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Thirty-Year Study Links Neuroscience, Specific Trauma, PTSD, Image Conversion, and Language Translation

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Abstract

Despite voluminous literature on trauma, studies on specific trauma and art expression remain sparse. Recurring graphic forms produced by sexual abuse victims have appeared in art therapy publications dating back to Naumburg (1958), but links between sexual abuse-assault and recurring graphic forms were not considered. In 1973, this author began a 30-year study of recurring graphic forms in drawings by this incident-specific group. Results reveal victims produce an artistic language not produced by nonvictims. Analyses using repeated ANOVAS determined frequency of occurrence of graphic forms across 225 drawings of 45 adult females. Findings indicate distinct graphic forms symbolize sensory-perceptual elements and stimulate integration of traumatic effects by image conversion through language translation, artistic to linguistic.

Introduction

Recurring graphic forms in drawings suggested the existence of an artistic symbolic language produced by women known to have experienced sexual abuse-assault and developed posttraumatic stress disorder (PTSD). The possibility of artistic communication by an incident-specific population fascinated this author. In 1973, while serving as Executive Director of a women's trauma center, I began a study. This center was the first in the United States to receive federal funding to use art therapy in crisis intervention and to use it as the primary treatment modality for adult women. The demonstration grant evolved into a 30-year study that included 6,000 documented cases of sexual abuse-assault in two states.

When the study began, the term PTSD was not in existence, trauma literature was not yet written, and sexual abuse-assault was just beginning to be acknowledged as causing psychophysiological consequences. At the time, it was unimaginable that clinical observations of an incident-specific group would one day link to neuroscience findings. Today, those clinical observations are known to be connected to brain function related to traumatic effects wherein conversion of image (internal to external) assists in trauma resolution through language translation (artistic to linguistic).

This paper reviews graphic forms integrated with posttrauma effects and reports on an empirical study based on data from the target group. Evidence from frequency distributions of distinct iconographic forms appearing across drawings was quantitated. Data were linked to an understanding of the psychophysiological effects of trauma. This paper also looks at the use of artmaking to assist in resolving traumatic effects. To reach resolution, trauma must be addressed within its incident-specific significance (Chapman, Morabito, Ladakakos, Schreier, & Knudson, 2001; Spring, 1986, 1988, 1993b, 2003).

The purpose of the study was to investigate, document, and quantify recurring graphic forms in drawings produced by an incident-specific group of women defined by a *category of experience.* The outcome was scientific discovery of an artistic language related to the incident-specific population. Research was structured to (a) investigate the impact of incident-specific experience on the production of artistic dialogues, (b) ascertain if recurring graphic forms were by-products of traumatic experience that results in chronic posttrauma symptomatology, (c) quantify frequency distributions of graphic forms appearing across drawings, and (d) determine if art therapy addresses the three critical factors necessary to process trauma. These factors are emotional engagement with traumatic memory, organization of trauma, and correction of dysfunctional cognition following traumatic events (Figley, 1985, 1986; Freud, 1896/1962; Hembree & Foa, 2000; Kardiner, 1959; van der Kolk, 1987).

The study hypothesis was based on two determinants: verified occurrence of sexual abuse-assault in childhood, adolescence, or adulthood; and lingering posttrauma symptomatology observed in the present. The function was to investigate the applicability of graphic forms to explore dissociated or undisclosed traumatic autobiographical memory. According to Freeman and Kimbrell (2001), traumatic autobiographical memory plays a significant role in PTSD: "It is unique. In no psychiatric illness does the recollection of traumatic past personal events play such a pivotal role in diagnostic classification and disease morbidity" (p. 106).

Drawings provided data. Although there were numerous recurring graphic forms, only the two most frequently observed were measured: disembodied eyes and wedges (triangular, angular shapes). This decision was based on the enormity of variables and limitations placed on the research. Doctoral research results were evaluated by the

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Fielding Institute with Rudolph Arnheim as the outside evaluator. Results of the study were reported at the 1987 annual conference of the American Art Therapy Association in Miami, Florida (Spring, 1987) with subsequent publication (Spring, 1988).

This study was not intended to define pathology nor to be an assessment. A five-drawing series (visual dialogue) was used to explore past personal events (experience). The intention was to provide a visual method to assist in exploring possible cause and effect based on current behavior and symptomatology when etiology is unknown or undisclosed.

