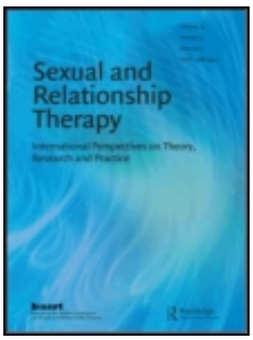

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Neuropsychological deficits in sexual offenders: implications for treatment

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ABSTRACT *This paper provides a brief overview of the growing body of evidence that a proportion of adult sexual offenders present with some localized form of brain pathology, often left temporal lobe, that may, in part, explain the presence of gender dysphoria and the attraction to deviant behaviour patterns in sexually anomalous men who prefer child surrogate partners or unsuspecting women. Given the treatment-resistant stance of many sexual offenders, certain treatment techniques are illustrated that have some proven merit. Such partially impaired men are amenable to action-oriented, visual (right-brain) training methods that compare favourably with traditional verbally-mediated, insight-orientated approaches. The techniques employed rely on social skill training, psychodramatic role plays (using a doll or mannequin), stress reduction and anger management, empathy training, guided visualization, neurolinguistic programming (NLP), cognitive restructuring, sketches of covert fantasies or deviant actions for group discussion, and victim–perpetrator role reversal, selectively applied within the context of a relapse prevention (RP) model for adult sexual offenders.*

Introduction

Sexual aberrations have been associated with some kind of 'organicity' or 'brain damage', with growing evidence that the site and extent of cortical tissue can be directly related to the presence of a sexual anomaly. While electrical (EEG) and biochemical imbalances (Berlin, 1983; Lang, Langevin *et al.*, 1989; Flor-Henry *et al.*, 1988; 1991; Gaffney & Berlin, 1984) have been noted in exhibitionist, sexually aggressive and paedophilic men, so have temporal lobe abnormalities been associated with changes in sexual behaviour. Anomalous sexual preferences have also been linked to brain abnormality (Cummings, 1985). The clinician may observe either an increase or decrease in libido in the patient, or the appearance *de novo* of unusual sexual urges or driven impulses that overwhelm the normal inhibition against sexual contact with both children or unsuspecting women subjected to genital exhibitionism, toucherism or forcible rape. These sexual urges arise rapidly and are acted on rapidly without thought for the consequences.

Early research with men exhibiting sexually unusual behaviours, notably transvestism (Epstein, 1961), fetishism (Epstein, 1960; 1969) and hypo- or hyper-sexuality (Shukla, Srivastava & Katiyar, 1979) have clearly identified the frontal lobes as sites of abnormal EEG activity. Walker (1972) also observed global hyposexuality in 32 of 47 males with temporal lobe epilepsy. Hoenig & Kenna (1979) noted that 48% of transsexual men studied had definite EEG abnormalities, mainly localized in the temporal lobe. In their 1975 review of functional neuroanatomy, Blumer & Walker profess that the inferior temporal areas serve as a mediator of sexual arousal, along with the paracentral lobule. If so, then temporal structures may be linked to diencephalic mechanisms in mediating sexual excitement. It has long been proposed that hippocampal dysfunction, especially sclerosis of Ammon's horn and subtle cortical pathology, have an etiological role in gender dysphoria and unconventional sexual behaviour.

Some initial evidence has emerged that may reflect a structural–functional relationship between brain pathology and child molestation. Early work by Regenstein & Reich (1978) reported four cases in which paedophilic or incestuous behaviour occurred fortuitously after the onset of cognitive impairment caused by various organic disorders. A double-blind study by Kolarsky *et al.* (1967) found that 18% of temporal lobe epileptics showed evidence of multiple paraphilias. In her 1985 doctoral study, Baker found that the exhibitionists she examined displayed deficits on tasks involving oral word fluency, speech sounds perception and rote verbal learning suggestive of some left frontal–temporal impairment. Genital exhibitionists are an interesting group to explore since they share some common features with rapists as well as paedophiles in that about one-fifth of exhibitionists are aggressive (Rooth, 1973; Lang *et al.*, 1987). Freund, Scher & Hucker (1983) and Freund & Blanchard (1986) have also noted that exhibitionism, voyeurism, toucherism, frotteurism and preferential rape pattern often co-occur as varying phases of an underlying courtship disorder. Sexual energy is prematurely expended rather than being released in genital union. Sexual anomalies may be viewed as exaggerated, overtly intensified or distorted counterparts of the four normal phases that comprise Freund's model, namely, searching for a potential partner; pretactile interaction, tactile interaction (without coitus) and, lastly, intercourse or genital union.

Berlin (1983), in examining 41 paraphilic men, found seven with abnormal CT scans, four with pathological EEGs and another four with clear neuropsychological deficits when medically examined. When Scott *et al.* (1984) tested 36 sexually deviant men, they showed more impairment than controls on seven of 14 tasks on the Luria–Nebraska Neuropsychological Battery.

Paedophilic behaviour, often accompanied by vivid imagery, self-generated masturbatory fantasies, or bizarre sexual acts, may suddenly emerge in men who develop the Kluver-Bucy or Kleine-Levin syndrome (e.g. as in hypersexuality). Patients with temporal lobe epilepsy are especially vulnerable to sexual deviation, particularly fetishism and transvestism (Walinder, 1965; Hunter *et al.*, 1963). Unusual or conventional sexual interests can also develop in the presence of a degenerative neurological illness.

