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Review

Rorschach test in murderers: a systematic review of the literature 1946-2021 IV– case control groups comparative studies: murderers vs other criminals and murderer's subgroups

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Abstract

A total of 91 studies on Rorschach test in murderers from 1946 to 2021, written in English (62), French (13), Italian (12) or other languages (N = 4; Portuguese, Spanish and German) were reviewed, searched from the main databases (PubMed, Medline Complete, Embase, PsycINFO, PsycNET, PEPWeb, Cochrane, Gallica and Perseus) and other relevant sources (Google scholar; books and journals in the Rorschach field; Rorschach bibliographies; Buros MMY Mental Measurement Yearbooks), as well as from researcher networks (academia.edu, researchgate.net) and from the list of references of identified articles. Literature searching, study selection, screening and data extraction were carried out independently and concordantly by two authors. All the papers containing data on the Rorschach test in murderers were included, but only the contributions whose full text pdf was available were considered. Five types of studies were identified: 1) Literature reviews (N = 4); 2) Single case studies (N = 31); 3) Descriptive studies on murderer samples without controls (N = 20) or compared with normative data (N = 2); 4) Case-Control groups comparative studies (N = 28); 5) Miscellanea (N = 6). All the studies have been summarized in detail, so as to almost always replace a direct reading. The present paper concerns two subgroups of case control groups comparative studies, respectively comparing murderers with other criminals (N = 13), and subgroups of murderers (N =4). The results are extensively discussed, focusing on forensic implications and indications for future research.

Keywords: Homicide, Murder, Murderer, Rorschach test.

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Rorschach test in murderers: a systematic review of the literature 1946-2021 IV– case control groups comparative studies: murderers vs other criminals and murderer's subgroups

Introduction

The psychological and psychiatric assessment of authors of homicide is of paramount relevance in the forensic practice, in order to address issues of competence to stand trial, mental state at the time of offense and current dangerousness, according to the principles of EBMPA (Evidence Based Multimethod Psychological Assessment) (Erard & Evans, 2017; Giromini & Zennaro, 2019). In this field, the Rorschach test blew out its first hundred candles since the publication of Psychodiagnostic (1921, 1942, 1981), the masterpiece of Herman Rorschach (1884-1922), and confirmed itself until to-day as the longest-lived and one of the most used psychodiagnostic tests, both in clinical and forensic psychological and psychiatric practice (Archer, Buffington-Vollum,Vauter Stredny, & Handel, 2006; Archer &Wheeler, 2013; Giromini & Zennaro, 2019; Giromini et al., 2022; Hinselroth & Strycker, 2004; Neal & Grisso, 2014). In addition, in the last decade, the outstanding metanalysis by Mihura, Meyer, Dumitrascu & Bombel (2013) completed the work of refoundation of the psychometric bases of the Rorschach, convincing the most bitter opponents of the first hour (Wood, Garb, Nezworski, Lilienfeld & Duke, 2015) and almost putting an end to the so-called 'Rorschach controversy' (Zizolfi, 2016), despite some recent criticism (Areh, Verkanpt, & Allan, 2021). As a consequence, the Rorschach test is not challenged at unusually high rates, when compared to other psychological tests, in the United States and in selected European courts (Viglione, et al., 2022). It is therefore of the greatest interest to analyze the literature on the Rorschach test in murderers, along a systematic all-inclusive comprehensive review, with the aid of electronic databases, which allows us to identify many more studies (N = 91) than previous reviews (Cimino, 2018a; Ferracuti, 1961; Frank, 1994; Gambineri, 2004a). The following paper refers expressly to our previous contribution in this issue; for further details, the first work (Zizolfi, et al., 2023a) is an indispensable reading and a pivotal element also as regards the aims, the rationale and the methods used. Five types of papers were identified: 1) Literature reviews (N = 4); 2) Single case studies, without (N = 10) or with (N = 21) Rorschach record; 3) Descriptive studies on murderer samples without controls (N = 20) or compared with normative data (N = 2); 4) Case-Control group comparative studies (N = 28); 5) Miscellanea (N = 6). For each of these five categories, every paper is described in chronological order, resuming all the major details, with frequent citations (in italics), aiming to replace, as far as possible, the reading of the full text: anyway, the interested reader may always request the original pdf to the first author[1]. In the first contribution (Zizolfi, et al., 2023a), we presented single case studies (10 without Rorschach protocol and 21 reporting Rorschach record) and miscellaneous studies (N = 6). The second contribution (Zizolfi, et al., 2023b), concerns descriptive studies without controls, including murderers samples without controls (N = 20) or compared with normative data (N = 2).

The third contribution considers two subgroups of case control groups comparative studies, i.e. studies comparing murderers with normal controls (N = 8) and papers comparing murderers with suicides and attempted suicides (N = 3). The present paper reviewed two last subgroups of case control groups comparative studies, respectively comparing murderers with other criminals (N = 13), and subgroups of murderers (N =4).

Methods

In order to obtain a comprehensive and inclusive literature review, all articles mentioning the Rorschach test in murderers were included without any language filter: search strategy, eligibility and exclusion criteria, and data extraction are fully detailed in our first contribution (Zizolfi, S., et al., 2023a). Briefly, only full text contributions were considered; two reviewers extracted the different data independently from each other; if the systematic review process lacked consensus between the two, they discussed between them to solve the disagreement, or, otherwise, a third reviewer resolved it. 103 papers were identified, 91 articles entered the study[2]: paper by Ermentini (1990) and eleven papers presenting Rorschach data from mixed criminals (not only murderers) were excluded (Dorr & Viani, 2006; Franks, Sreenivasan, Spray & Kirkish, 2009; Keltikangas-Jarvinen, 1978; Parrot & Briguet-Lamarre, 1965; Norbech, Gronnerod, & Hartmann, 2016; Rader, 1957; Schachter, 1975; Timsit & Bastin, 1987, Walters, 1953; Weizmann-Henelius, 2005 and 2006)[3].

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Results

The present fourth section of our review concerns the last two subgroups of case-control group comparative studies, comparing:

- murderers with other criminals (N = 13);
- subgroups of murderers (N = 4).

Comparison studies between murderers and other criminals (N = 13)

Kahn (1959) compared two groups of criminals, admitted to a psychiatric hospital over a two-year period for evaluation of legal sanity: 15 murderers (12 males and 2 females) and 24 males charged with burglary. Differences between the two groups were statistically analyzed by means of chi square for the majority of social, psychiatric and Rorschach variables, and by means of F and t test for Wechsler-Bellevue results. No difference between the two groups was found as regards to marital status (ratio of about 5:2 married in both groups), occupational level (both predominantly unskilled), religion (Protestant-Catholic ratio of approximately 3 to 1 in both groups), economic level, psychiatric diagnosis (two-thirds of the cases in each group) and IQ. Murderers were older (mean age: 40.93 vs. 26.70 years; $p < 0.05$), and differ in race (about half were Hispanic-American or Black, while burglars were predominantly white Americans), education (a little higher in burglars), previous arrest (more frequent in burglars, $p < 0.01$), judgement of legally insane (more frequent in murderers; $p < 0.03$), type of psychiatric diagnosis (murderers diagnosed psychotic more frequently, burglars more frequently diagnosed as character disorders; $p < 0.002$). The following Rorschach variables were considered (not specified method): R, W%, D%, S%, F%, Extended F-%, Extended F+%, M%, FM%, FC%, CF%, C%, Shading%, P. In addition, a Rorschach response content analysis was performed, according to Schafer (1954), considering the per cent values of the following categories: oral, anal, sado-masochistic, authority, superego, strength and weakness, rejection of sexual role, body narcissism, reproduction, age and death. Murderers showed a statistically significant higher 'extended F-%' (chi square, $p < 0.05$), consistent with the evidence of more psychosis in this group, and with the hypothesis of a poorer emotional control. Strong suggestive trends of higher F% and C% in murderers, approaching but not reaching $p < 0.05$, are also consistent with the hypothesis of greater rigidity and greater impulsivity in murderers. It is of note that sado-masochistic content occurs more frequently for both groups, suggesting that hostility is an important factor in both murderers and burglars. Some limitations concerning the sample should be considered: since only individuals who pleaded insanity were evaluated, the sample may not be representative of murderers or burglars.

Lester & Perdue (1973) focused on movement Rorschach responses in murderers, and confuted Klopfer's suggestion (personal communication, 1972) that murderers might be characterized by high numbers of extensor human movement responses: no difference was found in the proportions of flexor, extensor and blocked movement responses in two groups of 50 male murderers and 20 male convicted of non-violent crimes, all in a state penitentiary, matched for age and IQ.

Gupta & Sethi (1974) administered the Rorschach test, according to Klopfer (Klopfer, Ainsworth, Klopfer, & Holt, 1954), and the Maudsley Personality Inventory, in 54 (18%) out of 300 male prisoners convicts of murder (mean age: 31.6), matched with respect to age and education (75% primary school, 25% more than 5 years of schooling) to a comparison prisoner group consisting of cases of theft (N = 31), dacoity (N = 10) and miscellaneous crimes (N = 13). No statistically significant difference between the two criminal groups was found as regards total number, locations, determinants and contents of Rorschach responses; responses of good form level (F+) were significantly greater in the murder group as compared to the non-murder one. Mean values for total response (14.2 and 12.3 respectively for murder and non-murder criminals), as well as for F+% (52.0 and 45.8) and popular responses (3.3 and 2.8) were much below the normal range, suggesting "…*impaired ego-functioning and lack of social conformity among the prisoners in general*". According to these Authors "…*a relatively higher frequency of colour determined percepts in the Rorschach Test (CF/FC) would depict the existing emotional tension in these convicts of murder as they have been sentenced to a long term imprisonment*".

Lester, Kendra, Thisted & Perdue (1975) applied stepwise multiple discriminant analysis to two groups of 100 male prisoners for homicide (original sample of Perdue, 1964) and 50 males incarcerated for other crimes (15 for rape, 15 for non-sexual aggressive offenses and 20 for nonaggressive offenses). A predictive equation including Space, Animal, Popular and m Rorschach responses led to a correct classification of 71% of the murderers and 66% of the nonmurderers.

McDonald & Paitich (1981) presented the results of a retrospective comparison of the psychological test findings (Verbal WAIS and Raven IQ, MMPI, PF 16, Parent-Child Relations Questionnaire, Rorschach) within four groups, including 61 murderers (twelve diagnosed as psychotic), 42 assaulters, 71 perpetrators of theft, and 24 unemployed non-criminal controls; the three criminal groups were referred for psychiatric and psychological assessment to the Forensic Service on the Clarke Institute of Psychiatry in Toronto. "*Data were accumulated on the following variables: age, sex, educational level, number or prior criminal offenses, marital status, sibling data, level of alcohol consumption... For the murder group only, data were also recorded for type of motive, amount of brutality used, method used to kill, other drug use, employment status, previous therapeutic contact, and estimated home stability during childhood. Rorschach protocols were scored by two people, each using several approaches. Klopfer variables recorded were: W, W, D, d, Dd and S for location scores; F, FM, Fm, mF, FC, CF, FC', C'F and M for determinants; and form level estimations. Specific*

content responses recorded were: food-drink, water, anatomy, explosion of fire, clouds-smoke-fog, and card failures. More generalized content categories for responses generally associated with the following dimensions were also recorded: inferiority, immaturity, femininity, tension or anxiety, orality, mild overt aggression, strong overt aggression, mutilation, missing appendages, phallic responses, mildly confused identification, markedly confused identification, distorted self-image, overt male sex, overt female sex, anality, fearfulness or insecurity, mild dysphoria, marked dysphoria, mild paranoia, overt paranoid self-references, confabulation, contamination, perseveration, and idiosyncratic or original responses". Rorschach tests were also scored by Elizur's hostility scoring system (1949) and the alternate system of DeVos (1952). Statistical analysis was performed for all measures other than Rorschach by means of analysis of variance; analysis of covariance was used for Rorschach measures to correct for the variability in the number of responses given. Note that Rorschach data were not available for all the subjects, but only for 42 (68.8%) for murderer group (33 males and 9 females), 25 (59.5%) for assaulters (22 males and 3 females), 18 (25.3%) for thefts (17 males, 1 female) and 24 (100.0%) for unemployed non-criminal controls (20 males and 4 females). The control unemployed non-criminal group was younger ($p < 0.01$; average age 22.5, versus 25.6 for theft, 27.5 for assault and 30.0 for murder), better educated ($p < 0.01$; grade 13 or better, the other groups averaged between grade 9 and 11) and more intelligent (Average Verbal IQ on the WAIS Vocabulary Test was 116.4, with all other groups falling between 102 and 103; Non-Verbal Raven Progressive Matrices average was 118.8, with the others all falling between 105 and 107): all these differences are clinically not significant. As regards Rorschach data, no statistically significant difference was found on the Elizur Hostility Scores (mean and SD were 4.07 and 4.98 for murderers, 4.36 and 4.28 for assaulters, 4.00 and 3.96 for thefts, and 6.44 and 6.15 for controls), on six DeVos hostility measures, and on 29 of 31 considered content responses; murder group shows highest Feminine Responses ($p < 0.05$), assaulters highest Missing Appendages ($p < 0.05$). Despite the relatively higher intelligence of the unemployed group, no statistically significant difference was found on form level of the responses given; murder group shows no difference on the use of S (Space responses) and in the relative proportion of FM to M (animal movement to human movement). Control unemployed group scored higher on W ($p < 0.02$), FC ($p < 0.001$) and H ($p < 0.02$). According to the Authors' conclusive remarks: "*The overall picture presented by the results of this study is that murder or violence is not predictable as a general category of behavior from the test data considered*".