> The relationship of sexual abuse-assault and PTSD explored through symbolic communication is viewed as an external visual statement of the internal emotional state being experienced by the victim following the traumatic event, and remains in the present regardless of when the event occurred. (Spring, 1988, p. 5)

Recurring Graphic Forms

Premise of Graphic Forms Link to Neuroscience

According to Arnheim (1974), "Form is the visual shape of content; patterns…validly interpret experience by means of organized form" (pp. 46-47), and "visual shapes influence one another" (p. 97). Symbolic forms in the context of reflecting traumatic experience retain holding power to condense effects (content) and symbolize symptom clusters, memories, sensation, affect, cognition, and perceptions. This is a process of knowing on a sensory level. Sensory knowledge combined with image formation becomes the *message* received by the victim-artist. The victim-artist subsequently engages in image conversion to interpret and translate artistic form to linguistic form to find essential meaning (Chapman et al., 2001; Spring, 2001b). The process unites sensory knowledge with symbolic logic. In turn, the process links patterns and relationships within art expression. The linkage influences and elucidates what is known through nonverbalized, *unsymbolized*, kinesthetic-optical, imaginal-emotional, and sensory-perceptual elements (intrinsic memory). When elements are translated into linguistic form (explicit memory), the action of translation becomes the permissible operation upon the symbolic material (Brown, Scheflin, & Hammond, 1998; Spring, 2003).

Disembodied Eyes

Stylized, disembodied eye shapes are distinct (Figure 1). The form can include tears or eyebrows in wedge form. Disembodied eyes may be single elements, clustered, or spread across a drawing. Eye forms are not usually superimposed on each other and may exhibit a scatter pattern or be superimposed on other forms. An example of placement can be found in an article by More et al. (2002, p. 116). Disembodied eyes suggest emotional response to traumatic events, particularly guilt, which may or may not be acknowledged. Content may include perceptions of sin and punishment related to religious beliefs, watching, being watched, hypervigilance, sadness, or grief. Participants linked these forms to responses that align with known emotional posteffects related to PTSD symptoms.

Wedges

Triangular, angular shapes (Figure 2) designate action or motion and may curve or twist. Wedges may be single or multiple, superimposed on one another, spread across a drawing, or placed in parallel fashion. Intersecting, crossing lines may denote confusion and create clusters of wedges. Overlapping patterns may convey a quality of incompleteness with absence of a closed form expressing a movement toward freedom by the pressure of entrapment. Wedge forms suggest behavioral responses related to posttrauma effects, particularly threat. Wedges are often drawn in red or black; red may be superimposed on black as though anger is attempting to obliterate threat. Content includes active dynamics of fear, anger, confusion, and conflict. The meaning of the wedges, described by participants, links to behavioral posteffects of traumatic experience related to PTSD (Arnheim, 1974; Spring, 1988, 1993a).

Disembodied Eyes and Wedges Together

Combinations of disembodied eyes and wedges in the same drawing (Figures 3 and 4) suggest symbolization of

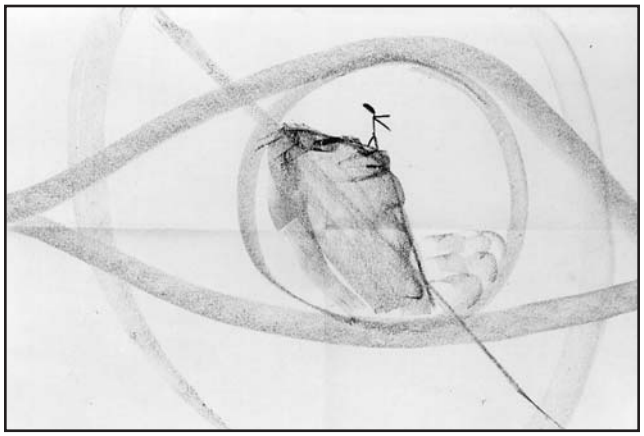

Figure 1 Disembodied Eye

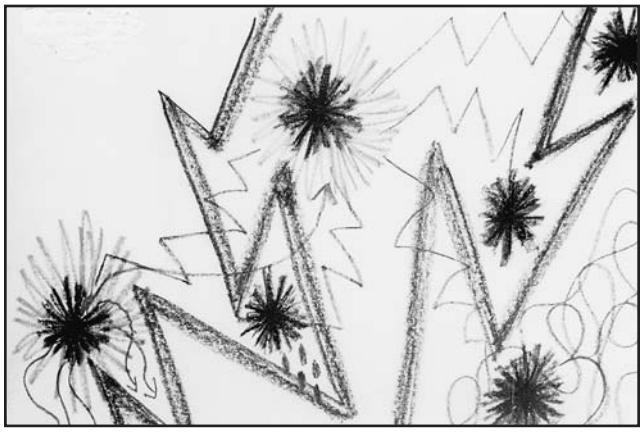

Figure 2 Wedges

combined psychophysiological and behavioral response. Combinations suggest the primary range of symptomatology in both acute stress disorder and chronic PTSD (Solomon & Siegel, 2003; Spring, 1985, 1986, 1993b, 2001b). Combinations of wedges and disembodied eyes together often appear in fragmented, abstract compositions showing cage or jail-type structures, or forms that divide space to form visual barriers (Spring, 1985, 1986, 1994). Barriers indicate divisions, suggesting separation and detachment or, as van der Kolk (1987) notes, "a walling off of distress" (p. 7).