Other research by Hucker *et al.* (1986), using the CT scan and Reitan Battery, found signs of left tempero–parietal lobe dysfunction in 67% of paedophilic men. In a similar vein, one in eight (13%) incest offenders were found to have an impaired neurological profile on the Reitan Battery and one in four men had some CT scan abnormality (Langevin *et al.*, 1988). However, when CT scan and Reitan test results were combined, three of 10 incestuous men emerged with some form of temporal lobe pathology relative to normal controls. In examining both the CT scan and neuropsychological profiles of 51 sexually aggressive men, Hucker *et al.* (1988) reported a higher incidence of right-sided temporal horn dilation in sadists than in non-sadistic assaulters and controls. However, non-sadistic sexual assaulters showed more global as opposed to discrete left vs right impairment relative to controls and sadists based on their measured performance on the Luria–Nebraska Neuropsychological Battery. The authors attribute this mixed finding to the poor discriminability and localizing function of the Luria battery and point out that more refined indices (magnetic resonance imaging (MRI) and positron emission tomography (PET)) are needed to identify the temporal–limbic substructures that relate to sexual anomalies. A study by Graber & associates (1982) found decreased tissue density, reduced blood flow and performance deficits on the Luria–Nebraska Battery for three of their modest sample of six sex offenders. When a group of child molesters were compared to normals by Hendricks *et al.* (1988), it was found they had thinner and less dense skulls as well as lower regional cerebral blood flow (rCBF) values which again poses the question of the causative relationship between brain structure and paedophilic behaviour. Several authors posit that temporal and frontal lobe syndromes tend to have an adverse impact on inhibitory systems mediating sexual activity. Thus it would seem that cortical pathology may be a probable contributing or dominant factor in giving rise to sexually aberrant behaviour. In this paper, the terms sexual offender, sexual abuser, child molester and perpetrator will be used interchangeably given their common usage. Table 1 presents a summary of published research findings on this topic.

TABLE I. Neuropsychological deficits in sexually anomalous men

Investigator	Number of cases	Sexual deviation	% impaired	Identified deficits
Epstein (1961)	5	Fetishism, transvestism	100	Temporal lobe dysfunction
Epstein (1969)	12	Fetishism	100	8—abnormal EEG 2—seizures 4—temporal lobe dysfunction
Hunter *et al.* (1963)	1	Transvestism	100	Temporal lobe epilepsy
Walinder (1965)	26	Transvestites	38	Abnormal EEGs, 60% in either temporal lobe

TABLE I.—*Continued*

Investigator	Number of cases	Sexual deviation	% impaired	Identified deficits
Kolarsky *et al.* (1967)	86	Multiple paraphilias, often fetishism	22	Temporal lobe epileptics
Taylor (1969)	100	Loss of libido	66	Clients referred for temporal lobe surgery
		Sexual anomaly	15	
Blumer (1970a)	12	Hyposexuality	50	Temporal lobe epileptics
Blumer (1970b)	50	Hyposexuality	58	Temporal lobe epilepsy
Walker (1972)	37	Hyposexuality	86	Temporal lobe epilepsy
Regenstein & Reich (1978)	4	Incest and/or Pedophilia	100	Organic impairment
Shulka *et al.* (1979)	30	Hyposexuality	63	Temporal lobe epilepsy
		Hypersexuality	3	
Hoenig & Kenna (1979)	35 men 11 women	Transexualism	48	Abnormal EEGs, 45% in temporal lobe area
Graber *et al.* (1982)	6	Sex offenders	50	Decreased tissue density, reduced rCBF and performance deficits on the Luria–Nebraska Test Battery
Berlin (1983)	41	Mixed paraphilias	17	Abnormal CT scan
			10	Pathological EEGs
			10	Neuropsychological deficits
Scott *et al.* (1984)	36	Mixed paraphilias	36	Impaired on 7/14 Luria–Nebraska Battery tasks
Baker (1985)	23	Exhibitionism	100	Left focal temporal lobe impairment
	19		100	Reduced EEG frontal power ratios
Hucker *et al.* (1986)	41	Paedophiles	67	Left temporo-parietal pathology, using CT scan
			52	Using Reitan measures
Langevin *et al.* (1988)	91	Incest offenders	13	Impaired on Reitan Battery
		Incest offenders	25	CT scan abnormality
Flor-Henry *et al.* (1988)	43	Exhibitionists	N/A*	Increased power in EEGs, reduced interhemispheric coherence during verbal processing
Hendricks *et al.* (1988)	16	Child molesters	100	Thinner/less dense skulls, lower cerebral blood flow (rCBF)
Hucker *et al.* (1988)	51	Sadistic sexual assaulters	41	Right temporal horn dilation on CT scan
		Non-sadistic sexual assaulters	60	Global impairment as opposed to right vs left dysfunction
Flor-Henry *et al.* (1991)	96	'True' paedophiles	54	Increased frontal power in EEGs, reduced

TABLE I.—*Continued*

Investigator	Number of cases	Sexual deviation	% impaired	Identified deficits
				interhemispheric coherence during verbal processing
Langevin *et al.* (1989)	15	Exhibitionists	25	Soft neurological signs on selected Reitan measures
Lang *et al.* (submitted)	75	Paedophiles	33	Left frontal-temporal
	14	Hebephiles	50	lobe impairment, verbal
	42	Incest	25	learning deficits

*Non-applicable due to type of data analysis.

How, exactly, such brain pathology contributes to human sexual behaviour needs more accurate definition (Finger & Stein, 1982). The scant but growing body of evidence seems to implicate temporal lobe impairment as an etiological factor of a person's erotic preference profile for a variety of classes of stimuli. If we are inclined to accept this brain–behaviour paradigm, then it seems plausible to infer that certain remedial methods can be utilized to re-direct sexually anomalous men towards a non-deviant orientation that does not violate the dignity of another person regardless of age.