Greco & Cornell (1992) reported Rorschach results in two groups of 55 homicides out of 110 violent adolescent offenders: 'conflict group adolescents' (N = 33), who committed a homicide in the course of an interpersonal conflict with the victim, and 'crime group adolescent' (N = 22), who committed a homicide in the course of some other crime such as robbery or burglary. The nonviolent comparison subjects (N = 55, reduced to 42 because 13 Rorschach records had fewer responses), matched on age, race and gender, were convicted of some form of larceny or breaking and entering, with no prior charges for violent offenses. All 110 subjects (80% African-American, 20% White) ranged in age from 12 to 18 years (mean: 15.9) at the time of their offense; all but 10 of the subjects (5 homicide and 5 nonviolent) were male; the mean Wechsler (WAIS or WISC-R) IQ was 86 for the two homicide groups and 88 for the comparison group. Two scorers rescored all the Rorschach records blind to subject offense status, using the second edition of the Comprehensive System (Exner, 1986), and coding the protocols for differentiation (Blatt et al., 1976), Mutuality of Autonomy Scale (MAS) (Urist, 1977) and aggressive contents (Holt, 1975). The inter-rater reliability between the two scorers was very high, ICC exceeding 0.85. Total number of responses was very similar in the three groups, mean and SD were 15.12-5.75, 16.00-4.36 and 13.95-4.56 respectively for conflict murderers, crime murderers and nonviolent groups. The mean R for all three groups was low compared to Exner's norms (1986) for adolescents, but a low R is consistent with the subject low-average IQs and pattern of lower verbal than performance scores. A multivariate analysis of variance (MANOVA) was conducted on conflict murderers, crime murderers and nonviolent groups, using seven object relation variables: 3 indexes of differentiation (Overall H, Good Form H, Poor Form H), Mutuality of Autonomy, and 3 Aggressive Contents (Attack, Victim, Results of Aggression). The MANOVA showed no statistically significant difference between homicide and nonviolent groups, but statistically significant comparisons when contrasting conflict and crime groups ($p < 0.05$) as regards 3 variables: Overall H was lower in conflict group (mean-SD: 1.73-0.65 vs 2.21-0.79); Poor Form H was higher in crime group (mean-SD: 0.97-1.42 vs 1.86-1.50), Victim Contents was higher in crime group (mean-SD: 0.18-0.40 vs 0.00-0.00). These results suggest that juveniles who committed crime-related homicides evidenced greater disturbance in object relations than juveniles who committed conflict-related homicides. One interpretation is "…*that the crime group youth have a pervasive deficit in their conception of others, so that aggressive feelings are not inhibited by a realistic perception of others as complex, differentiated human beings. These youth may be able to commit homicide because they fail to recognize other individuals as human beings like themselves*… (they) *may have a more pervasive tendency to dehumanize others, permitting them to act on aggressive impulses when their needs are frustrated…In contrast, the conflict group youth may have a comparatively more well-developed conception of other individuals and a capacity for attachment, but in the context of interpersonal conflict and emotional stress, they experience a regression in their perception of a specific adversary… their violent outburst represents a poor coping strategy for dealing with a highly stressful relationship rather than a generalized inability to take the perspective of others and empathise with them*".

Gacono and Meloy repeatedly examined the Rorschach tests, administered according to the Comprehensive System (Exner, 1986, 1991, 1993), in different samples of incarcerated sexual homicide perpetrators (SHP) compared with other incarcerated criminals, where '*Sexual homicide is the intentional killing of another human being during which there is evidence of sexual activity by the perpetrator*". Since sexual homicide has not been identified as a paraphilia in DSM, but has been categorized as one of the four motivational types of homicide (Douglas, Burgess, Burgess, & Ressler, 1992), they searched for distinctive features for this type of murderers. According Meloy, Gacono & Kenney (1994), positive evidence was needed to classify a murder as sexual homicide: "*Positive evidence included physical evidence of sexual assault of the victim; sexual activity in close proximity to the victim, such as masturbation; or a legally admissible confession of sexual activity by the perpetrator*".

Meloy, Gacono, & Kenney (1994), in their first preliminary study, compared sexual homicide perpetrators (SHP) with non-sexually offending primary psychopaths (PP), examining the Rorschach protocols of a small SHP sample (N = 18; males = 16, females = 2; examined between 1986 and 1992 in various prisons and forensic hospitals in California and other US states), gathered nonrandomly through the two senior authors' clinical and forensic practices (11 protocols) and solicited from three other colleagues, one male and two female psychologists (7 protocols), and those of a PP comparison group (N = 23), randomly drawn from a larger Rorschach sample of convicted and incarcerated antisocial personality disordered (DSM-IV) men (N = 82), each having a score of 30 or higher on the Hare Psychopathy Checklist-Revised (PCL-R) (Hare, 1991), never previously incarcerated for a sexual offence, examined in various prisons and hospitals in California during the years 1984-1992 by the two senior Authors (Gacono & Meloy, 1991). The Authors "… *purposefully did not exclude individuals on the basis of mental retardation, mental illness, or neurological impairment to accurately represent the probable heterogeneity of this population. None of the subjects, however, were psychotic at the time of testing or judged to be mentally retarded (IQ < 70) by the examiners*". Sexual homicide subjects accounted for the deaths of at least 30 victims, most of whom were stranger women, none being married or cohabiting with the perpetrators; 22% of the sample (N = 4) committed more than one sexual homicide. Sexual homicide sample was a little older (mean age: 35.3 versus 29.7 years); no difference was found as regards ethnicity and education. All Rorschach for both groups were administered using the Comprehensive System (Exner, 1986), and descriptive statistics were generated using the Rorschach Scoring Program – Version 2 (Exner, Cohen, & McGuire, 1990). Interrater reliability (Spearman's rho) for PCL-R was 0.94; percentages of agreement for Rorschach scoring ranged from 90.2% and 99.3% for each variable, while total agreement (for all variables) was 85.5%. Select Rorschach variables were compared between groups based on previous research (Gacono & Meloy, 1991, 1992; Gacono, Meloy, & Heaven, 1990; Meloy & Gacono, 1992a) and theory (Gacono, 1992; Meloy, 1988), and were clustered according to affects (T, T = 0, T>1, V, Space, FM), cognitions (WSum6, X-%), self-perception (Rf, PER), and object relations (All H, COP > 2). Variables were nonparametric and tested using either Mann-Whitney U (means comparison) or chi square (frequency comparison); they were considered significantly different if $p < 0.05$. SHP, when compared with PP, produced more total R (mean: 30.00 versus 19.04, SD: 13.91 versus 5.93; $p < 0.01$), more T (Texture response, measure of attachment capacity, mean: 1.17 versus 0.09, SD: 2.23 versus 0.09), more frequent T (39% versus 9%; $p < 0.05$), elevated T (T > 1; measure of attachment anger; 27.8% versus 0.00%; $p < 0.05$), more but not statistically significant V (Vista response, measure of dysphoric or painful introspection; mean: 0.94 versus 0.35, SD: 1.39 versus 0.49) (normal values = mean: 0.24, SD: 0.61; Exner, 1991), equal S higher than norms (Space response, measure of characterological anger or chronic negativism when S >2; mean: 2.72 versus 2.48, SD: 1.78 versus 1.78), significantly greater FM (Animal Movement response, measure of nonvolitional ideation – obsessional thoughts – resulting from unmet instinctual need states; mean. 6.11 versus 2.87, SD: 3.60 versus 1.74; $p < 0.002$). Both groups reported similar, not statistically different, scores, higher than norms, as regards WSum6 (Weighted measure of formal thought disorder; mean: 23.17 versus 14.22, SD: 19.12 versus 13.01) (normal values = mean: 3.34, SD: 3.04; Exner, 1991), and X-% (measure of reality-testing impairment; mean: 21.00 versus 20.00, SD: 12.00 versus 10.00) (normal values = mean: 7.00, SD: 5.00; Exner, 1991). As concerns self-perception, the Reflection response (Rf), a measure of pathological narcissism, appeared with clinically elevated frequency (Rf>0) in both SHP (50%) and PP (39%); the Personal response (PER), a measure of self-aggrandizement in forensic population (Gacono, Meloy, & Heaven, 1990), was also elevated (>2) in both samples (mean: 3.28 versus 2.09, SD. 3.85 versus 1.86). SHP produced more All H (Human content, a general measure of interest in others; mean: 7.00 versus 4.26, SD: 3.22 versus 2.09; $p < 0.005$) (normal values = mean: 5.72, SD: 1.61; Exner, 1991), and more frequent COP > 2 (Cooperative Human Interaction, a measure of the expectation of cooperative human interaction; 27.8% versus 0.00%, $p < 0.01$). According to these preliminary results, SHP differ from both PP and normal subjects. 89% of SHP highlight abnormal bonding or attachment capacities (T >< 1; T = 1 in 88% of normal subjects); some of SHP, however, are hungry for attachment, rather than detached, in contrast to the PP, who are almost always chronically emotionally detached. Both SHP and PP appear to engage in dysphoric introspection (V), at least after incarceration, and there is a trend toward more dysphoric rumination in SHP. Both SHP and PP show chronic characterological anger and negativism towards others (S > 2). SHP experience significantly more nonvo-

litional ideation (obsessional thoughts) than PP and normal subjects, because of the press of instinctual unmet need states (FM). Both SHP and PP show more thought disorder (WSum6) than normal subjects, not unlike antisocial personality disordered men (mean: 17.12, SD: 13.83) (Gacono & Meloy,1991), but far less than inpatient schizophrenics (mean: 44.69, SD: 35.40) (Exner,1991); SHP, when compared to PP, highlight more frequent redundant, circumstantial, and irrelevant thoughts than PP, and a somewhat greater frequency of clearly bizarre (Level 2) associations (44% versus 30%). The reality testing (X-%) of both SHP and PP groups is likewise seriously impaired: it is worse than that of normal men, almost the same as that of antisocial personality disordered men (mean: 23.00, SD: 11.00) (Gacono & Meloy,1991), but far less than inpatient schizophrenics (mean: 34.00, SD: 17.00) (Exner,1991). Both SHP and PP appear to be pathologically narcissistic (Rf), or at least inclined to self-aggrandize (PER). SHP, when compared to PP, show a greater genuine interest in other human beings (All H) and a tendency to more readily mentally represent others as a whole, real, and meaningful individuals (Pure H), with a more frequent expectation of cooperativeness from others (COP > 2). Although the empirical support is limited because of the retrospective and inferential nature of the study, these preliminary findings lend the first empirical support to five psychodynamic factors that the Authors propose "…*to partially understand the act of sexual homicide itself: abnormal bonding, characterological anger, formal thought disorder, borderline reality testing, and pathological narcissism (entitlement)… these factors may play a large role in the psychogenesis of sexual homicide when the perpetrator is in the presence of a potential victim and is sexually aroused*".

Coram (1995) compared the Rorschach protocols of 23 incarcerated male violent murderers (VM) with those of 23 incarcerated male offenders with no violence in their history (NV), in order to obtain findings that may be potentially useful Rorschach indicators to identify and understand violent murders. Each subject was administered a Rorschach utilizing the Exner CS (1985, 1986, 1990, 1993) for administration, scoring and interpretation. "*There were four apriori hypotheses proposed in this study: Hypothesis I: the two groups would differ on reality testing and ability to accurately translate and interpret events (F+%, X+%, X-%); Hypothesis II: the two groups would differ on pure C, with the violent group having a higher frequency of pure C and possess a reduced capacity for emotional modulation; Hypothesis III: the two groups would differ on greater vulnerability for disorganization and difficulty with stress tolerance (D, adj D, EA, es); Hypothesis IV: The non-violent offenders group would differ with the violent group providing a higher aggression score and lower Egocentricity Index. Both groups would provide a low pure human content when compared to Exner norms".* The two groups show no difference in mean age (34.43 vs 32.48), in race and occupation (76% white, 20% African American and 4% Hispanic: all from a predominantly low socioeconomic status), and in type of incarceration. Both groups had access to the community, none was on death row, and all had access to recreational areas and equipment. None of the subjects had a documented psychiatric history. The violent murderers (VM) had more structured and supervised jobs when compared with the nonviolent group. The criterion for inclusion in the violent murderer group was a homicide that involved mutilation, removal of body parts, or repeated knife wounds to the victim. Nonviolent offenders (NV) met criterion by having no arrests for personal crimes, e.g. robbery or assault on their past or current records. Subjects were randomly selected from a list generated by the records department of two northeastern USA prisons. "*Each subject participated in a single session lasting about 2.5 hours, and was advised that the study was designed to assist policymakers in developing more effective inmate programs. The subjects were asked to complete a Draw-A-Person, a Rorschach, and to verbally report two of their earliest memories from childhood. Rorschach protocols were administered and scored utilizing the Comprehensive System (Exner, 1985). Each protocol was independently scored twice, once by a graduate student trained in the Exner system, and again by the author, with scoring discrepancies referred to a colleague for resolution. The protocols were randomly distributed to the raters so they were unaware of the type of subject assessed in each protocol. Interrater agreement for all categories was at least 90%, except for special scores, that resulted in an 88% interrater agreement. The data were organized using the Computerized Rorschach Interpretation Assistance Program (Exner, McGuire, & Cohen, 1985)".* Statistical analysis was performed by means of chi square and one-way ANOVA analyses. Murderers Rorschach data were compared with those of nonviolent inmates; both groups data were compared with those of Exner (1985) norms (N = 700), too. 18 CS theoretically relevant variables for violent murderers were identified: F+% (Form%), X+% (Conventional Form%), X-% (Distorted Form%), XU% (Unusual Form%), ZD (Organizational Activity), ZF (Z frequency), D (Common Detail Response), Adj D (Adjusted D score), EA (Experience Actual), es (Experienced Stimulation), Afr (Affective Ratio), FC+CF+C (Sommatoria colore), C Colore puro) Sum Shading (Sommatoria chiaroscuro) , Fr and rF (Reflexion responses), H (Human content), 3r+(2)r ((Egocentrity index), and AG (Aggression Response). Other 15 CS Rorschach variables, identified as theoretically irrelevant for violent murderers, were not considered for further analysis (R, L, W, D, Dd, M, FM, FD, T, Blends, Mor, S, WSum6, Food, P); anyway, violent murderers, when compared with nonviolent inmates, showed higher R (mean: 22.56 versus 19.04, SD: 5.28 versus 4.15; $p < 0.05$) and higher Blends (Multiple Determinant) (mean: 3.74 versus 1.74, SD: 2.93 versus 1.54; $p < 0.01$). Both groups, when compared with CS Exner (1985) norms (N), showed lower F+% (VM mean: 0.58, SD: 0.14; NV mean: 0.53, SD: 0.15; N mean: 0.71, SD: 0.17), lower X+% (VM mean: 0.53, SD: 0.13; NV mean: 0.55, SD: 0.13; N mean: 0.79, SD: 0.08), and higher X-% (VM mean: 0.39,

SD: 0.15; NV mean: 0.20, SD: 0.12; N mean: 0.07, SD: 0.05), indicating a disturbance with reality testing. VM, when compared with NV, reported lower Xu% (mean: 0.07 versus 0.20, SD: 0.09 versus 0.09; $p < 0.01$) and higher X-% (mean: 0.39 versus 0.20, SD: 0.15 versus 0.12; $p < 0.01$), demonstrating "*…a more pervasive deficit in perceptual inaccuracy and a disturbance in their ability to translate and interpret events in the same manner as most people…In addition, 43% of the violent offenders had a Schizophrenia Index of 4, when compared with a normative sample of 0)*". On ZF, a measure of individual's ability to organize and process information, NV scored significantly lower than VM (mean: 7.83 versus 11.26, SD: 3.34 versus 4.62; $p < 0.01$), maybe suggesting "*…an intellectual limitation, a reflection of an immature psychological development, or an approach of avoiding the complexity of a situation (Exner, 1986b)*".