As described by participants, configurations of wedges and disembodied eyes together, combined with symbolized content of both forms, suggest fragmentation of memory and cognition, helplessness and entrapment, and threat and guilt. Configurations provide visual interaction between affect and behavior. Combined forms link to psychophysiological and behavioral responses initiated by the original sexual abuse-assault to generate posttrauma arousal in the present and expose lingering symptomatology.

The Empirical Study

Problem Statement

> In the U.S., recent epidemiological surveys show that even lower bound estimates of PTSD place it as the single most prevalent seriously impairing anxiety disorder among women in the population. (Brunnello et al., 2001, p. 1)

Whether a victim tells or not, the violent crime of rape, long-term perpetration of incest, or repeated acts of sexual molestation create similar traumatic experiences with resultant poststress, acute stress disorder, and possible development of PTSD. Often the experience, the trauma, and the posteffects go unnoticed or unidentified for lack of verbal disclosure. This can be due to dissociation, fragmented memory, and dysfunctional cognition (Bremner, 2002; Herman, 1992b; Spring 2001b, 2003; Summit, 1983; van der Kolk, 1987). On the other hand, a sensory-driven memory directs visual expression of unsymbolized elements to create incongruency between visual and verbal narratives (Brown et al., 1998). Victims' dissociated memory, intentional silence, strategy to guard secrets, or decision to conceal private reality often blocks access to discovery, proper diagnosis, or effective treatment (Blake-White & Kline, 1985; Brodyaga, Gates, Singer, Tucker, & White, 1975; Brunnello et al., 2001; Burgess & Holmstrom, 1974; Dickinson, deGuy, Dickinson, & Camdib, 1998; Donaldson, 1987; Freeman & Kimbrell, 2001; Miller, 2000; Solomon & Siegel, 2003; Spring, 1988, 1993b, 2001b, 2003; Zimmerman & Mattia, 1999).

Childhood sexual abuse-assault may not be revealed until adulthood due to its intimate nature and shame. When forcible rape is reported to law enforcement, it is listed second to murder by the FBI. Sex crimes are documented by local law enforcement then reported to the FBI. No similar reporting method exists for incest due to differing definitions and variance in state laws. Not until 1996 did the U.S. Department of Justice begin to identify whether sex offenders were a family member, someone known by the victim, or a stranger (Snyder, 2000).

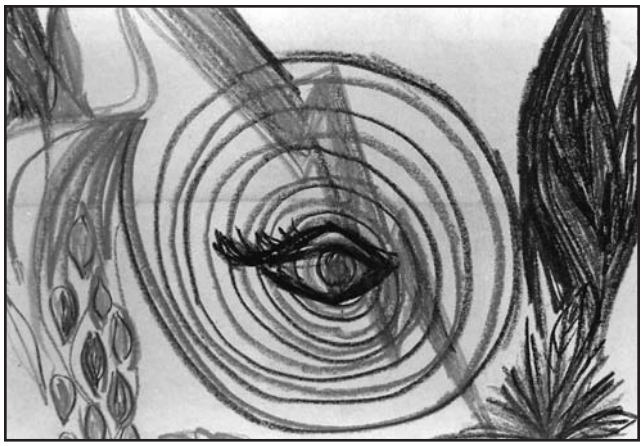

Figure 3 Wedge and Eye Together

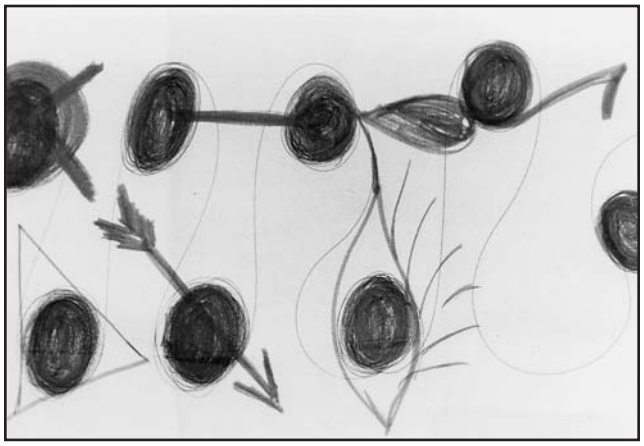

Figure 4 Wedge and Eye Together

Offender typology is described in three categories: child molesters, rapists, and serial rapists with different modus operandi. Offender typology plus crime patterns affect victims' willingness to disclose experience. According to many authors, sex crimes are generally misunderstood by society, rape in particular. Moreover, society's attitudes become a strong influence, not only on victims' disclosures but also on posttrauma effects and treatment (Abel, Becker, Murphy, & Flanagan, 1981; Amir, 1971; Bohmer, 1974; Groth, Burgess, & Holmstrom, 1977; Groth, 1979; Snyder, 2000; Stuart & Greer, 1984; Stuart, 1981; Warren, Reboussin, & Hazelwood, 1995).