Treatment goals

The primary goals of treatment are (1) to promote self-disclosure (be more 'open and honest') to enable sexual offenders to admit their sexual preferences for children; (2) to use confrontation to motivate offenders to take *full* responsibility for their abusive actions; (3) to assist men to perceive children as victims who simply obey but do not comply with their wishes; (4) to challenge their distorted thought processes that sexual contact with children is alright and non-harmful; (5) to reduce their sexual arousal and need for a child surrogate; (6) to provide instruction on improving their heterosexual/social skills so they can learn the distinction between having feelings and acting on them, bolster their self-esteem, and exercise greater self-control over sudden erotic impulses; (7) to offer programming in both an individual and group therapy format to show men how to be alert to the 'early warning signs' in the affect-fantasy-thought cycle; (8) to provide self-management training in a variety of cognitive–behavioural strategies that past abusers can utilize when alone to preclude any potential lapse or relapse.

Ancillary goals might include making offenders aware of how they misused power and control or adult sophistication (e.g. abuse of power in search of intimacy); sensitizing them to the negative psychological impact of child sexual abuse (e.g. sexual parts of child fetishized, child's trust and vulnerability manipulated); guiding sexual offenders to ensure they develop genuine empathy in interpersonal relations and, lastly, providing a supportive but firm milieu that will enable sexually anomalous men to develop, and maintain, a healthy adult sexual

identity. These goals are by no means all-inclusive but form part of the Relapse Prevention (RP) treatment model. Treatment components for alcohol or drug dependency problems, academic or vocational upgrading, basic living skills, leisure planning, budgeting, family or marriage enrichment, and conjoint therapy will not be dealt with in this paper but do form part of a sexual offender's overall rehabilitation programme.

Admitting sexual preferences

On entering treatment, many sex offenders are hard-pressed to admit the full extent of the crime perpetrated on the child surrogate, often expressed as 'She never said NO', 'She was a sexy kid or teased me' and 'What I did never really hurt him. I never went as far as intercourse. Everyone needs sex education' or 'She still loves me. That was nine years ago. Her mother didn't like sex' and 'I only put baby oil on her vagina for redness'. Being evasive and defensive on self-report questionnaires, as well as faking (by enhancing or suppressing penile responses by contracting one's perineal musculature) during penile plethysmography, the assessment of penile tumescence to erotic stimuli, is quite common (Langevin, 1987). This only complicates the assessment and treatment process. Sexual offenders employ a wide variety of seduction strategies (Lang & Frenzel, 1988; Conte *et al.*, 1989) and there is no end to the number of scenarios that can be re-enacted to expose their surreptitious motives and full extent of their actions. In fact, brain-impaired offenders are no less adept at rationalizations: 'She wore a revealing nightgown. She wanted to take a bath with me. Someone else had already abused her.' Oddly, digital, oral, anal and penile penetration are often described by incestuous fathers, uncles, grandparents and paedophiles by use of the gentle term 'fondling', which does not truly connote the seriousness of the sexual abuse but is simply a part of the minimization process. Within the home, intrafamilial abusers are master manipulators and their wives and children often live within an aura of domestic violence, as shown by the finding that up to one-third of paedophilic and incestuous men tend to utilize intimidation, verbal threats, gestures or force besides emotional coercion to elicit sex from children (Lang *et al.*, 1988). These self-deceptions are prominent, partly for men to assuage their own guilt and shame, partly to justify their actions, partly to avoid the social stigma linked with child molestation, and partly to convince themselves they are not really a paedophile after all. In fact, only about one in four intrafamilial abusers produce a truly paedophile profile during sexual preference ('phallometric') testing, judging by the fact that they generate their greatest penile responses to the body shape of pre-pubertal children (Langevin & Lang, 1988; Frenzel & Lang, 1989).

Use of confrontation

A combined firm and, when necessary, gentle approach aids men with fragile self-esteem, fear of vulnerability, mistrust of authority persons or self-blame to assume greater responsibility for their offensive behaviour. However, continual confrontations is the norm if the offender is to take ownership of his behaviour. The

notion of 'I'm bad' taken to extremes as guilt induction, or a fervent religious appeal ('I've sinned and God has forgiven me. I'm a born again Christian and really don't need therapy') both serve as obstacles, since the individual has not progressed through the stages in treatment for a successful resolution of his confusion of sex with love. At the outset, sex offenders lack empathy by dehumanizing the child and display little self-control over their deviant masturbatory fantasies and sexual urges. At first, denial serves as a form of self-protection from the cognitive dissonance that is evoked when men try to reconcile their non-admitter status (e.g. 'I didn't do it. They said I molested her when she was 6 year old. She's a healthy teenager and does not look hurt to me'), with their conviction and incarceration for molestation. A group therapy format can utilize peer pressure to elicit and reward honesty and willingness to risk being vulnerable as part of redeeming oneself and striving to replace dysfunctional habits with new adaptive coping styles. Tactful but extensive confrontation need not be counterproductive and will allow the offender to describe what, exactly, did occur, as well as how the molestation was planned, carried out to avoid detection, what he felt, thought and fantasized about during the commission of his offense, in a genuine manner while maintaining satisfactory rapport with the therapist.