Both groups had a Lambda higher than CS Exner (1990) norms (VM mean: 1.00, SD: 0.66; NV mean: 1.57, SD: 1.32; N mean: 0.58, SD: 0.26), regarding the individual's willingness to be involved in a situation, and indicating "*…the subjects' tendency to minimize the importance of a situation or to ignore some of the elements. It is also reflective of a style of oversimplifying a complex situation or of resistance to the testing situation (Exner, 1991)*". VM had an Egocentricity Index (EI) (3r+(2)/R) corresponding to the normative values (mean: 0.39, SD: 0.07), and significantly higher than NV (mean: 0.38 versus =.25, SD: 0.17 versus 0.13, $p < 0.01$); since EI is a measure of psychological self-focusing or concerns for self, reflecting issues regarding low self-esteem or overvaluation of the self at the expense of others, VM "*…have apparently adequate measures of self-esteem,…*(while NV show) *negative self-esteem, lower personal worth and a proneness to depressive feelings (Exner, 1986)*". Both groups had low color responses (FCCFC), with the VM displaying significantly higher results than NV (mean: 3.61 versus 1.78, SD: 2.15 versus 1.65, $p < 0.01$). Surprisingly, neither group had a significant increase in pure C. 61% of VM and 39% NV had a higher shading response when compared to 15% CS norms (Sum Shading mean: 3.39, SD: 2.15); on Sum Shading (Total Shading Responses), VM scored significantly higher than NV (mean: 6.00 versus 3.13, SD: 4.36 versus 2.51; $p < 0.01$): "*These appear to be more situational (Y) than chronic (C'), and may reflect the length of incarceration*". "*Both groups had a higher frequency of underincorporators (ZD) when compared to Exner's nonpatient sample (30% versus 5%). This score may indicate a quick scanning of the environment, and possibly coming to hasty conclusions, faulty decision-making, and inappropriate or false conclusions about a situation*". In addition, there were also differences in terms of problem-solving style (EB): 70% of VM and 70% of NV demonstrated an ambitent style of approaching situations, substantially different from the normative sample of 20% (Exner, 1990): "*These inmates may be more vulnerable to difficulty, less efficient, require more time to complete tasks, and are inconsistent in their use of emotions and thinking during problem-solving. In one situation, the process of decision-making and problem-solving are strongly influenced by feelings, and at other times, emotions play a small role*". Both groups had an EA (Experience Actual) lower than CS Exner (1990) norms (VM mean: 4.83, SD: 2.58; NV mean: 3.56, SD: 2.86; N mean: 8.82, SD: 2.18), with slightly higher values in VM ($p < 0.05$); since EA is a measure of organized psychological resources available to effectively deal with stress, "*It appears that both groups had a reduced capacity to deal with stress, possessed fewer internal resources, and felt overwhelmed*". Last but not least, 'es' (Experienced Stimulation), a measure of impending stress and feelings of being overwhelmed, does not substantially differ from Exner norms (mean: 8.21, SD: 3.00), but is higher in VM than in NV (mean: 9.83 versus 6.26, SD: 5.95 versus 2.94, $p < 0.05$), demonstrating a greater vulnerability in VM for disorganization and difficulty with stress tolerance. According to these results, hypotheses I and III have been confirmed; hypothesis II was not, while hypothesis IV only for the low pure human content for both groups.

Gacono, Meloy, & Bridges (2000) (reprinted, with minor modifications, in Gacono, Meloy, & Bridges, 2008), six years after their first preliminary investigation, are confronted with the two major limitations of their previous study (Meloy, Gacono, & Kenney, 1994), namely the reduced number of samples, and the failure to address the question of specificity of Rorschach variables in one sexually offending group (sexual homicide perpetrators) (SHP), without any comparison to other sexually offending groups. Therefore, in these two studies, they compared sexual homicide perpetrators (SHP) (N = 38) to non-sexually offending primary psychopaths (PP) (N = 32) and to nonviolent pedophiles (PED or NVP) (N = 39) on select CS Comprehensive System Rorschach variables (Exner, 1993), offering the first comparison of Rorschach CS between two clearly delineated sexually deviant groups (SHP and PED/NVP). The four following hypotheses, to be verified, were developed based on a confluence of psychodynamic principles and the authors' previous research with these populations (Bridges, Wilson, & Gacono, 1998; Gacono & Meloy, 1994; Meloy, Gacono, & Kenney, 1994):

I *Primary Psychopaths (PP),* prone to predatory violence, were expected: 1. to produce less R than the two sexually deviant groups (SHP and PED/NVP); 2. to be most detached (T = 0), most affectively avoidant (<Afr), less interested in others (<COP; <Pure H), than SHP and PED/NVP; 3.to show higher levels of extratensiveness and less restrained hostility (S) than PED/NVP, due to their shared cluster B psychopathology, specifically Antisocial Personality Disorder (SPD), and consequently an associated alloplastic style of relating;

II *Sexual Homicide Perpetrators (SHP)* were predicted: 1. to produce more R than PP, since affective states ('internally troubled = dysphoric affect, internal press, needs & ideational noises), in part, motivated sexually

deviant behavior (Gacono & Meloy, 1994), and these states, 'pressing' for expression, induce higher R; 2. to show higher levels of extratensiveness and less restrained hostility (S) than PED/NVP, due to their shared cluster B psychopathology, specifically Antisocial Personality Disorder (SPD), and consequently an associated alloplastic style of relating; 3. to show more dysphoria and internally driven need states (V, FM, Fd, > DEPI) than PP; 4. to produce low Lambdas, due to their inability to distance from environmental, particularly sexually arousing, stimuli;

III *Non Violent Pedophiles (PED/NVP)* were predicted: 1. to produce more R than PP, since affective states ('internally troubled = dysphoric affect, internal press, needs & ideational noises), in part, motivated a sexually deviant behavior (Gacono & Meloy, 1994), and these states, 'pressing' for expression, induce higher R; 2. to show more dysphoria and internally driven need states (V, FM, Fd, > DEPI) than PP; 3. to highlight cluster C traits as rigidity, inadequacy, and overcontrol (high Lambda, introversive, >S);

IV All groups were hypothesized to be self-focused (Fr+rF) and highlighted problems with reality testing (X-%) and thought disorder (WSum6, SCZI).

All study data were archived and taken from a computer database containing over 800 forensic Rorschach protocols, all scored and re-scored by experienced raters prior to inclusion and found to be reliable, with the highest inter-rater agreement for all variables. All the Rorschachs were administered in incarcerated males (2 females in PP and SHP) between 1984 and 1997 (between 1991 and 1996 for PED/NVP) by advanced doctoral level clinical psychology interns or licensed clinical psychologists using CS guidelines (Exner, 1974, 1986, 1993; Exner et al., 1995). With the exception of one protocol, only protocols with >= 14 responses were included in the study. All subjects were free of mental retardation, psychosis or neurological impairment; PED/NVP met the DSM-IV criteria for Pedophilia, as determined by agreement by two experienced clinicians, none of them would meet the criteria for primary psychopathy. Psychopathy level (PCL-R score) or specific behavioral pattern (sexual offense) were the sole inclusion criteria. All other data, including demographic information, were treated as dependent variables. All CS Rorschach data were analyzed using the Rorschach Scoring Program 3-plus (Exner & Tuttle, 1995), applying parametric or nonparametric statistical procedure (ANOVA, Kruskal-Wallis, Chi-square). As regards demographics, PED/NVP were all males, significantly older (one-way ANOVA, $F = 14.06$, $p < 0.000$) and better educated (one-way ANOVA, $F = 10.93$, $p < 0.005$) than SHP and PP; they were all Caucasians, while SHP and PP were more racially diverse. PP were more likely to be single (75%, versus 47% SHP and 49% PED/NVP; Chi-square, $p < 0.05$). SHP were significantly more likely to target females (89% versus 36% PED/NVP) than males (8% versus 46% PED/NVP), and strangers only (63% versus 0% PED/NVP) than acquaintance only (24% versus 33% PED/VP); 0% SHP and 54% PED/NVP targeted both stranger and acquaintance. Most SHP had only one sexually related homicide identified in the official record, and a few committed serial murders; crime scene analysis of SHP indicated that 16 were organized, 13 disorganized, 4 mixed, and 5 undetermined (Ressler, Burgess, & Douglas, 1988). 39 PED/NVP were responsible for 160 male and 77 female known victims in instant offenses alone. A limited number of Rorschach variables (N = 27), related to the four hypotheses mentioned above, were presented, divided into 8 groups: Basic Personality/Validity (5), Self-perception/Grandiosity (1), Reality Testing (1), Thought Disorder (2), Obsessional Thinking (1), Attachment/Affects/ Interpersonal (12), Chronic anger (1), and Other Constellations (4). Descriptive statistics (mean, SD, Min, Max, Frequency, Median, Mode, Skewness and Kurtosis) for all 112 CS variables were reported in appendices A, B, and C, respectively for 39 PED/NVP, 32 PP and 38 SHP. As predicted (Hypothesis I), PP produced significantly fewer responses (mean: 18.9, SD: 5.17) than SHP (mean: 26.5, SD:11.8) and PED/NVP (mean: 29.5, SD: 11.3) (ANOVA, $F = 10.25$, $p < 0.001$) and appeared most detached ($T = 0$, in 100% PP, 61% SHP and 51% PED/NVP), most affectively avoidant (Afr < 0.50 in 69% PP, 47% SHP and 44% PED/NVP), and significantly less interested in others, as revealed by less Pure H (mean: 1.66, SD: 1.31, frequency: 75%) than SHP (mean: 2.81, SD: 1.87, frequency: 97%) and PED/NVP (mean: 2.62, SD: 2.84, frequency: 87%) (Kruskal-Wallis, $p < 0.05$) and by less Composite H (mean: 4.00, SD: 2.13, frequency 94%) than SHP (mean: 6.39, SD: 3.07, frequency: 100%) and PED/NVP (mean: 8.05, SD: 6.46, frequency: 100%) (Kruskal-Wallis, $p < 0.001$); PP are more likely to produce $H = 0$ (25%; chi square = 3.84, $p < 0.05$), and the frequency of COP < 2 is 0% in PP, 18% in SHP and 15% in PED/NVP. PP show also less S (mean: 2.28, SD: 1.75, frequency: 81%) than PED/NVP (mean: 4.64, SD: 3.53, frequency: 92%), and are Introversive (22%), Ambitent (47%) or more frequently Extratensive (31%) than the other two groups. As predicted (Hypothesis II), SHP produced: significantly more R than PP (see above); significantly less S (mean: 2.92, SD: 1.99, frequency: 97%) than PED/NVP (mean: 4.64, SD: 3.53, frequency: 92%) (ANOVA, $F = 8.05$, $p < 0.0006$), related to less restrained hostility/passive opposition; more V (suggesting internal distractions such as painful rumination) (mean: 1.11, SD: 1.90, frequency: 53%) than PP (mean: 0.63, SD. 0.94, frequency: 44%), more Fd (index of dependency yearnings) (mean: 0.53, SD: 0.92, frequency: 34%) than PP (mean: 0.16, SD: 0.45, frequency: 12%) and statistically more FM (index of nonvolitional ideation in response to physiological needs) (mean: 5.08, SD: 3.76, frequency: 92%) than PP (mean: 2.75, SD: 1.65, frequency: 90%) and PED/NVP (mean: 3.77, SD: 2.40, frequency: 92%) (Kruskal-Wallis, $p < 0.05$), suggesting more dysphoria, more obsessional intrusive thinking and more internally driven need states.

SHP were Introversive (39%), Ambitent (39%) or less frequently Extratensive (21%), and showed a lower frequency of high Lambda (Lambda is > 0.99 in 21%, versus 38% of PP and 51% of PED/NVP). As predicted (Hypothesis III), PED/NVP produced: significantly more R than PP (see above); statistically more SumV (mean: 1.77, SD: 2.03, frequency: 69%) than PP and SHP (see above) (Kruskal-Wallis, $p < 0.05$), higher frequency of DEPI >= 5 (index of depression) (54% versus 34% PP and 37% SHP), high FM (mean. 3.77, SD: 2.40, frequency: 92%), statistically higher S (see above). PED/NVP were Introversive (38%), Ambitent (49%) or Extratensive (13%), and showed a higher frequency of high Lambda (see above) (index of overcontrol) (chi-square, $p < 0.05$). As predicted (Hypothesis IV), all groups were self-focused, suggesting pathological narcissism, and highlighted impaired reality testing (X-%) and moderate to severe levels of cognitive slippage and thought disorder (WSum6, SCZI). Fr+rF (index of self-perception/grandiosity) was higher than norms in PP (mean. 0.72, SD: 0.96, frequency: 44%) and much higher in SHP (mean: 1.11, sd. 1.62, frequency. 45%) and in PED/NVP (mean: 1.23, SD: 2.32, frequency: 44%). X-% was higher than norms in PP (mean: 22.00, SD: 0.12, frequency: 100%), as well as in SHP (mean: 26.00, SD: 0.12, frequency: 97%) and in PED/NVP (mean: 22.00, SD: 0.10, frequency: 100%). WSum6 was higher than norms in PP (mean: 16.34, SD: 12.84, frequency: 94%), as well as in SHP (mean: 23.00, SD: 19.08, frequency: 92%) and in PED/NVP (mean: 16.39, SD: 15.15, frequency: 92%). An elevated value of SCZI (>=4) was highlighted in 15% PP, 29% SHP and 20% PED/NVP; the number of SHP who produced Level 2 Special Scores (N = 19) was slightly greater than PP (N = 12) and PED/NVP (N = 12). According to these findings "*Psychopaths are the least internally troubled of the three groups (less FM, T, Fd, V, S). They are less interested in others (T = 0, H), have little expectation of interpersonal cooperation (COP), and use people in a self-serving manner (Fr+rF). They are unfettered by remorse, guilt (V), or sustained Reflection (FD, Introversion). In common with pedophiles, psychopaths' perceptual and cognitive distortions (WSum6, X-%) add to their poor interpersonal judgement, and when combined with self-centeredness (Fr+rF), may contribute to a pervasive sense of entitlement. Psychopaths avoid genuine affective involvement, and although many in this group might be characterized as moving toward hypersocial sensation-seeking activities (one third are Extratensive), pleasure in others is experienced when others serve as an adequate mirror. For our sexual homicide perpetrators, of which two thirds are likely psychopaths, their sexual deviance appears to emotionally disrupt their narcissistic (psychopathic) equilibrium. Unlike non-sexually offending psychopaths, sexual homicide perpetrators are internally troubled. High levels of internal dysphoria, yearning, obsession, and dependency needs (V, T, FM, Fd) push behaviors, while at the same time there is a certain loss of distance or inability to disengage from the environment and revel (Lambda, R). Stimuli that resonate with their sexual deviance are particularly appealing and literally irresistible. The intensity of this push-pull effect is exacerbated by less than optimal controls (D = -1.45, AdjD = -0.58;R, see Appendix b). High levels of ideational noise or, as we previously hypothesized (Gacono & Meloy, 1994), obsessional thought (FM) differentiate sexual homicide perpetrators from the psychopath. Like pedophiles, they are interested and perhaps drawn to others; however, their interest is contaminated by the self-centeredness (Fr+rF) and severe perceptual (X-%) and cognitive distortions (WSum6), which characterize all three groups (Gacono & Meloy, 1988). Isolation is also a common defense utilized by these groups (SHP = 31.6% >< .33; PED/NVP = 28.2% > .33; PP = 25% > .33)*". In conclusion "*The present findings expand and clarify the differences between the non-sexually offending psychopaths and sexual homicide perpetrators. Non-sexually offending psychopaths are not interested in others, highlight a complete absence of attachment capacity, lack the channeled sexual arousal to extreme violence, and are not aggressively motivated by dysphoria, obsession, or affectional hunger. Pedophiles, although angrier, display the sexual arousal integral to their offenses, but lack the emotional detachment noted in the psychopaths and evidence better controls than the sexual homicide perpetrators*". Huprich, Gacono, Schneider & Bridges (2004) re-examined the Rorschach test of the same subjects (38 SHP, 32 PP/NSOP and 39 PED/NVP) as in the previous two studies (Gacono, Meloy, & Bridges, 2000, 2008), and scored protocols for Rorschach Oral Dependency (ROD) content and for the Aggressive Content scores (Gacono & Meloy, 1994). The Rorschach Oral Dependency Scale (ROD; Masling, Rabie, & Blondheim, 1967) is a good measure of overt dependent behavior, with robust psychometric properties (Bornstein, 1994, 1996, 1999), adequate interrater reliability and test-retest consistency (Bornstein, Hinselroth, Padawer, & Fowler, 2000; Bornstein, Rossner, & Hill, 1994; Juni & Semel, 1982), high correlations with other projective measures of dependency (Fowler, Hinselroth, & Handler, 1996), moderate correlations with self-report measures of dependency (Bornstein, 1996, 1999; Bornstein, Rossner, Hill, & Stepanian, 1994; Hirschfeld, Klerman, Gough, Barrett, Korchin, & Chodoff, 1977), and good construct validity (Bornstein, 1996). For example, ROD scores predict help-seeking behavior of participants in a research project (Shilkret & Masling, 1981) and are also positively and significantly correlated with eating disorders (Bornstein & Greenberg, 1991), behavioral difficulties in terminating inpatient psychiatric treatment (Greenberg & Bornstein, 1989), and, what is more important for the populations studied of SHP, NSOP and NVP, with self-reported levels of insecure attachment (Duberstein & Talbot, 1993) and with cooperation and compliance with authority figures (Bornstein & Masling, 1985; Masling, O'Neill, & Jane, 1981). Blais, Hinselroth, Fowler, & Conboy (1999) found that DSM-IV (APA; 1994) dimensional ratings for borderline personality disorder significantly correlated with ROD ratings (R = 0.43). Bornstein, Hinselroth, Padawer, & Fowler, 2000 found that inpatient borderlines had the highest ROD scores (mean: 0.265), followed by depen-

dent and avoidant outpatients (mean: 0.204), narcissistic outpatients (mean: 0.202), university student nonclinical controls (mean: 0.162), antisocial outpatients (mean: 0.117) and borderline outpatients (mean: 0.109). According to the Authors: "*The ROD is scored from the content of Rorschach material that is administered either in standard or group format (Bornstein, 1996). Each response is read and inspected for oral dependency content. Content may fall into one of 16 categories: food and drinks, food sources, food objects, food providers, passive food receivers, begging and praying, food organs, oral instruments, nurturers, gifts and gift-givers, good luck objects, oral activity, passivity and helplessness, pregnancy and reproductive organs, baby talk responses, and negation of oral dependent percepts. One point is assigned for each oral dependent response, and a percentage score is obtained by taking the number of oral dependent responses divided by the total number of responses provided*". The Aggressive Content scores (Gacono & Meloy, 1994) included: Aggressive Content (AgC), Aggressive Potential (AgPot), Aggressive Past (AgPast) and Sadomasochistic Aggression (SM). Each response is evaluated for all of these categories, and a given response may be scored for more than just one of aforementioned categories; the results of each category are reported for each individual. "*Once ROD and aggression special scores had been computed, ROD scores were evaluated for the presence of aggressive content in the response immediately prior to, co-occurring with, or immediately after an oral dependent score. The total number of oral dependent-aggressive sequences for each individual was computed and evaluated across groups. Such computations were an empirical way by which to represent a sequential analysis of the pairing of aggression and dependency. Sequential analysis has long been understood as a mechanism by which to evaluate the processes with which an individual copes with, defends against, and recovers from conflicting psychological impulses, needs and states (Peebles-Kleiger, 2002; Weiner, 2003). Given the nature of our clinical samples, we expected that stimuli from a given Rorschach card would generate dependent or aggressive impulses, and that the generation of such impulses would more than likely been associated with the other impulse. Utilizing sequence analysis guidelines, we anticipated that the two impulses would be in close proximity to each other in Rorschach responses*". Two following hypotheses, to be verified, were developed based on a confluence of psychodynamic principles and the authors' previous research with these populations (Bridges, Wilson, & Gacono, 1998; Gacono & Meloy, 1994; Meloy, Gacono, & Kenney, 1994):

I *Sexual Homicide Perpetrators (SHP)* would have significantly higher ROD scores than *Non-Violent Pedophiles (PED/NVP)* while the lowest levels of oral dependency would be found among *Primary Psychopaths/Non-Sexually Offending Psychopaths (PP/NSOP)*: SHP > PED/NVP > PP/NSOP;

II Sequences of aggressive and dependency responses would be more frequent in SHP (high aggression toward others, high interpersonal dependency), followed by PED/NVP (moderate levels of aggression toward others, high interpersonal dependency) and PP/NSOP (high aggression toward others, low interpersonal dependency): SHP > PED/NVP > PP/NSOP.

The results were statistically analyzed by means of ANOVA and Tukey post hoc test.

ROD number was higher in PED/NVP (mean: 8.31, SD: 6.94) than in SHP (mean: 6.32, SD: 4.35) and in PP/NSOP (mean: 3.48, SD: 2.84) ($p < 0.02$). ROD % was higher in PED/NVP (mean: 0.26, SD: 0.15) than in SHP (mean: 0.25, SD: 0.16) and in PP/NSOP (mean: 0.17, SD: 0.13) ($p<0.03$). ROD number sequentially paired or co-occurring with Aggression special scores was higher in SHP (mean: 3.13, SD: 3.73) than in PED/NVP (mean: 1.82, SD: 1.52) and in PP/NSOP (mean: 1.63, SD: 1.88) ($p <0.02$). ROD % sequentially paired or co-occurring with Aggression special scores was higher in SHP (mean: 0.14, SD: 0.19) than in PP/NSOP (mean: 0.08, SD: 0.09) and in PED/NVP (mean: 0.06, SD: 0.05) ($p < 0.005$). ROD number sequentially paired or co-occurring with Aggression special scores/Total ROD was higher in SHP (0.47) than in PP/NSOP (0.42) and in PED/NVP (0.26) ($p < 0.05$). The starting hypotheses are largely confirmed.

No statistically significant difference among the three groups was found as regards AgC (Aggressive Content) and AgC%. AgPast (Aggressive Past) was higher in SHP (mean: 1.05, SD: 1.49) than in PP/NSOP (mean: 0.68, SD: 1.05) and in PED/NVP (mean: 0.38, SD: 0.67) ($p <0.05$). AgPast% was higher in SHP (mean: 0.048, SD: 0.06) than in PP/NSOP (mean: 0.036, SD: 0.06) and in PED/NVP (mean: 0.015, SD: 0.03) ($p <0.02$). AgPo (Aggressive Potential) was higher in SHP (mean: 0.71, SD: 1.14) than in PED/NVP (mean: 0.21, SD: 0.47) and in PP/NSOP (mean: 0.03, SD: 0.18) ($p = 0.001$). AgPot% was higher in SHP (mean: 0.036, SD: 0.07) than in PED/NVP (mean: 0.01, SD: 0.02) and in PP/NSOP (mean: 0.00, SD: 0.01) ($p= 0.002$). SM (Sadomasochistic Aggression) was higher in SHP (mean: 0.45, SD: 1.13) than in PP/NSOP (mean: 0.19, SD: 0.40) and in PED/NVP (mean: 0.03, SD: 0.16) ($p <0.05$). SM% was higher in SHP (mean: 0.01, SD: 0.04) than in PP/NSOP (mean: 0.01, SD:0.02) and in PED/NVP (mean: 0.00, SD: 0.01).

According to the Authors "*The results of our findings add to the growing body of literature supporting the utility of the ROD in understanding dependency and aggression. Two of our groups were sexually deviant (SHPs, NVPs), and two have histories of aggression (NSOPs, SHPs). Consistent with the idea that dependency or interpersonal strivings fuel their behavior, ROD scores were elevated in our sexually deviant groups (SHPs, NVPs). The frequent pairing of dependency and aggression in SHPs (almost 50% of ROD scores were accompanied by aggression) offers a Rorschach marker that differentiates the real world behaviors of the SHP (sexually violent) and NVP (sexually nonviolent)".*

In contrast "*Psychopaths appear to lack interpersonal re-*

latedness…(with) low frequency of ROD scores… dependency, when infrequently expressed, was often associated with aggression, a finding consistent with the high frequencies of Kwaver's (1980) violent symbiosis responses previously reported in psychopaths (Gacono & Meloy, 1994)". On the other hand, "*…pedophiles seem to have greater interest in interpersonal relatedness, as they had the highest levels of oral dependency. As noted previously, pedophiles tend to feel damaged and experience low self-esteem and dysphoria (Bridges, Wilson, & Gacono, 1998; Gacono, Meloy, & Bridges, 2000). Their acting out may be triggered by such feelings and fueled by the dependency identified by the ROD. Consistent with their history of 'nonviolence', our findings suggest that pedophiles' dependency needs are the least associated with aggressive impulses of the three groups*". Finally, "*Sexual homicide perpetrators were found to have relatively high levels of oral dependency, which was consistent with their relatively high level of Texture and Food responses (Gacono, Meloy, & Bridges, 2000). Yet, much of their dependency was associated with aggressive content. Furthermore, SHPs had the highest levels of the aggressive special scores of Gacono & Meloy (1994) on three of the four categories (AgPast, AgPot, and SM), suggesting that they are highly preoccupied with aggressive impulses, including the dangerous mix of sadomasochistic ideation. Gacono, Meloy, & Bridges, 2000 found that SHPs have high levels of dysphoria, interpersonal yearning, cognitive distortion, and obsession, coupled with an inability to disengage from the environment (low Lambdas). Thus, when complex ideation coupled with sexual arousal meets a certain threshold, sexual homicide perpetrators act from their internal fusion of sexual, dependent, and aggressive impulses collectively. Consistent with the use of projective identification, SHPs project their oral needs into their victims and then react with rage, disgust, and violence in an attempt to eradicate these needs (see Gacono & Meloy, 1988). This group's high levels of thought disturbance (X-% = 26; X+% = 0.47; WSUM6 = 23.00; see Gacono, Meloy, & Bridges, 2000) provide a template for the cognitive and perceptual distortions that allow such behavior. These findings are best reflected in one SHP's Rorschach response,'a lonely bird of prey out looking for a relationship*".

Lefebvre & Léveillée (2008) compared the Rorschach records of 23 male uxoricides with those of 21 men who had committed domestic violence, with no difference as regards age, marital status, nation of birth (Canada), employment and number of children, respectively recruited on voluntary basis from federal prisons in Quebec, and from dedicated health services. Each subject underwent a four-session evaluation and was administered the Structured Clinical Interview for DSM-IV, TAT, MMPI, MCMI and the Rorschach test according Exner CS (2001, 2003). Rorschach tests were scored according Chabert (1997) too, and the presence of solicitations to the examiner was also considered, following Husain (1994, 2001) suggestions that this behaviour indicates a search for a limit or a desire to involve the other by making him an accomplice or a witness; in any case, a way to express conflicts by acting them in the relationship with the other/examiner. Rorschach scoring was performed concordantly by two experienced raters. The data were statistically analyzed by means of chi square test (for nominal variables) and of Student t test (for quantitative variables). 17 Rorschach variables were examined: six general indices of acting out tendencies, and 11 specific indices of impairment of the mentalization capacities. As regards acting out tendencies, uxoricides showed normal A% (animal contents; mean: 56.42, SD: 15.48), but FC < CF+C (100%), high C (pure Colour; mean: 0.39, SD: 0.78), low FD (formal responses; mean: 0.26, SD: 0.54), high Egocentricity Index 3r+(2)/R (60.90%) and high X-% (form quality negative, mean: 15.87, SD: 8.59). With regard to mentalization ability, uxoricides exihibit normal values of R (mean: 17.75, SD: 5.04), F% (pure Form%; mean: 54.69, SD: 18.80), M- (Human Movement, negative quality; mean: 0.09, SD: 0.29), Anat (Anatomy; mean: 1.10, SD: 0.97) and Popular (mean: 5.25, SD: 1.45). The remaining six mentalization indices are all altered in the direction of an impairment of this ability: high lambda (mean: 1.64, SD: 1.35), low M (Human Movement; mean: 1.48, SD: 1.28), low AG (Human Aggressive Responses; mean: 0.22, SD: 0.42), low S (Space; mean: 0.96, SD: 1.19), not relevant DEPI (Depressive Index; 100%). Uxoricides Rorschach, when compared with those of men committing domestic violence, showed higher A% (mean: 56.42 versus 46.92, SD: 15.48 versus 15.42; p <0.05), lower M (mean: 1.48 versus 3.29, SD: 1.28 versus 1.52; p<0.001), lower M- (mean: 0.09 versus 0.52, SD: 0.29 versus 0.53; p <0.05) and a lower frequency of solicitations to the examiner (mean: 26.10% versus 71.40%, SD: 6.00 versus 15.00; p <0.01). According to the Authors, these results are consistent with a coherent personality picture of uxoricides, marked by low Ego strength, impulsivity, self-centering, cognitive distortions, impairment of introversion abilities, mentalization deficits, tendencies to acting out balanced by strong control and clinging to concrete reality to prevent the emergency of drives and pulsions. Anyway, these results require confirmation in larger samples.