Restructuring of distorted beliefs and cognitions

Sexual offenders often lull themselves into a false set of beliefs that uphold their desire for sex with children. As noted by Abel *et al.* (1984a), paedophiles do not realize that their intentions or obsession with their natural advantage over children is incongruent with the child's growing sense of self. The paedophile's advances may be construed as friendly overtures instead of a covert misuse of adult authority and sophistication. The maturity of the child does not permit informed consent. Pressure to conceal the crime by use of threats or force with such a power imbalance will engender more negative consequences for the child. In therapy, cognitive distortions like, 'She enjoyed it (the sexual act)' and, 'I was preparing her for womanhood', are rigorously challenged through role-playing in order to expose the grooming process of seducing the child, to assist abusers to admit to the selfish fulfilment of their erotic needs while, simultaneously, ignoring the child's feelings and confusion during child–adult sex which is based not on mutual intimacy but deception.

These rationalizations can be listed, debated and slowly dispelled over time as offenders gain in self-awareness and insight and make a firmer commitment to change. In order to dispel rationalizations further, group therapy along with cognitive behaviour strategies has proven helpful as members pinpoint a variety of self-evident disparities in child–adult sex (the age gap, lack of a close, intimate relationship, the abuser's hidden agenda, failure to evaluate one's distorted cognitions). If, and when, deviant attractions are self-generated, the task is for the offender to recognize what he is doing both to create and to rationalize these cognitive distortions and to challenge and refuse to respond to them. The Abel & Becker Cognitions Scale (Abel *et al.*, 1984b) is a helpful self-rating device for sex offenders who rationalize their behaviour as non-harmful. These cognitive beliefs

that rationalize sex with children by ascribing adult characteristics to them can be neutralized and replaced with more caring and protective attitudes for the betterment of the individual.

Relapse prevention

As defined by Pithers *et al.* (1988) "relapse prevention (RP) is a therapeutic approach geared toward the maintenance phase of behaviour change programs...For the sex offender, successful maintenance is the attainment of long-term abstinence in regard to the performance of unlawful sexual acts". (p. 140) What appear to be impulsive acts at first glance do involve some degree of forethought and planning in fantasy or emotion, often delayed, and it is argued that the subtle precursors can be isolated for each sexual offender and resisted during any potential relapse process. Self-control, self-confidence and specific coping skills developed in treatment can assist the offender to maintain a sense of mastery when having to contend with, or avoid a high-risk situation.

Successful identification of early warning signs of relapse and high-risk situations include: fantasizing or masturbating to deviant thoughts; offering to babysit a youngster; walking through a school playground; driving around looking for a solitary child; visiting arcades frequented by children, or swimming pools to observe children undressing; or offering to do voluntary work for youth organizations. Cue cards inserted in one's shirt pocket about the harm of child sexual abuse also serve to prompt the person who puts himself into circumstances where he is tempted to re-offend. Pithers *et al.* (1988) point out that in the case of sexual aggression the goal is to identify and interrupt at the earliest possible stage the sequence of precursors unique to each individual—from affect to fantasy to distorted thought to planning to enactment of sexual offence. The further the progression into the deviant relapse cycle without some kind of self-intervention, the higher the likelihood a full-blown relapse will occur.

Life events such as family disputes, loss of employment, low grade depression, self-reproach, frustrations, intense anger, loss of perceived self-efficacy, having a drink, buying pornography or 'cruising' for the opportunity of meeting a possible victim all need to be viewed as risky determinants or 'early warning signals' of an imminent lapse. Those conditions which predispose an abuser to relapse are avoided by prudent self-monitoring, by relying on internalized coping skills and by refusing to engage in the sequential (and sometimes combined) chain of cognitive, behaviourial, social, affective or situational events that precede a relapse. A comprehensive RP programme can identify the salient antecedents and provide sexual offenders with a problem-solving strategy successfully to avoid and cope with high-risk situations that might, if ignored, lead to relapse.

Role play using video feedback

Use of the Gestalt two-chair technique with other offenders playing the role of parent, spouse, victim or perpetrator while the individual acts as both participator

and, later, observer (e.g. hearing others say, 'daddy loves you' while re-enacting one episode with a mock penis using a doll-size or life-size mannequin) to highlight the abuser's lust, egocentric outlook and manipulation, can exert a powerful effect on the emotions of the perpetrator. Some men are visibly shaken for several days when they suddenly grasp the true picture of their insidious maltreatment of their son or daughter or other child(ren). Perpetrators may be asked to draft and re-write a letter to the child victim and, in turn, comments on how sorry he truly feels (for himself vs the victim) are elicited from group members to assess his level of empathy and to help offenders better understand the traumagenic impact of their offence from the victim's frame of reference. Other group members may assume the role of victims or perpetrators as different members vicariously experience the hurtful impact felt by everyone and provide constructive criticism. When children speak of an abusive father, they say they still love him but hate what he did. Listening to the actual victim's response or that played by a confederate ('You hurt me. I hate my body. I feel ugly or like killing myself') directly or by means of videotape feedback serves as a powerful tool for therapeutic change. These kinds of role plays are invaluable in aiding the perpetrator to grasp the full impact of his abusive behaviour along with the mixture of self-blame, embarrassment, anger, despondency and remorse he comes to feel as he resolves his own confusion and inner conflict. Video recorded material can serve to enable perpetrators to share vicariously in and clarify both victim and perpetrator issues.

Certain men who expose children to pornography in order to stimulate their curiosity as a prelude to sexual contact, or those who attempt to intoxicate children by feeding them alcohol, are asked to re-enact either scenario in front of peers and staff members as part of their self-disclosure process. Viewing videos of sexual assault victims (e.g. of incest and rape cases) as opposed to soft or hard core erotica can serve as a useful adjunct to mobilizing men's sensitivity to the negative persisting effects ('sequelae') many child victims experience and which carry over into adulthood. Initially, few sexual offenders have any real conception of the intrinsic harm in the form of a sense of betrayal, disillusion, stigma and a host of other symptoms that arise as a result of their intrusive actions when they fetishize the sexual parts of a child (Finkelhor, 1988). Self-forgiveness is necessary if the offender is to achieve any degree of positive self-confidence, and for healing of family relationships to occur.

Sex education/parenting skills

Despite their offending behaviour, some sex offenders are ignorant of human anatomy, reproduction, foreplay and stimulating their spouse to orgasm, not to mention the risk of sexually transmitted diseases (e.g. venereal warts, herpes or even AIDS they may pass on to innocent victims). Discussions may be focused on their complaints of genital dysfunction (whether the problem is one of erectile insufficiency, premature or retarded ejaculation) and the impact this may exert on their desire for a female child surrogate as a substitute for a consenting adult partner. Perpetrators often express many myths about male and female sexuality that need

revision. Small discussion groups, augmented by easy-to-understand films, slides, lectures, graphic literature of coital activity and simple quizzes, help men to place sex in a more appropriate context as a give-and-take process. One man with some left-brain processing difficulties was asked to draw an enlarged vagina on the blackboard in order to highlight how this enduring fixation with little girls' genitals became his dominant preoccupation. Another drew a disproportionately sized penis with himself in miniature to reflect its distorted all-powerful role in his sexual abuse cycle. For many male offenders, sex equals love and by learning to distinguish between the two (e.g. women want emotion from men while offenders want sex from women or children), they become more aware that what they called 'love' was simply lust in disguise. In time they learn to give up their lust-sex or anger-sex style and adopt a love-sex style based on trust and respect for one's marital or age-appropriate partner.

Given the dysfunctional nature of the family unit and sexual offenders' own disturbed child–parent relations in their family of origin (Lang & Langevin, 1991), many such men exhibit poor child management skills. These can be refined over the course of treatment by using video films, selected parenting books, examples of lack of bonding from the abuser's autobiography and didactive discussions that can be put into practice during visits by family members and upon his release into the community. In-house programmes might include Parent Effectiveness Training (PET), Systematic Training for Effective Parenting (STEP) and Parent Involvement Program (PIP) to help offenders learn effective parenting skills and knowledge for use with their children.

Assertiveness training

Given the lack of assertion of some sexual perpetrators in a given interpersonal context (e.g. meek and mild with friends and relatives but irritable and domineering with their immediate family), learning to distinguish between assertive, passive, aggressive and passive–aggressive communication styles is a major goal for certain abusers. Men meet in small groups twice a week over a 10-week cycle and focus on personal rights, listening, making or refusing requests, criticism, double or non-verbal messages that confuse victims (e.g. 'I love you in a special [lustful] way') and positive and negative feelings. Men are taught to acknowledge their own rights and respect those of others (to be safe from predation) by being direct, honest, mindful and courteous. Goals are to deter offenders from their self-serving perspective of 'How to get your own way' or 'Me pleasing me'.

Even impulsive individuals with perseverative tendencies as displayed in frontal lobe dysfunction can benefit from goal-orientated training techniques that incorporate role playing, intensive discussions (about fear, of breaking old ingrained patterns and habits, of being wary of becoming vulnerable and being resistant to letting go of the need to control), *in vivo* conflict resolution, modelling, brainstorming, explanation of concepts using diagrams on the blackboard or flip chart, and by providing visual feedback using video or mirrors, all of which help men to modify the cognitive set that led to the commission of their sexual offenses.

Anger management

Direct and oblique forms of verbal hostility and escalating feelings of anger are self-evident in the coping styles of many sexual offenders who rely on emotional or physical coercion to seduce children and to intimidate other family members into a bond of silence. Anger can function as a secondary emotion to camouflage one's hurt or sadness. It can also serve as a primary factor in inducing change. Anger is also a major disinhibitor and a frequent antecedent for a sexual offence and later relapse if the abuser's negative arousal state is left unmodified. Anger and need for power are prominent in the rapist's profile. Either a tutored course or workbook approach can offer the sexual offender a series of exercises by which to self-monitor this emotion (when anger is too frequent, too intense, lasts too long, when it leads to aggression or when it disturbs work and relationships).

In practice, use of a communications grid or anger measurement schedule, coupled with practical rehearsals, work-outs and time-outs as anger intensifies, all enable the offender to minimize anger's negative functions. Suppressed anger prevents incestuous fathers from expressing positive feelings towards their spouses. For these men, sex can be anger-provoking rather than pleasure-evoking and they turn to children when expressing sexual feelings. Treatment provides coping strategies on a chart along with any cognitive distortions about one's right to anger. Conflict resolution involves being able to separate anger from sex. Anger-avoidant strategies are learnt by observing and mimicking others who avoid anger successfully and by envisioning anger provocation scenes arranged in order of severity while in a relaxed state where no anger arousal or signs of tension are experienced. Anger cannot be avoided but can be managed constructively.

Social skills training

Many paedophiles were shy or teased by peers and exhibit social skill deficits in adulthood that may predispose them towards a sexual relationship with a child which feels safer and less demanding than an adult relationship based on reciprocity. Abusers may also satisfy many non-sexual needs as well, though gratification is enhanced by the child's naivete, accessibility, trust, need for affection and compliance with adult caregivers. Given the offender's lack of emotional integration, social and life skills training can increase sensitivity to others' feelings, bolster self-esteem, reduce fear of failure or retaliation, and assist one to express anger safely (without intending to hurt).