In a preliminary study, Trebuchon & Léveillée (2016) compared two groups of females incarcerated in Canada, 88.2% French speaking: 6 females imprisoned for homicide (murderer group), 11 for major domestic violence (non-murderer group; 1 attempted homicide, 8 armed assault, 2 sexual assault). The victims were the partner or ex-partner (7 cases, 41.2%), a brother/sister (1 case, 5.9%), a child (aged < 18 years, 9 cases, 52.9%); notably, no subject killed a child, so that the victim was a child in 81.8% of non-murderer group. At the time of crime, the females were 21-44 years old (mean: 34.18 year, SD: 7.62; 70.5% aged between 31 and 45), married (47.1%), employed (52.9%), and with children (88.2%); 64.7% were physically abused, 47.1% sexually abused; 35.3% attempted suicide before imprisonment, 11.8% have had a previous arrest; 35.3% and 29.4% respectively assumed alcohol or drugs before the crime. All the subjects were recruited on voluntary basis, and were administered the

Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) (1997), the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II) (1997), and the Rorschach test according Exner CS (2001, 2003). The Rorschach records were firstly scored by the first Author, and then rescored by the second one; the interrater agreement ranged between 92.2 and 97.6%. Statistical analysis was performed by means of SPSS, version 22: Fisher exact test was used for nominal variables, Mann-Whitney test for quantitative variables. The murderer group was older ($p < 0.05$) and differs for employed/unemployed status (100% versus 36.4%, $p < 0.05$). Distribution of 37 CS variables in the two groups was detailed, concerning lambda (2), stress tolerance (4), affect (7), interpersonal relations (9), self-perception (6), ideation (5) and cognitive mediation (4). Only seven statistically significant differences were found. Four concern interpersonal relations indices: 16.7% of Murderers and 81.8% of Non-Murderers presented GHR<PHR ($p < 0.05$), 33.3% of Murderers and 100% of Non-Murderers had a SumT=0 (lower than norms, $p < 0.001$), 100% of Murderers and 45.4% of Non-Murderers showed a Pure H<2 (lower than norms, $p<0.05$), 0.0% of Murderers and 54.5% of Non-Murderers reported an Isolation Index > 0.26 (higher than norms; $p<0.05$). The two groups differ significantly in two indices of self-perception: 100% of Murderers and 45.4% of Non-Murderers had 3r+(2)/R < 0.33 (lower than norms, $p < 0.05$), 66.7% of Murderers and 9.1% of non-Murderers were scored MOR > 1 (higher than norms, $p < 0.05$). Last, the ideation index FM is scored 0-2 (lower than norms) in 83.3% of Murderers and 18.2% of Non-Murderers ($p < 0.05$). According to the Authors, these Rorschach data are consistent with differences in intrapsychic functioning between the two groups. Murderer females have a negative self-image and a pessimistic view of themselves, devalue themselves when compared to others and blame themselves for many of their characteristics; they are able to recognize and express their needs for proximity, are willing to establish intimate relationships and accept to maintain them through adequate physical contacts; but, however, they encounter difficulties in understanding others, and tend to make mistakes with others and to misinterpret certain relational gestures. On the contrary, non-murderer females recognize and express their needs for proximity in unusual ways, and are more cautious in situations of interpersonal intimacy, especially when they involve body contact; they care a lot about themselves, so that they neglect the outside world. Both groups present difficulties on the level of introspection, and a relational immaturity that often involves difficulties in interacting with the environment; they encounter difficulties in the management and expression of affects and, on a cognitive level, present a disorganized thinking, which often faces errors of judgment. In any case, the authors underline that the small number of their sample limits the generalizability of the results obtained, and call for further research on larger samples.

Comparison studies between subgroups of murderers (N = 4)

Perdue & Lester (1973), according to the Beck's method (1944), explored differences in Rorschach test responses of those who murdered kin (blood relatives or wives) and those who murdered an unrelated victim, examining two groups of 20 protocols from males matched for age, race, IQ and length of time in prison. No difference was found for a majority of Rorschach variables (R, color shock, C, time, m, DW, D, Dd, S, M, F, F+, F, FV, FY, FC, CF, Sum C, A, Ad, H, Hd, P, A%, T/IR, Total R (I-VII), Total R (VIII-X)). Subjects killing kin (Student two tailed test) gave more W ($p < 0.05$), fewer FM ($p 0.05$), lower F+% ($p < 0.05$) and lower F% scores ($p < 0.01$). According to Beck (1944) and Piotrowski (1957), "…*these differences suggest that these subjects (kin murderers) might have increased sensitivity to affective stimuli and greater affectivity, less need for physical activity, and lowered depression and anxiety. The data may be taken to suggest, therefore, either a greater cathartic effect for murderers of kin as a result of their murder (since they appear calmer) or, alternatively, murderers of kin may have been healthier to start with (prior to the murder). The reliability of these results must, of course, remain in doubt until the study is replicated*".

Perdue & Lester (1974), not specifying Rorschach method, found no statistically significant difference as regards 26 Rorschach variables in the protocols of 33 black homicidal males compared with 33 white murderers matched for age and intelligence.

Grattagliano, et al. (2019a) focused on Rorschach variables associated with the judgement of imputability in murderers examined during the trial. According to a retrospective design, they rescored, according the SRR (Scuola Romana Rorschach), the Rorschach of 49 murderers stored in the database of the Criminology and Forensic Psychiatric Hospital Section of Bari University: 43 males and 6 females; 17-67 years old; 24 single, 21 married and 4 separated; 8 without any psychiatric history, 41 with different psychiatric diagnoses (13 schizophrenia, 1 delusional disorder, 1 bipolar disorder, 5 depression, 4 psychorganic syndrome, 13 personality disorder, 4 mild mental disability). Following the court expert evaluation, 23 were recognized as 'mentally sane' and therefore imputable, 10 as 'partially mental insane' and 16 as 'totally mental insane' at the time of the crime. As 'totally mental insane' and not imputable were judged: 11 out of 13 schizophrenics, 1 out of 5 depressed, 1 out of 4 with mild mental disability and 2 out of 4 patients with psychorganic disorders. In 14 cases, the homicide was considered as premeditated, in 35 as impulsive and not premeditate. In 31 cases, the crime scene was classified as 'organized', in 16 cases as 'disorganized' (no sufficient data in 2 cases). More than 200 SRR Rorschach indexes were evaluated. The results were statistically analyzed with SPSS (Statistical Package for Social Science, Version 15.0), by means of Student two-tailed t test and by means of chi square test. As a whole, murderers group, when compared with SRR normative data (Cicioni, 2016; Giambelluca,

Parisi & Pes, 1995; Parisi & Pes, 1990), showed lower total R (mean: 14.6, SD: 5.6; NV: 20-40), slightly lower R+% (mean: 66.4, SD: 19.5; NV: 70-80), slightly lower F+% (mean: 65.7, SD: 19.2; NV: 60-80), much lower H% (mean: 5.9, SD: 7.5; NV: males, 10-20, females: 20-30), slightly lower Affectivity Index (mean: 031, SD: 0.12; NV: > 0.35), much lower Reality Index (mean: 3.8, SD: 1.8; NV: 6-8), much lower Self Control Index (mean: 0.12, SD: 1.99; NV: > 1). As a whole, murderer group showed a constricted personality (low R), mild cognitive deficiencies (R+%, F+%), reduced interpersonal relationships (H%, Affectivity Index), marked impulsivity (Self Control Index) and improper reality testing (Reality Index). No statistically significant difference was found in the distribution of the judgement of imputability ('mentally sane', 'partially mentally insane', 'totally mentally insane') as regards gender, age, marital status, years of schooling and premeditation of crime. A diagnosis of schizophrenia and a disorganized crime scene were more frequent in not imputable murderers (chi square test, $p < 0.05$). As regards Rorschach variables, no difference was found between 23 'Totally sane' and 10 'partially mentally insane'. 16 'totally mentally insane' showed higher F- responses when compared with 23 'totally sane' (mean: 4.06 vs 2.52, SD: 2.57 vs 2.33, $p < 0.05$), and with 10 'partially mentally sane' (4.06 vs 2.10, SD: 2.57 vs 2.08, $p < 0.05$). When 16 'totally mentally insane' were compared with the remaining 33 subjects, two Rorschach variables discriminate in a statistically significant measure: R+% (mean: 58.2 vs 70.3, SD: 17.6 vs 19.4; $p < 0.05$) and F- (mean: 4.06 vs 2.39, SD: 2.57 vs 2.23; $p < 0.05$). In addition, R+% (NV = 70-80) and F+% (NV = 70-80) are higher than 70 only in 4 out of 16 'totally mentally insane', in 7 out of 10 'partially mentally insane' and in 21 out of 23 'mentally sane'. No difference between the three groups was found as regards affective Rorschach variables. R+% and F- SRR variables are therefore the most useful in the forensic setting as regards the judgement of imputability.

Grattagliano, et al. (2019b) revisited the same sample of 49 Rorschach records in order to identify Rorschach variables associated with the dichotomy 'organized crime scene' vs 'disorganized crime scene'. More than 200 SRR Rorschach indexes were evaluated. No statistically significant difference was found in the distribution of the type of crime scene (organized vs disorganized) as regards gender, age, marital status, years of schooling and premeditation of the murder. An organized crime scene was more frequent in imputable and partially insane murderers when compared with non-imputable, and in normal subjects when compared with those suffering from a psychiatric disorder (chi square test, $p < 0.05$). Rorschach records of murderers with 'disorganized crime scenes' (N = 13), when compared with those of murderers with 'organized crime scenes' (N = 31) (Student two-tailed t test) (N = 16) showed a higher total R (mean: 16.6 vs 13.2; SD: 4.7 vs 5.0; $p < 0.05$), higher D (mean: 9.44 vs 6.58; SD: 4.30 vs 3.77; $p < 0.05$), higher Dim% (mean: 2.42 vs 0.84; SD: 3.46 vs 1.19; $p < 0.05$), higher F (mean: 13.25 vs 9.61; SD: 3.62 vs 3.39; $p < 0.05$) and, most importantly, much higher F- (mean: 4.31 vs 2.12; SD: 2.80 vs 1.75; $p < 0.05$). Since negative form quality (F-) is one of the most reliable and valid Rorschach indexes (Mihura, Meyer, Dumitrascu & Bombel, 2013), a value more than twice in murderers leaving a disorganized crime scene, certainly signals lower cognitive abilities, rough observation powers, compromised attention and concentration and poor cognitive self-control in this group of homicides.

Discussion

Comparison studies between murderers and other criminals (N = 13)

As Munnich (1993) wrote, "*The comparison of criminals to criminals was important because the study was performed under similar conditions, i.e. in prison, after the lower court judgement, etc., so the test indices were less apt to reflect the distorting effect of the sentence and the prison environment in this context*". In this respect, in order to obtain reliable and valid results, it is imperative to control all the variables with possible confounding effect: not only age, sex, marital status, sibling data, level of education, IQ, full psychiatric state examination, psychiatric diagnosis, drug and/or psychological treatment, level of alcohol consumption, number or prior criminal offenses, and so on, but also length of imprisonment according to sentence, and length of imprisonment at the time of testing: at this last regard, it is worth remembering that Pakesch (1961) suggested that the fourth year spent in prison is critical to homicidals, because a coartative process starts in their personality at this time.

The first three studies (Kahn, 1959; Lester & Perdue, 1973; Lester, Kendra, Thisted & Perdue, 1975) have been mentioned for the purpose of completeness of the present review, but suffer from important methodological limitations, and from the lack of confirmatory research.

Kahn (1959) didn't specify the Rorschach method, and compared two very small groups of 15 murderers and 24 burglars, quite different as concern judgement of legally insane (more frequent in murderers; $p < 0.03$) and the type of psychiatric diagnosis: in each group, two-third of the cases received a psychiatric diagnosis, but murderers were diagnosed as psychotic more frequently, while burglars as character disorder ($p < 0.02$). As a consequence, the statistically significant higher 'extended F-%' in murderers (chi square, $p < 0.05$), and the strong suggestive trends of higher F% and C% in the same group, approaching but not reaching $p < 0.05$, suggesting a poorer emotional control, greater rigidity and greater impulsivity in murderers, do not seem murderer specific traits, but consistent with the evidence of more psychosis in this group. In addition, since only individuals who pleaded insanity were evaluated, the sample may not be representative of murderers or burglars.

Lester & Perdue (1973) didn't specify the Rorschach method, and reported a negative finding, needing confirmatory research; confirmatory research is impossible for results reported by Lester, Kendra, Thisted & Perdue (1975), who didn't specify the 'predictive' equation, including Space, Animal, Popular and m Rorschach responses, suggested to lead to a correct classification of 71% of the murderers and 66% of the nonmurderers.

Subsequent contributions by Gupta & Sethi (1974), and by McDonald & Paitich (1981), lend themselves to substantial criticism.

Gupta & Sethi (1974) directly administered the Maudsley Personality Inventory and the Rorschach test, according to Klopfer (Klopfer, Ainsworth, Klopfer, & Holt, 1954), in 54 (18%) out of 300 male prisoners convicts of murder (mean age: 31.6), matched with respect to age and education (75% primary school, 25% more than 5 years of schooling) to a comparison prisoner group consisting of cases of theft (N = 31), dacoity (N = 10) and miscellaneous crimes (N = 13). No statistically significant difference between the two criminal groups was found as regards total number, locations, determinants and contents of Rorschach responses; responses of good form level (F+) was significantly greater in the murder group as compared to the non-murder one. Mean values for total response (14.2 and 12.3 respectively for murder and non-murder criminals), as well as for F+% (52.0 and 45.8) and popular responses (3.3 and 2.8) were much below the normal range, suggesting "…*impaired ego-functioning and lack of social conformity among the prisoners in general*". According to these Authors "…*a relatively higher frequency of colour determined percepts in the Rorschach Test (CF/FC) would depict the existing emotional tension in these convicts of murder as they have been sentenced to a long term imprisonment*". It is noteworthy that this is not a retrospective study, as the Authors directly administered the test. Unfortunately, however, no mention is made of the length of the sentence and of the length of imprisonment at the time of testing: two relevant factors that alone can account for the observed differences.

McDonald & Paitich (1981), according to a retrospective design, found no statistical significant differences (analysis of covariance) as regard psychological test findings (Verbal WAIS and Raven IQ, MMPI, PF 16, Parent-Child Relations Questionnaire) and Rorschach data, according to Klopfer (Klopfer, Ainsworth, Klopfer, & Holt, 1954), Elizur's hostility scoring system (1949) and DeVos hostility measures (1952), within four groups, including 61 murderers, 42 assaulters, 71 perpetrators of theft, and 24 unemployed non-criminal controls. A lot of variables were controlled, but Rorschach data were not available for all the subjects, but only from 42 (68.8%) for murderer group (33 males and 9 females), 25 (59.5%) for assaulters (22 males and 3 females), 18 (25.3%) for thefts (17 males, 1 female) and 24 (100.0%) for unemployed non-criminal controls (20 males and 4 females). What is more important, 12 out of 61 murderers were diagnosed as psychotic: a factor which by itself compromises the effective comparability between the groups considered. Finally, somewhat surprising are the Authors' conclusive remarks: "*The overall picture presented by the results of this study is that murder or violence is not predictable as a general category of behavior from the test data considered*". It should be very clear that in no way a retrospective study, which re-examines, at a later date, the data collected after an event, can highlight evidences that can be confidently attributed to a predictive value of the event itself.

Very interesting are the Rorschach results obtained by Greco & Cornell (1992), according to a flawless methodological design, in two groups of 55 homicides out of 110 violent adolescent offenders: 'conflict group adolescents' (N = 33), who committed a homicide in the course of an interpersonal conflict with the victim, and 'crime group adolescent' (N = 22), who committed a homicide in the course of some other crime such as robbery or burglary. The nonviolent comparison subjects (N = 55, reduced to 42 because 13 Rorschach records had fewer responses), matched on age, race and gender, were convicted of some form of larceny or breaking and entering, with no prior charges for violent offenses. All 110 subjects (80% African-American, 20% White) ranged in age from 12 to 18 years (mean: 15.9) at the time of their offense; all but 10 of the subjects (5 homicide and 5 nonviolent) were male; the mean Wechsler (WAIS or WISC-R) IQ was 86 for the homicide groups and 88 for the comparison group. Two scorers rescored all the Rorschach records blind to subject offense status, using the second edition of the Comprehensive System (Exner, 1986), and coding the protocols for differentiation (Blatt et al., 1976), Mutuality of Autonomy Scale (MAS) (Urist, 1977) and aggressive contents (Holt, 1975). The inter-rater reliability between the two scorers was very high, ICC exceeding 0.85. Total number of responses was very similar in the three groups, mean and SD were 15.12-5.75, 16.00-4.36 and 13.95-4.56 respectively for conflict, crime and nonviolent groups. The mean R for all three groups was low compared to Exner's norms (1986) for adolescents, but a low R is consistent with the subject low-average IQs and pattern of lower verbal than performance scores. A multivariate analysis of variance (MANOVA) was conducted on conflict, crime and nonviolent groups, using seven object relation variables: 3 indexes of differentiation (Overall H, Good Form H, Poor Form H), Mutuality of Autonomy, and 3 Aggressive Contents (Attack, Victim, Results of Aggression). The MANOVA showed no statistically significant difference between homicide and nonviolent groups, but statistically significant comparisons when contrasting conflict and crime groups ($p < 0.05$) as regards 3 variables: Overall H was lower in conflict group (mean-SD: 1.73-0.65 vs 2.21-0.79); Poor Form H was higher in crime group (mean-SD: 0.97-1.42 vs 1.86-1.50), Victim Contents was higher in crime group (mean-SD: 0.18-0.40 vs 0.00-0.00). These results suggest that juveniles who committed crime-related homicides evidenced greater disturbance in object relations than juveniles who committed conflict-related homicides. One interpretation is "…*that*

the crime group youth have a pervasive deficit in their conception of others, so that aggressive feelings are not inhibited by a realistic perception of others as complex, differentiated human beings. These youth may be able to commit homicide because they fail to recognize other individuals as human beings like themselves… (they) *may have a more pervasive tendency to dehumanize others, permitting them to act on aggressive impulses when their needs are frustrated…In contrast, the conflict group youth may have a comparatively more well-developed conception of other individuals and a capacity for attachment, but in the context of interpersonal conflict and emotional stress, they experience a regression in their perception of a specific adversary… their violent outburst represents a poor coping strategy for dealing with a highly stressful relationship rather than a generalized inability to take the perspective of others and empathise with them*".

Very interesting are the results obtained by Coram (1995) too, according to a methodological flawless design, who administered the Draw-a-Person test and the Rorschach test, according Exner CS (1985, 1986, 1990, 1993) in 23 incarcerated male violent murderers (VM) and in 23 incarcerated male offenders with no violence in their history (NV), matched for mean age (34.43 vs 32.48), race and occupation (76% white, 20% African American and 4% Hispanic: all from a predominantly low socioeconomic status), absence of documented psychiatric history, and type of incarceration (both groups had access to the community, none was on death row, and all had access to recreational areas and equipment). All the subjects were randomly selected from a list generated by the records department of two northeastern USA prisons; the criterion for inclusion in the violent murderer group was a homicide that involved mutilation, removal of body parts, or repeated knife wounds to the victim, while Nonviolent offenders (NV) met criterion by having no arrests for personal crimes, e.g. robbery or assault on their past or current records. Each protocol was independently scored twice, once by a graduate student trained in the Exner system, and again by the author, unaware of the type of subject assessed, with scoring discrepancies referred to a colleague for resolution. Interrater agreement for all categories was at least 90%, except for special scores, that resulted in an 88% interrater agreement. The data were organized using the Computerized Rorschach Interpretation Assistance Program (Exner, McGuire, & Cohen, 1985). Statistical analysis was performed by means of chi square and one-way ANOVA analyses. Murderers Rorschach data were compared with those of nonviolent inmates; both groups data were compared with those of Exner (1985) norms (N = 700), too. 18 CS theoretically relevant variables for violent murderers were identified: F+% (Form%), X+% (Conventional Form%), X-% (Distorted Form%), XU% (Unusual Form%), ZD (Organizational Activity), ZF (Z frequency), D (Common Detail Response), Adj D (Adjusted D score), EA (Experience Actual), es (Experienced Stimulation), Afr (Affective Ratio), FC+CF+C (Sommatoria colore), C Colore puro) Sum Shading (Sommatoria chiaroscuro) , Fr and rF (Reflexion responses), H (Human content), 3r+(2)r ((Egocentrity index), and AG (Aggression Response). Other 15 CS Rorschach variables, identified as theoretically irrelevant for violent murderers, were not considered for further analysis (R, L, W, D, Dd, M, FM, FD, T, Blends, Mor, S, WSum6, Food, P); anyway, violent murderers, when compared with nonviolent inmates, showed higher R (mean: 22.56 versus 19.04, SD: 5.28 versus 4.15; $p < 0.05$) and higher Blends (Multiple Determinant) (mean: 3.74 versus 1.74, SD: 2.93 versus 1.54; $p < 0.01$). Both groups, when compared with CS Exner (1985) norms (N), showed lower F+% (VM mean: 0.58, SD: 0.14; NV mean: 0.53, SD: 0.15; N mean: 0.71, SD: 0.17), lower X+% (VM mean: 0.53, SD: 0.13; NV mean: 0.55, SD: 0.13; N mean: 0.79, SD: 0.08), and higher X-% (VM mean: 0.39, SD: 0.15; NV mean: 0.20, SD: 0.12; N mean: 0.07, SD: 0.05), indicating a disturbance with reality testing. VM, when compared with NV, reported lower Xu% (mean: 0.07 versus 0.20, SD: 0.09 versus 0.09; $p < 0.01$) and higher X-% (mean: 0.39 versus 0.20, SD: 0.15 versus 0.12; $p < 0.01$), demonstrating "…*a more pervasive deficit in perceptual inaccuracy and a disturbance in their ability to translate and interpret events in the same manner as most people…In addition, 43% of the violent offenders had a Schizophrenia Index of 4, when compared with a normative sample of 0)*". On ZF, a measure of individual's ability to organize and process information, NV scored significantly lower than VM (mean: 7.83 versus 11.26, SD: 3.34 versus 4.62; $p < 0.01$), maybe suggesting "…*an intellectual limitation, a reflection of an immature psychological development, or an approach of avoiding the complexity of a situation (Exner, 1986b)*". Both groups had a Lambda higher than CS Exner (1990) norms (VM mean: 1.00, SD: 0.66; NV mean: 1.57, SD: 1.32; N mean: 0.58, SD: 0.26), regarding the individual's willingness to be involved in a situation, and indicating "…*the subjects' tendency to minimize the importance of a situation or to ignore some of the elements. It is also reflective of a style of oversimplifying a complex situation or of resistance to the testing situation (Exner, 1991)*". VM had an Egocentricity Index (EI) (3r+(2)/R) corresponding to the normative values (mean: 0.39, SD: 0.07), and significantly higher than NV (mean: 0.38 versus =.25, SD: 0.17 versus 0.13, $p < 0.01$); since EI is a measure of psychological self-focusing or concerns for self, reflecting issues regarding low self-esteem or overvaluation of the self at the expense of others, VM "…*have apparently adequate measures of self-esteem*,…(while NV show) *negative self-esteem, lower personal worth and a proneness to depressive feelings (Exner, 1986)*". Both groups had low color responses (FCCFC), with the VM displaying significantly higher results than NV (mean: 3.61 versus 1.78, SD: 2.15 versus 1.65, $p < 0.01$). Surprisingly, neither group had a significant increase in pure C. 61% of VM and 39% NV had a higher shading response when compared to 15% CS norms (Sum Shading mean: 3.39, SD: 2.15); on Sum Shading (Total Shading Responses), VM scored significantly higher than NV (mean: 6.00 versus 3.13, SD: 4.36 versus 2.51; $p < 0.01$): "*These appear*

to be more situational (Y) than chronic (C'), and may reflect the length of incarceration". "*Both groups had a higher frequency of underincorporators (ZD) when compared to Exner's nonpatient sample (30% versus 5%). This score may indicate a quick scanning of the environment, and possibly coming to hasty conclusions, faulty decision-making, and inappropriate or false conclusions about a situation*". In addition, there were also differences in terms of problem-solving style (EB): 70% of VM and 70% of NV demonstrated an ambitent style of approaching situations, substantially different from the normative sample of 20% (Exner, 1990): "*These inmates may be more vulnerable to difficulty, less efficient, require more time to complete tasks, and are inconsistent in their use of emotions and thinking during problem-solving. In one situation, the process of decision-making and problem-solving are strongly influenced by feelings, and at other times, emotions play a small role*". Both groups had an EA (Experience Actual) lower than CS Exner (1990) norms (VM mean: 4.83, SD: 2.58; NV mean: 3.56, SD: 2.86; N mean: 8.82, SD: 2.18), with slightly higher values in VM ($p < 0.05$); since EA is a measure of organized psychological resources available to effectively deal with stress, "*It appears that both groups had a reduced capacity to deal with stress, possessed fewer internal resources, and felt overwhelmed*". Last but not least, 'es' (Experienced Stimulation), a measure of impending stress and feelings of being overwhelmed, does not substantially differ from Exner norms (mean: 8.21, SD: 3.00), but is higher in VM than in NV (mean: 9.83 versus 6.26, SD: 5.95 versus 2.94, $p < 0.05$), demonstrating a greater vulnerability in VM for disorganization and difficulty with stress tolerance.

Contributions by Gacono, Meloy, and their collaborators (Meloy, Gacono, & Kenney, 1994; Gacono, Meloy, & Bridges, 2000; Gacono, Meloy, & Bridges, 2008) retrospectively studied the Rorschach tests, according to the Comprehensive System (Exner, 1974, 1986, 1991, 1993; Exner et al., 1995), in incarcerated Sexual Homicide Perpetrators (SHP) compared with other incarcerated criminals, where '*Sexual homicide is the intentional killing of another human being during which there is evidence of sexual activity by the perpetrator*" and positive evidence was needed to classify a murder as sexual homicide: "*Positive evidence included physical evidence of sexual assault of the victim; sexual activity in close proximity to the victim, such as masturbation; or a legally admissible confession of sexual activity by the perpetrator*". These Authors offered the first comparison of Rorschach CS between two clearly delineated sexually deviant groups (SHP and PED/NVP). In the first preliminary study (Meloy, Gacono, & Kenney, 1994), 18 SHP (Sexual Homicide Perpetrators) were compared with 23 PP (non-sexually offending Primary Psychopaths) (each having a score of 30 or higher on the Hare Psychopathy Checklist-Revised, PCL-R, Hare, 1991). The following studies enlarged number of samples and included a second comparison group, comparing 38 SHP with 32 PP and with 39 PED/NVP (Non Violent Pedophiles) (Gacono, Meloy, & Bridges, 2000; Gacono, Meloy, & Bridges, 2008). These works are certainly outstanding from a methodological point of view:

- Psychopathy level (PCL-R score) or specific behavioral pattern (sexual offense) were the sole inclusion criteria;
- All other data, including demographic information, were treated as dependent variables;
- All subjects were free of mental retardation, psychosis or neurological impairment; PED/NVP met the DSM-IV criteria for Pedophilia, as determined by agreement by two experienced clinicians, none of them would meet the criteria for primary psychopathy;
- All study data were archived and taken from a computer database containing over 800 forensic Rorschach protocols, all scored and re-scored by experienced raters prior to inclusion and found to be reliable, with the highest inter-rater agreement for all variables;
- All the Rorschachs were administered in incarcerated males between 1984 and 1997 by advanced doctoral level clinical psychology interns or licensed clinical psychologists using CS guidelines; with the exception of one protocol, only protocols with >= 14 responses were included in the study;
- All CS Rorschach data were analyzed using a computerized tool, i.e. the Rorschach Scoring Program 3-plus (Exner & Tuttle, 1995), and a comparison was made with normal controls;
- Detailed demographic data were reported for each of the three groups (SHP, PP, PED/NVP);
- Basic descriptive statistics (mean, SD, min-max, frequency, median, mode, skewness, kurtosis) for 112 CS variables in each of the three groups (SHP, PP, PED/NVP) were reported;
- Selected CS Rorschach variables (N = 27) were compared between groups, based on previous research and related to four hypotheses, predicting Rorschach profiles in the three groups;
- ROD (Rorschach Oral Dependency) (Masling, Rabie, & Blondheim, 1967) scores and Aggressive Content (Gacono & Meloy, 1994) scores, were rated by Huprich, Gacono, Schneider & Bridges 2004;
- The results were statistically analyzed by means of parametric or nonparametric statistical procedure (ANOVA, Kruskal-Wallis, Chi-square). Mann-Whitney U and chi square were used by Meloy, Gacono, & Kenney, 1994;
- CS Rorschach characteristics in SHP and PP (Hypothesis I and II) have been fully reported in the previous section. As predicted (Hypothesis IV), all groups were self-focused, suggesting pathological narcissism, and highlighted impaired reality testing (X-%) and moderate to severe levels of cognitive slippage and thought disorder (WSum6, SCZI);
- Fr+rF (index of self-perception/grandiosity) was higher than norms in PP (mean. 0.72, SD: 0.96, frequency:

44%) and much higher in SHP (mean: 1.11, sd. 1.62, frequency. 45%) and in PED/NVP (mean: 1.23, SD: 2.32, frequency: 44%);
- X-% was higher than norms in PP (mean: 22.00, SD: 0.12, frequency: 100%), as well as in SHP (mean: 26.00, SD: 0.12, frequency: 97%) and in PED/NVP (mean: 22.00, SD: 0.10, frequency: 100%);
- WSum6 was higher than norms in PP (mean: 16.34, SD: 12.84, frequency: 94%), as well as in SHP (mean: 23.00, SD: 19.08, frequency: 92%) and in PED/NVP (mean: 16.39, SD: 15.15, frequency: 92%);
- An elevated value of SCZI (>=4) was highlighted in 15% PP, 29% SHP and 20% PED/NVP;
- the number of SHP who produced Level 2 Special Scores (N = 19) was slightly greater than PP (N = 12) and PED/NVP (N = 12).

As predicted (Hypothesis II), SHP produced:

- significantly more R (mean: 26.5, SD:11.8) than PP (mean: 18.9, SD: 5.17);
- significantly less S (mean: 2.92, SD: 1.99, frequency: 97%) than PED/NVP (mean: 4.64, SD: 3.53, frequency: 92%) (ANOVA, F = 8.05, p < 0.0006), related to less restrained hostility/passive opposition;
- more V (suggesting internal distractions such as painful rumination) (mean: 1.11, SD: 1.90, frequency: 53%) than PP (mean: 0.63, SD. 0.94, frequency: 44%);
- more Fd (index of dependency yearnings) (mean: 0.53, SD: 0.92, frequency: 34%) than PP (mean: 0.16, SD: 0.45, frequency: 12%);
- statistically more FM (index of nonvolitional ideation in response to physiological needs) (mean: 5.08, SD: 3.76, frequency: 92%) than PP (mean: 2.75, SD: 1.65, frequency: 90%) and PED/NVP (mean: 3.77, SD: 2.40, frequency: 92%) (Kruskal-Wallis, p < 0.05), suggesting more dysphoria, more obsessional intrusive thinking and more internally driven need states.
- SHP were Introversive (39%), Ambitent (39%) or less frequently Extratensive (21%), and showed a lower frequency of high Lambda (Lambda is > 0.99 in 21%, versus 38% of PP and 51% of PED/NVP).

According to these findings "*…For our sexual homicide perpetrators, of which two thirds are likely psychopaths, their sexual deviance appears to emotionally disrupt their narcissistic (psychopathic) equilibrium. Unlike non-sexually offending psychopaths, sexual homicide perpetrators are internally troubled. High levels of internal dysphoria, yearning, obsession, and dependency needs (V, T, FM, Fd) push behaviors, while at the same time there is a certain loss of distance or inability to disengage from the environment and revel (Lambda, R). Stimuli that resonate with their sexual deviance are particularly appealing and literally irresistible. The intensity of this push-pull effect is exacerbated by less than optimal controls (D = -1.45, AdjD = -0.58;R, see Appendix b). High levels of ideational noise or, as we previously hypothesized (Gacono & Meloy, 1994), obsessional thought (FM) differentiate sexual homicide perpetrators from the psychopath. Like pedophiles, they are interested and perhaps drawn to others, however, their interest is contaminated by the self-centeredness (Fr+rF) and severe perceptual (X-%) and cognitive distortions (WSum6), which characterize all three groups (Gacono & Meloy, 1988). Isolation is also a common defense utilized by these groups (SHP = 31.6% >< .33; PED/NVP = 28.2% > .33; PP = 25% > .33)*". In conclusion "*The present findings expand and clarify the differences between the non-sexually offending psychopaths and sexual homicide perpetrators. Non-sexually offending psychopaths are not interested in others, highlight a complete absence of attachment capacity, lack the channeled sexual arousal to extreme violence, and are not aggressively motivated by dysphoria, obsession, or affectional hunger. Pedophiles, although angrier, display the sexual arousal integral to their offenses, but lack the emotional detachment noted in the psychopaths and evidence better controls than the sexual homicide perpetrators*".

Huprich, Gacono, Schneider & Bridges (2004) re-examined the Rorschach test of the same subjects (38 SHP, 32 PP/NSOP and 39 PED/NVP) of the previous two studies (Gacono, Meloy, & Bridges, 2000, 2008), and scored protocols for Rorschach Oral Dependency (ROD) content and for the Aggressive Content scores (Gacono & Meloy, 1994). According to the Authors: "*The ROD is scored from the content of Rorschach material that is administered either in standard or group format (Bornstein, 1996). Each response is read and inspected for oral dependency content. Content may fall into one of 16 categories: food and drinks, food sources, food objects, food providers, passive food receivers, begging and praying, food organs, oral instruments, nurturers, gifts and gift-givers, good luck objects, oral activity, passivity and helplessness, pregnancy and reproductive organs, baby talk responses, and negation of oral dependent percepts. One point is assigned for each oral dependent response, and a percentage score is obtained by taking the number of oral dependent responses divided by the total number of responses provided*". The Aggressive Content scores (Gacono & Meloy, 1994) included: Aggressive Content (AgC), Aggressive Potential (AgPot), Aggressive Past (AgPast) and Sadomasochistic Aggression (SM). Each response is evaluated for all of these categories, and a given response may be scored for more than just one of aforementioned categories; the results of each category are reported for each individual. "*Once ROD and aggression special scores had been computed, ROD scores were evaluated for the presence of aggressive content in the response immediately prior to, co-occurring with, or immediately after an oral dependent score. The total number of oral dependent-aggressive sequences for each individual was computed and evaluated across groups. Such computations were an empirical way by which to represent a sequential analysis of the pairing of aggression and dependency. Sequential analysis has long been understood as a mechanism by which to evaluate the processes with which an individual copes with, defends against, and recovers from conflicting psychological impulses, needs and states (Peebles-*

Kleiger, 2002; Weiner, 2003). Given the nature of our clinical samples, we expected that stimuli from a given Rorschach card would generate dependent or aggressive impulses, and that the generation of such impulses would more than likely been associated with the other impulse. Utilizing sequence analysis guidelines, we anticipated that the two impulses would be in close proximity to each other in Rorschach responses". Two hypotheses were pre-formulated:

I *Sexual Homicide Perpetrators (SHP)* would have significantly higher ROD scores than *Non-Violent Pedophiles (PED/NVP)* while the lowest levels of oral dependency would be found among *Primary Psychopaths/Non-Sexually Offending Psychopaths (PP/NSOP)*: SHP > PED/NVP > PP/NSOP;

II Sequences of aggressive and dependency responses would be more frequent in SHP (high aggression toward others, high interpersonal dependency), followed by PED/NVP (moderate levels of aggression toward others, high interpersonal dependency) and PP/NSOP (high aggression toward others, low interpersonal dependency): SHP > PED/NVP > PP/NSOP.

The results were statistically analyzed by means of ANOVA and Tukey post hoc test.

ROD number was higher in PED/NVP (mean: 8.31, SD: 6.94) than in SHP (mean: 6.32, SD: 4.35) and in PP/NSOP (mean: 3.48, SD: 2.84) ($p < 0.02$). ROD % was higher in PED/NVP (mean: 0.26, SD: 0.15) than in SHP (mean: 0.25, SD: 0.16) and in PP/NSOP (mean: 0.17, SD: 0.13) ($p<0.03$). ROD number sequentially paired or co-occurring with Aggression special scores was higher in SHP (mean: 3.13, SD: 3.73) than in PED/NVP (mean: 1.82, SD: 1.52) and in PP/NSOP (mean: 1.63, SD: 1.88) ($p <0.02$). ROD % sequentially paired or co-occurring with Aggression special scores was higher in SHP (mean: 0.14, SD: 0.19) than in PP/NSOP (mean: 0.08, SD: 0.09) and in PED/NVP (mean: 0.06, SD: 0.05) ($p < 0.005$). ROD number sequentially paired or co-occurring with Aggression special scores/Total ROD was higher in SHP (0.47) than in PP/NSOP (0.42) and in PED/NVP (0.26) ($p < 0.05$). The starting hypotheses are largely confirmed.

No statistically significant difference among the three groups was found as regards AgC (Aggressive Content) and AgC%. AgPast (Aggressive Past) was higher in SHP (mean: 1.05, SD: 1.49) than in PP/NSOP (mean: 0.68, SD: 1.05) and in PED/NVP (mean: 0.38, SD: 0.67) ($p <0.05$). AgPast% was higher in SHP (mean: 0.048, SD: 0.06) than in PP/NSOP (mean: 0.036, SD: 0.06) and in PED/NVP (mean: 0.015, SD: 0.03) ($p <0.02$). AgPo (Aggressive Potential) was higher in SHP (mean: 0.71, SD: 1.14) than in PED/NVP (mean: 0.21, SD: 0.47) and in PP/NSOP (mean: 0.03, SD: 0.18) ($p = 0.001$). AgPot% was higher in SHP (mean: 0.036, SD: 0.07) than in PED/NVP (mean: 0.01, SD: 0.02) and in PP/NSOP (mean: 0.00, SD: 0.01) ($p= 0.002$). SM (Sadomasochistic Aggression) was higher in SHP (mean: 0.45, SD: 1.13) than in PP/NSOP (mean: 0.19, SD: 0.40) and in PED/NVP (mean: 0.03, SD: 0.16) ($p <0.05$). SM% was higher in SHP (mean: 0.01, SD: 0.04) than in PP/NSOP (mean: 0.01, SD:0.02) and in PED/NVP (mean: 0.00, SD: 0.01).

According to the Authors "*The results of our findings add to the growing body of literature supporting the utility of the ROD in understanding dependency and aggression. Two of our groups were sexually deviant (SHPs, NVPs), and two have histories of aggression (NSOPs, SHPs). Consistent with the idea that dependency or interpersonal strivings fuel their behavior, ROD scores were elevated in our sexually deviant groups (SHPs, NVPs). The frequent pairing of dependency and aggression in SHPs (almost 50% of ROD scores were accompanied by aggression) offers a Rorschach marker that differentiates the real world behaviors of the SHP (sexually violent) and NVP (sexually nonviolent)".*

"*Sexual homicide perpetrators were found to have relatively high levels of oral dependency, which was consistent with their relatively high level of Texture and Food responses (Gacono, Meloy, & Bridges, 2000). Yet, much of their dependency was associated with aggressive content. Furthermore, SHPs had the highest levels of the aggressive special scores of Gacono & Meloy (1994) on three of the four categories (AgPast, AgPot, and SM), suggesting that they are highly preoccupied with aggressive impulses, including the dangerous mix of sadomasochistic ideation. Gacono, Meloy, & Bridges, 2000 found that SHPs have high levels of dysphoria, interpersonal yearning, cognitive distortion, and obsession, coupled with an inability to disengage from the environment (low Lambdas). Thus, when complex ideation coupled with sexual arousal meets a certain threshold, sexual homicide perpetrators act from their internal fusion of sexual, dependent, and aggressive impulses collectively. Consistent with the use of projective identification, SHPs project their oral needs into their victims and then react with rage, disgust, and violence in an attempt to eradicate these needs (see Gacono & Meloy, 1988). This group's high levels of thought disturbance (X-% = 26; X+% = 0.47; WSUM6 = 23.00; see Gacono, Meloy, & Bridges, 2000) provide a template for the cognitive and perceptual distortions that allow such behavior. These findings are best reflected in one SHP's Rorschach response, 'a lonely bird of prey out looking for a relationship'*". Anyway, as the Authors finally stated "*The present findings are limited in that they may only apply to NSOPs, NVPs, and SHPs who are incarcerated. It may be that, when such individuals are not within the restrictive environment of a prison, their levels of dependency and aggression would differ*".

Well designed but quite preliminary are the studies by Léveillée and coworkers (Lefebvre & Léveillée, 2008; Trebuchon & Lèveillée, 2016).

Lefebvre & Léveillée (2008) compared the Rorschach records of 23 male uxoricides with those of 21 men who had committed domestic violence, matched for age, marital status, nation of birth (Canada), employment and number of children, respectively recruited on voluntary basis from federal prisons in Quebec, and from dedicated

health services, undergoing a four-session evaluation and administered the Structured Clinical Interview for DSM-IV, TAT, MMPI, MCMI and the Rorschach test according Exner CS (2001, 2003), concordantly scored according Chabert (1997) and Husain (1994, 2001) suggestions too, by two experienced raters. The data were statistically analyzed by means of chi square test (for nominal variables) and of Student t test (for quantitative variables). 17 Rorschach variables were examined: six general indices of acting out tendencies, and 11 specific indices of impairment of the mentalization capacities (see previous section for further details). Uxoricides Rorschach, when compared with those of men committing domestic violence, showed higher A% (mean: 56.42 versus 46.92, SD: 15.48 versus 15.42; p <0.05), lower M (mean: 1.48 versus 3.29, SD: 1.28 versus 1.52; p<0.001), lower M- (mean: 0.09 versus 0.52, SD: 0.29 versus 0.53; p <0.05) and a lower frequency of solicitations to the examiner (mean: 26.10% versus 71.40%, SD: 6.00 versus 15.00; p <0.01). According to the Authors, these results are consistent with a coherent personality picture of uxoricides, marked by low Ego strength, impulsivity, self-centering, cognitive distortions, impairment of introversion abilities, mentalization deficits, tendencies to acting out balanced by strong control and clinging to concrete reality to prevent the emergency of drives and pulsions. Anyway, these results require confirmation in larger samples.