For such men, conflict resolution involves learning to listen, learning to use I-statements, when stating impressions and feelings, to avoid accusations or putdowns, and to explore and choose options that can be tape recorded or videotaped as feedback for later analysis. Use of this medium can, and does, lead to changed behaviour, good feelings, intimacy that was previously avoided, loving and caring relationships and enhanced self-image despite the presence of certain cognitive deficits.

Guided visualization

Guided or task imagery has proven useful in modifying emotive, cognitive and behavioural processes. Shorr (1983) contends that imagery may serve as a motivator for change. Daydreams, fantasies and inner talk are all forms of visualization amenable to change. Thoughts and fantasies of children vary in their range, evocation and erotic valence and can be replaced by positive, healthy healing images by teaching offenders to use the intuitive, imaginative part of their mind. By constructing non-deviant imagined outcomes in one's mind when relaxed, using smells, tastes, touch, sound and sights as inner cues, deviant sexual arousal patterns can be altered, since what sex offenders do in real life was previously enacted in imagery. Guided imagery which can focus on the molester's potential to feel shame, sadness, anxiety *or* their opposites can be used to modify irrational beliefs, covert desires, unmet needs, urges to re-offend and emotions that prevent change. By forming mental sense impressions and by using affirmations while imagining healthy contact with children (e.g. 'I am not getting aroused'), the abuser can with therapeutic guidance learn to re-direct or re-focus a deviant interest into a normal outcome. Everyone is capable of envisioning himself as changing and growing and child molesters can mentally rehearse divesting themselves of their self-limiting beliefs that sex with children is worth the risk. Use of this medium, whether to help patients learn deep muscle relaxation or as a form of aversive conditioning to deviant arousal, is mediated by intact right hemisphere functioning. It has been proposed that right frontal or right parietal lesions are associated with deficits in non-verbal social understanding, spatial or form visualization and visual–motor coordination, as measured by WAIS-R subtests. Daydreams or fantasies, metaphors, analogies, inner dialogue with oneself, and dreams are facets of visualization as they relate to sexual preoccupation. Many offenders have active imaginations and a rich fantasy life that focuses on the fulfilment of sexual desires as a substitute for other unmet developmental needs from an unhappy childhood.

Guided visualization can be used to lessen deviant interests by having abusers imagine a goal they wish to attain by constructing a safe, happy and non-invasive scenario including the array of sounds, smells, tastes, tactile sensations and sights associated with success without erotic self-gratification. With practice, even poor visualizers can learn to use positive affirmations to relax and eliminate the sexual aspect from the constructed inner scene. In our clinical experience, image content can be split (the good–bad selves), change colour, expanded to any size (mastering the sexual addiction), faded or shrunk (the desire to re-offend), rotated, made transparent or otherwise altered to conform to a specific treatment goal. The ability to generate vivid and distinct images generally has a more profound effect in mediating the desired change than reliance on willpower alone.

Therapists can use imagery skills with offenders who are not able to change their mental set quickly, or who perseverate, identified as impaired on the Halstead Category Test. They are confronted with their negative self-talk and cognitive rigidity by visualizing scenes of being in control, confronting elusive automatic thoughts, overcoming their inner self-critical dialogue or voices by the startle

(STOP) technique, by seeing the desirable traits and behaviours that are obscured by one's deprecatory or shame-based self-image, and by generating positive affirmations during visualization. Over time, it is hoped that use of guided imagery as an adjunctive technique will assist in the reduction and elimination of overt or covert deviant arousal and behaviour patterns by creating a relaxing mental state and harmonious alternative to daily living.

Neurolinguistic programming (NLP)

This potent technique, based on re-living old memories or re-experiencing the past, is helpful for modifying or re-shaping traumatic childhood memories or certain emotions linked to a person's deviant cycle that are recycled throughout one's life. The goal is to change the internal distortion or imprint based on past learning (e.g. 'Sex with kids is safer. I'm so ashamed I'll never change') using *anchors* that trigger the visual imagery, auditory self-talk, or feeling states connected with old recorded memories. Words evoke sensory images and feelings of lived experiences that can be changed by the NLP method so they exert less effect over the offender's present life. John Bradford (1990), in describing his use of the NLP change model which is based on the cybernetic principle, states "that the brain and central nervous system cannot tell the difference between real and imagined experience if the experience is vivid enough and in detail". (p. 178) By showing sexual offenders how to access specific memories or associate certain images linked with their deviant cycle, the person can not only re-experience but re-run the chain sequence of events, cognitions and feeling (kinaesthetic) responses. Perpetrators use their imagination to achieve sexual arousal and thereby programme themselves to be aroused to vulnerable children or women. Use of right-brain imagery techniques have merit for changing the original thoughts, emotions or sensations laid down as neurologically imprinted experience or 'anchored imprints' (auditory, visual, gustatory or olfactory memories) that can be re-triggered, neutralized, re-done and re-encoded the way it ought to be. By using anchors (touching a thumb and finger together as a kinaesthetic trigger) while visualizing a new coping strategy with real feeling, the painful experience can with practice be overridden. Sexual offenders can visualize future high-risk scenes and rehearse seeing, feeling and doing well in the company of a potential child victim and thus reshape their own self-expectations rather than avoid contact with children.

Dissociation of abusive incidents

While statistics vary, up to 50% of incestuous fathers and paedophiles were sexually or physically abused or both, as noted in recent studies (Lang & Langevin, 1991; Hanson & Slater, 1988). Many men have a poor recollection of their own abuse and of its probable etiology in their recent offending behaviour. Given the sense of betrayal, hopelessness and helplessness traumatized children experience, many 'victims' become 'victimizers' in later life as they revert to a kind of role reversal. Many offenders tend to dissociate their own abuse as well that of their victims.