Trebuchon & Léveillée (2016) compared two groups of females incarcerated in Canada, 88.2% French speaking: 6 females imprisoned for homicide (murderer group), 11 for major domestic violence (non-murderer group; 1 attempted homicide, 8 armed assault, 2 sexual assault) (see previous section for full details). In any case, the authors underline that the small number of their sample limits the generalizability of the results obtained, and call for further research on larger samples.

Comparison studies between subgroups of murderers (N = 4)

Perdue & Lester (1973), according to the Beck's method (1944), explored differences in Rorschach test responses of those who murdered kin (blood relatives or wives) and those who murdered an unrelated victim, examining two groups of 20 protocols from males matched for age, race, IQ and length of time in prison. No difference was found for a majority of Rorschach variables (R, color shock, C, time, m, DW, D, Dd, S, M, F, F+, F, FV, FY, FC, CF, Sum C, A, Ad, H, Hd, P, A%, T/IR, Total R (I-VII), Total R (VIII-X)). Subjects killing kin (Student two tailed test) gave more W (p < 0.05), fewer FM (p 0.05), lower F+% (p < 0.05) and lower F% scores (p < 0.01). As Authors stated "*The reliability of these results must, of course, remain in doubt until the study is replicated*".

Perdue & Lester (1974), without specifying the Rorschach method, searching for racial differences in the personality of murderers, found no statistically significant difference as regards 26 Rorschach variables in the protocols of 33 black homicidal males compared with 33 white murderers matched for age and intelligence: these findings too, lack confirmatory research.

Grattagliano, et al. (2019a) focused on SRR (Scuola Romana Rorschach) Rorschach variables associated with the judgement of imputability in murderers examined during the trial. They retrospectively rescored, according the SRR (Cicioni, 2016; Giambelluca, Parisi & Pes, 1995; Parisi & Pes, 1990), the Rorschach of 49 murderers stored in the database of the Criminology and Forensic Psychiatric Hospital Section of Bari University: 43 males and 6 females; 17-67 years old; 24 single, 21 married and 4 separated; 8 without any psychiatric history, 41 with different psychiatric diagnoses (13 schizophrenia, 1 delusional disorder, 1 bipolar disorder, 5 depression, 4 psychorganic syndrome, 13 personality disorder, 4 mild mental disability). Following the court expert evaluation, 23 were recognized as 'mentally sane' and therefore imputable, 10 as 'partially mental insane' and 16 as 'totally mental insane' at the time of the crime. No statistically significant difference was found in the distribution of the judgement of imputability ('mentally sane', 'partially mentally insane', 'totally mentally insane') as regards gender, age, marital status, years of schooling and premeditation of crime. As 'totally mental insane' and not imputable were judged: 11 out of 13 schizophrenics, 1 out of 5 depressed, 1 out of 4 with mild mental disability and 2 out of 4 patients with psychorganic disorders. In 14 cases, the homicide was considered as premeditated, in 35 as impulsive and not premeditate. In 31 cases, the crime scene was classified as 'organized', in 16 cases as 'disorganized' (no sufficient data in 2 cases). A diagnosis of schizophrenia and a disorganized crime scene were more frequent in not imputable murderers (chi square test, p < 0.05). More than 200 SRR Rorschach indexes were evaluated. The results were statistically analyzed with SPSS (Statistical Package for Social Science, Version 15.0), by means of Student two-tailed t test and by means of chi square test. As regards Rorschach variables, no difference was found between 23 'Totally sane' and 10 'partially mentally insane'. 16 'totally mentally insane' showed higher F- responses when compared with 23 'totally sane' (mean: 4.06 vs 2.52, SD: 2.57 vs 2.33, p < 0.05), and with 10 'partially mentally sane' (4.06 vs 2.10, SD: 2.57 vs 2.08, p < 0.05). When 16 'totally mentally insane' were compared with the remaining 33 subjects, two Rorschach variables discriminate in a statistically significant measure: R+% (mean: 58.2 vs 70.3, SD: 17.6 vs 19.4; p < 0.05) and F- (mean: 4.06 vs 2.39, SD: 2.57 vs 2.23; p < 0.05). In addition, R+% (NV = 70-80) and F+% (NV = 70-80) are higher than 70 only in 4 out of 16 'totally mentally insane', in 7 out of 10 'partially mentally insane' and in 21 out of 23 'mentally sane'. No difference between the three groups was found as regards affective Rorschach variables. R+% and F- SRR variables are therefore the most useful in the forensic setting as regards the judgement of imputability.

Grattagliano, et al. (2019b) revisited the same sample of 49 Rorschach records in order to identify Rorschach variables associated with the dichotomy 'organized crime

scene' vs 'disorganized crime scene'. More than 200 SRR Rorschach indexes were evaluated. No statistically significant difference was found in the distribution of the type of crime scene (organized vs disorganized) as regards gender, age, marital status, years of schooling and premeditation of the murder. An organized crime scene was more frequent in imputable and partially insane murderers when compared with non-imputable, and in normal subjects when compared with those suffering from a psychiatric disorder (chi square test, $p < 0.05$). Rorschach records of murderers with 'disorganized crime scenes' (N = 13), when compared with those of murderers with 'organized crime scenes' (N = 31) (Student two-tailed t test) (N = 16) showed a higher total R (mean: 16.6 vs 13.2; SD: 4.7 vs 5.0; $p < 0.05$), higher D (mean: 9.44 vs 6.58; SD: 4.30 vs 3.77; $p < 0.05$), higher Dim% (mean: 2.42 vs 0.84; SD: 3.46 vs 1.19; $p < 0.05$), higher F (mean: 13.25 vs 9.61; SD: 3.62 vs 3.39; $p < 0.05$) and, most importantly, much higher F- (mean: 4.31 vs 2.12; SD: 2.80 vs 1.75; $p < 0.05$). Since negative form quality (F-) is one of the most reliable and valid Rorschach indexes (Mihura, Meyer, Dumitrascu & Bombel, 2013), a value more than twice in murderers leaving a disorganized crime scene, certainly signals lower cognitive abilities, rough observation powers, compromised attention and concentration and poor cognitive self-control in this group of homicides.

Conclusions

General remarks

All the studies here reviewed, except one (Gupta & Sethi, 1974) retrospectively re-examined Rorschach data; all the studies considered Rorschach test administered after a variable time from the murder, in a jail context, for forensic purposes.

As a first consequence, in no case the results may be considered 'predictive' of homicidal behavior, because of two principal reasons. The first, homicide is a rare and highly variable behavior, different from case to case, and the very existence of a 'murderous mind', common to all or some murderers, is a dubious and questionable working hypothesis. The second, no Rorschach test was administered before the murder. In addition, a retrospective design is not able to generate 'predictive' data.

As a second consequence, the results are not generalizable, except to populations of a similar type, taking into consideration and possibly controlling all the variables involved with possible confounding effect: not only age, sex, marital status, sibling data, level of education, IQ, full psychiatric state examination, psychiatric diagnosis, drug and/or psychological treatment, level of alcohol consumption, number or prior criminal offenses, and so on, but also length of imprisonment according to sentence, and length of imprisonment at the time of testing.

Comparison studies between murderers and other criminals (N = 13)

Major goal of the comparison studies between murderers and other criminals is to identify statistically significant differences in Rorschach test indices, in similar conditions of test administration, with less distorting effect of sentence, prison environment and so on.

The five papers published before 1990 shows major methodological flaws, and have been mentioned only for the purpose of completeness of the present reviews:

- in the first study of the series (Kahn, 1959), the two groups are too much heterogeneous as regards presence of psychotic subjects;
- 3 out 5 studies didn't specify Rorschach method (Kahn, 1959; Lester & Perdue, 1973; Lester, Kendra, Thisted and Perdue, 1975); the remaining 2, used outdated not standardized and psychometrically reliable and valid procedures, such as that by Kloper (Klopfer, Ainsworth, Klopfer & Holt, 1954) (Gupta & Sethy, 1974; McDonald & Paitich, 1981).

More recent contributions (N = 8) are methodologically well designed, and reported quite interesting results, very useful in the forensic evaluations of similar samples of murderers, i.e.: adolescent murderers, both 'conflict group' or 'crime group' homicides (Greco & Cornell, 1992); adult male violent murderers (Coram, 1995); sexual homicide perpetrators (Gacono, Meloy, & Bridges, 2000; Gacono, Meloy, & Bridges, 2008; Meloy, Gacono & Kenney, 1994; Huprich, Gacono, Schneider & Bridges, 2004); male uxoricides (Lefebvre & Léveillée, 2008), and adult female murderers (Trebuchon & Léivellée, 2016). Anyway, it must be outlined that sample size of murderer and/or comparison groups is lower than 25 in 4 out of these 8 studies, since that replication is needed in larger samples (Coram, 1995; Greco & Cornell, 1992; Lefebvre & Léveillée, 2008, Trebuchon & Léivellée, 2016).

Comparison studies between subgroups of murderers (N = 4)

Perdue & Lester (1973), according to Beck's method (1944), reported more W ($p < 0.05$), fewer FM (p 0.05), lower F+% ($p < 0.05$) and lower F% scores ($p < 0.01$) in 20 males who murdered kin (wives and blood relatives) when compared with 20 males matched for age, race, IQ and length of time in prison, who murdered unrelated victim (Student two tailed test). As Authors stated "*The reliability of these results must, of course, remain in doubt until the study is replicated*".

Perdue & Lester (1974), without specifying Rorschach method, found no statistically significant difference as regards 26 Rorschach variables in the protocols of 33 black homicidal males, when compared with those from 33 white murderers matched for age and intelligence: these findings too, lack confirmatory research.

Finally, the contributions by Grattagliano et al. (2019a, 2019b) are the most interesting from ones a forensic point of view. These Authors have retrospectively rescored, according the SRR (Cicioni, 2016; Giambel-

luca, Parisi & Pes, 1995; Parisi & Pes, 1990), one of the three Rorschach methods known as reliable and valid (Zizolfi, 1916), the Rorschach of 49 murderers, examined during their trial, stored in the database of the Criminology and Forensic Psychiatric Hospital Section of Bari University: 43 males and 6 females; 17-67 years old; 24 single, 21 married and 4 separated; 8 without any psychiatric history, 41 with different psychiatric diagnoses (13 schizophrenia, 1 delusional disorder, 1 bipolar disorder, 5 depression, 4 psychorganic syndrome, 13 personality disorder, 4 mild mental disability). Following the court expert evaluation, 23 were recognized as 'mentally sane' and therefore imputable, 10 as 'partially mental insane' and 16 as 'totally mental insane' at the time of the crime. No statistically significant difference was found in the distribution of the judgement of imputability ('mentally sane', 'partially mentally insane', 'totally mentally insane') as regards gender, age, marital status, years of schooling and premeditation of crime. As 'totally mental insane' and not imputable were judged: 11 out of 13 schizophrenics, 1 out of 5 depressed, 1 out of 4 with mild mental disability and 2 out of 4 patients with psychorganic disorders. In 14 cases, the homicide was considered as premeditated, in 35 as impulsive and not premeditate. In 31 cases, the crime scene was classified as 'organized', in 16 cases as 'disorganized' (no sufficient data in 2 cases). More than 200 SRR Rorschach indexes were evaluated. The results were statistically analyzed with SPSS (Statistical Package for Social Science, Version 15.0), by means of Student two-tailed t test and by means of chi square test. In the first study (Grattagliano et al., 2019a), searching to identify Rorschach variables associated with the judgement of imputability, no difference was found between 23 'Totally sane' and 10 'partially mentally insane'. 16 'totally mentally insane' showed higher F- responses when compared with 23 'totally sane' (mean: 4.06 vs 2.52, SD: 2.57 vs 2.33, $p < 0.05$), and with 10 'partially mentally sane' (4.06 vs 2.10, SD: 2.57 vs 2.08, $p < 0.05$). When 16 'totally mentally insane' were compared with the remaining 33 subjects, two Rorschach variables discriminate in a statistically significant measure: R+% (mean: 58.2 vs 70.3, SD: 17.6 vs 19.4; $p < 0.05$) and F- (mean: 4.06 vs 2.39, SD: 2.57 vs 2.23; $p < 0.05$). In addition, R+% (NV = 70-80) and F+% (NV = 70-80) are higher than 70 only in 4 out of 16 'totally mentally insane', in 7 out of 10 'partially mentally insane' and in 21 out of 23 'mentally sane'. No difference between the three groups was found as regards affective Rorschach variables. According to these results, R+% and F- SRR variables appear to be the most useful in the forensic setting as regards the judgement of imputability. In the second study (Grattagliano, et al., 2019b), looking to identify Rorschach variables perhaps associated with the dicothomy 'organized crime scene' vs 'disorganized crime scene', no statistically significant difference was found in the distribution of the type of crime scene (organized vs disorganized) as regards gender, age, marital status, years of schooling and premeditation of the murder. An organized crime scene was more frequent in imputable and partially insane murderers when compared with non-imputable, and in normal subjects when compared with those suffering from a psychiatric disorder (chi square test, $p < 0.05$). Rorschach records of murderers with 'disorganized crime scenes' (N = 13), when compared with those of murderers with 'organized crime scenes' (N = 31) (Student two-tailed t test) (N = 16) showed a higher total R (mean: 16.6 vs 13.2; SD: 4.7 vs 5.0; $p < 0.05$), higher D (mean: 9.44 vs 6.58; SD: 4.30 vs 3.77; $p < 0.05$), higher Dim% (mean: 2.42 vs 0.84; SD: 3.46 vs 1.19; $p < 0.05$), higher F (mean: 13.25 vs 9.61; SD: 3.62 vs 3.39; $p < 0.05$) and, most importantly, much higher F- (mean: 4.31 vs 2.12; SD: 2.80 vs 1.75; $p < 0.05$). Since negative form quality (F-) is one of the most reliable and valid Rorschach indexes (Mihura, Meyer, Dumitrascu & Bombel, 2013), a value more than twice in murderers leaving a disorganized crime scene, certainly signals lower cognitive abilities, rough observation powers, compromised attention and concentration and poor cognitive self-control in this group of homicides. These results, too, confirmed the relevance of R+% and F- SRR Rorschach variables in the forensic setting.

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