During association, one will actually experience the painful memory; in dissociation the victim observes with little feeling the old memory or inner experience. Most helpful in accessing these painful emotions and memory in brain-injured men is simple bibliotherapy (often vignettes), age regression by Eriksonian hypnosis and guided visualization under conscious control.

Group Assignments

The group is a more powerful vehicle as a change-inducing agent than individual counselling. In simple terms, it is hard to lie to a bunch of liars who wish to redeem themselves for past wrongdoing. In our experience we have found that homework assignments in the form of: (1) writing a letter to the depersonalized victim to be shared with everyone; (2) doing a large collage, as one man did, of several hundred victims over a 22-year offending cycle (which shocked everyone who saw it); (3) listing the five most 'sneaky' things about oneself; (4) keeping a daily diary of deviant thoughts or an anger log of feelings experienced; (5) drafting a newspaper advertisement portraying oneself as a child molester looking for a single mother with needy children vs appealing as an emotionally honest male looking for a sincere, 'open and honest' relationship with an adult female; or, (6) writing a play or booklet about how to seduce a child, or scripting one's own mode of operation in seducing a child for staff facilitators to observe being re-enacted in a safe therapeutic context as part of the self-disclosure of one's private thoughts, feelings and fantasy processes while normally offending.

Since child rape or incest takes place in secret, usually in the sexual offender's or victim's domicile, asking the offender to expose his weakness without inviting scorn, or approval either by peers or members of the multidisciplinary treatment team, is a positive step towards better self-understanding. Even offenders with mild learning disabilities can benefit from these strategies which, if simplified, do work to create empathy for the victim and sharing of the molester's idiosyncratic perceptions and hidden agenda with children for everyone to see. Some shame aversion using props in the presence of female therapists evokes powerful emotions. In time, the intrinsic value of consensual sexual relations with an age-appropriate partner assumes a greater importance in these men's lives.

Graded homework assignments and goal-setting can be geared to the offender's ability. Using estimates of pre-morbid intelligence as a baseline, treatments can be geared to enable offenders to manipulate verbal and non-verbal symbols, in order to maximize treatment efficacy. Even microcomputer programs with multiple-choice options can be utilized as a visual teaching aid to deter sexual offenders from engaging a child sexually (e.g. if you find yourself alone with a child, you should A,B,C,D or E) or to test for social skill acquisition (e.g. in this problematic situation, which is the most and least helpful reaction?). Of course, most sexual abuse perpetrators will require some form of follow-up maintenance counselling for a 5–10 year duration and, in some cases, longer.

Conclusions

The present review seeks to focus on the treatment implications of the link, not necessarily causal, between types of paraphilic behaviour and deficits in language, memory, motor and perceptual processes that impede treatment. Much of the research literature on this topic, though sparse, suggests left fronto-temporal impairment in up to one-third of heterosexual paedophiles with lower verbal than performance IQs and reduced language skills relative to normal males. Older hebephiles, that is men whose primary attraction is to pubescents of either gender (aged 12–16), have poor abstraction ability and an immediate memory deficit, as shown by Lang, Flor-Henry, Frenzel & Neufeld (in press).

No doubt, aphasia, as seen in some sex offenders, will interfere with their ability to select words to describe their feelings, needs, urges and wishes to engage a child surrogate. Lack of communication skills gets in the way of change as shown by the problems sexual offenders encounter with generalizations, making sound social judgements, a lack of meaningful and emotionally relevant use of facts, being unable to evaluate better and use past experience to avoid high-risk situations, as well as with constraints in their logical thinking and minimal empathy or moral conscience when sexually offending against a child or woman. The therapeutic process cannot ignore the relevance of these factors in guiding men to resolve their sexual adjustment problem and prevent any re-offence.

An abnormal perinatal environment, a congenitally misshapen brain or uneven cerebral maturation, or brain degeneration caused by a hereditary process may all be linked to child sexual abuse. In investigating the brain in sex offenders predisposed to interact with children of varying ages, CT and MRI scans and electrical (EEG) patterns need to be included along with neuropsychological test batteries if we are to isolate the behavioural correlates that underlie certain kinds of brain dysfunction. All too often school difficulties and failed grades and social skill deficits seem to be equated with a learning disability that may serve as a precursor to predispose men toward incestuous and paedophilic acts with children. Possibly subtle as opposed to gross abnormalities may be linked to an erotic preference for children in that the ensuing confusion, impulsivity, poor judgement and cognitive distortions can give rise to atypical sexual behaviour.

Many men suffering from these problems do, in fact, respond well to action-oriented therapies that rely on right-brain strategies as visual aids to resolving emotional conflicts. It is known that affect, motivation and memory functions are linked to the integrity of the limbic system. Impulse control, or sexual deviations, may thus be associated with certain processes that disrupt not only mood but intellectual functioning (memory loss, learning and concentration skills). Unfortunately strictly insight-orientated modes of therapies may not alter the direction of anomalous sexual preferences. Of course how the brain regulates not only the abuser's frequency of outlet or compulsive drive level, but the mode of expression (or direction) of sexual impulses is still speculative and bears further study.

In general our own work has shown that one-third of paedophiles, one-half of

hebephiles, about one-fourth of incestuous fathers and 10% to 30% of men who expose for erotic gratification reveal some evidence of dominant (left) hemispheric dysfunction based on specific neuropsychological tests alone (Lang *et al.*, in press). This is consistent with parallel research conducted at the Clarke Institute of Psychiatry (Hucker *et al.*, 1986; 1988; Langevin *et al.*, 1988; 1989) which identified a higher proportion of impaired sexual offenders when neuropsychological test results and CT scan or profile were combined. Flor-Henry (1980; 1989) has postulated a neurophysiological model for sexual deviations that emphasizes the lack of intact interhemispheric connections. If there is cerebral dysfunction, especially in early life, conventional sexual thoughts and fantasies may not dominate to direct sexual behaviour. Depending on the kind of lateralized dysfunction, abnormal ideational representations of a given sexual deviation can lead to, or be associated with, disturbed interhemispheric interactions so that *only* the abnormal fantasies or thoughts are capable of eliciting the orgasmic response in the non-dominant hemisphere. Flor-Henry argues that despite the ruminative, obsessional and intrusive quality of sexual urges or fantasies, they may well represent fragments of normal sexuality gone awry, especially when the fragmented and isolated ideations assume an exaggerated importance and become dominant in eliciting sexual arousal and triggering the orgasmic response. In such cases, only the body shape of a child, a fetish of a non-living female object or the pain inflicted by a female dominatrix, as opposed to conventional outlets, become linked to erotic gratification.

Different aspects of a courtship disorder (cf. Freund *et al.*, 1983; 1986), such as voyeurism, exhibitionism, toucherism, cross-dressing, gentle domination and bondage, or attraction to children for sexual and non-sexual motives are all a peripheral part of human sexuality. In sexual deviation they become central. Converging empirical evidence supports the notion of incest offenders being least impaired neurologically, followed by hebephiles, then exhibitionists, with paedophiles showing the most pronounced deficits that appear to localize to the left fronto-temporal hemisphere. By comparison, bisexual paedophiles appear to have visuo-spatial (right-brain) processing deficits to exemplify their unique status. What is certain is that subtle dysfunction of frontal and left temporal regions of the brain, whether diffuse or focal, does seem implicated in the occurrence of sexually aberrant behaviour. Furthermore, this can be modified to a greater or lesser degree by a multi-faceted treatment approach based on a cognitive–behavioural relapse prevention (RP) model. In assessing treatment efficacy, incest offenders changed most, followed by married and then single paedophiles, who were the most resistant to change (Lang, Pugh & Langevin, 1988).

Overall, the research findings seem to imply that sex offenders, in varying degrees, exhibit a number of pathognomonic signs in both sides of the cortex on certain cognitive, motor, auditory-verbal memory, and neuropsychological factors. The composite profile of one-third of paedophilic, one-half of hebephilic and roughly 25% of incest offenders reveals some evidence of dominant (left) hemisphere dysfunction that has also been identified in other sexually anomalous men: e.g. exhibitionists and rapists. It seems possible to conclude that this pattern of deficits may not be caused by a single, but rather a combination of, etiological

factors. There is the pervasive presumption by many neuropsychologists that every behavioural function has its neural substrate in some discrete parts of the brain, which remains to be proven.

Despite impairment of some functions, offenders can still rely on visuo-spatial judgement and visual memory of pre-rehearsed high-risk situations to be avoided (e.g. schools or playgrounds, babysitting, drinking when lonely or sad) or can rely on visual internal cues (e.g. ignoring the covert sexual fantasies that if masturbated to result in acting out with a child, seeing oneself being arrested, phoning a friend) to prevent relapse.

Visuo-spatial skills depend less on educational background than verbal knowledge and so performance-based approaches to cognitive remediation can exert a dramatic impact on men with some degree of focal left hemisphere brain pathology. Even sexual abusers with low pre-morbid intelligence with a language disorder can derive benefit from the proposed techniques. Because speech is necessary for social interaction and coping with day to day stressors, a language disorder can prove a major handicap. While language and sensory motor systems are well localized, one must be mindful that other complex cognitive functions like fantasy and abstract thinking resist attempts to localize them. In any event, the emotional, sexual and social sequelae of either 'open' or 'closed' head injury or a neurodevelopmental disorder in a subset of sexual offenders can be isolated and targeted for cognitive rehabilitation, and retraining can be conducted to improve the individual's quality of life. Over the course of treatment, offenders become more proficient in the use of internal and external strategies, external memory aids, impulse control exercises, and can achieve self-regulation and master coping skills that generalize to everyday living.

As shown, a higher proportion of sexual offenders present with some form of left-brain dysfunction. However, they can be encouraged to engage in endeavours that shift them out of a verbal labelling abstract mode, and switch them over into a visual, intuitive or concrete (simplistic) mode that enables them to perceive and retain impressions the left brain ignores or cannot process. Visualization and guided imagery thus serve to help modify behaviour, alter self-limiting mood states, induce a calm relaxed state, engender euphoria as deviant fantasies and negative inner dialogue are confronted, decreased and eliminated, and help offenders achieve a sense of mastery in a way discrete from that obtained by trying to exert one's conscious will.

It is hoped that, despite the locus and precise degree of neuropsychological impairment noted in a proportion of sexual offenders, different combinations of some (or all) of the techniques proposed can help motivated patients to modify their ongoing deviant behaviour as well as monitor the early warning signs or precursor cues that may signal a potential relapse. It would seem that our growing reliance on a multimodal relapse prevention (RP) treatment model will best serve the needs and competencies of adult sexual offenders who desire to make a firm commitment to change and to avoid high-risk situations leading to re-offence. Such incarcerated and non-incarcerated men in sex offender programmes, despite the presence of certain learning deficits, can be assisted to make a more normal transition to an

adult sexual orientation and meet society's expected standards of good moral behaviour.

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