In the context of the problem statement, the purpose of the research was to determine if the frequency distribution of two distinct graphic forms across visual dialogues reached statistical significance. If frequency of occurrence reached statistical significance, then specific recurring distinct forms would be applicable to sexual abuse-assault being probable in a woman's autobiographical history, remaining undisclosed but intruding on the present. Identification of a category of experience could explain or have bearing on current symptomatology. This theory is particularly relevant to undisclosed childhood sexual trauma and

forced spousal sex. Accurate diagnosis is compromised or undermined, and treatment is ineffective without an accurate basis for symptomatology in view (Blake-White & Kline, 1985; Brunnello et al., 2001; Miller, 2000; Spring, 1988, 1993b, 2001b, 2003; Zimmerman & Mattia, 1999).

Questions Considered

A systematic structure was designed to study one main and three subsidiary questions relevant to the formation of artistic language produced by an incident-specific population. The structure includes knowledge of inherent problems related to disclosure, society's views, offender typology and patterns, criminal justice procedures, psychophysiology, neurological and cognitive impairment, and lifelong consequences.

Main Question

Does a relationship exist between the occurrence of sexual abuse-assault, the resultant posttraumatic stress, and artistic language that appears in drawings of the incident-specific population?

Subsidiary Questions

1. Do women who experience sexual abuse-assault use a particular artistic language to reflect the category of experience?
2. What is common to drawings produced by women known to have experienced sexual abuse-assault that is *not* common to drawings produced by women who did not experience sexual abuse-assault, other abuse, a psychiatric disorder, or a life-threatening accident or illness?
3. Is there a difference in frequency of occurrence of graphic forms (wedges and disembodied eyes) in drawings of sexually abused women and women not sexually abused?

Method

Participants

All victim participants experienced rape as an adolescent, an adult, or both. No victim was raped under age 13. All victim participants (ages 21-45) were verified victims of sexual abuse-assault, diagnosed with PTSD. Thirty women comprised two groups of 15: Group R (rape only) and Group M (multiple sexual abuse). Group R participants reported no history of sexual abuse prior to rape. Group M participants disclosed multiple sexual abuse-assault as follows: Sixty-seven percent reported incest before age 13; 27% reported multiple sexual abuse as adults with no remembered sexual abuse prior to age 13; and 6% reported sexual molestation by various offenders other than family members before age 13. Victim participants were from two states and two separate areas within each state to determine if geographical location was a factor. Participants were referred by law enforcement, community mental health, substance abuse rehabilitation centers, jail release programs, and victim-witness programs.

Group C (controls) were 15 women (age 21-45) selected from a group of 98 respondents, matched to the marital status and education level of victim participants. Advertisement for controls was through a local newspaper. Controls were from an ordinary community of 100,000 population. Prior to selection, controls participated in three screenings and completed three self-reports. No control participant was known to have experienced sexual abuse-assault, other abuse, a psychiatric disorder, or a life-threatening accident or illness.

Materials

The source of evidence was 225 original drawings completed by each participant as a directed, sequential five-drawing series, defined as a visual dialogue. Victims executed 150 drawings and controls executed 75 drawings. Prior to beginning the drawing series, all participants completed a self-report designed to capture posttrauma symptomatology. The self-report included 50 behavioral and affect items related to seven response patterns of PTSD.

Procedure

All participants completed an identical five-drawing series. No drawing title referred to sexual abuse-assault, trauma effects, specific emotion, action, behavior, or circumstance. Drawings consisted of a self-portrait concept, "This Is Me, I Am," (one at the beginning and one at the end for comparison). The three middle drawings were designed to capture how participants viewed their space in relation to the world, "My Space"; autobiographical history, "My Life's Road"; and perception of and relation to family, "My Family and Me." Following completion of each drawing, discussion was audiotaped.

Raters

Three art therapists in different geographical locations were selected as raters to count disembodied eye and wedge forms in each of the 225 drawings. Raters were blind to group divisions and hypothesis. An anticipated problem was continuous use of projection by art therapists. This concern was built into the research design as a known influence. The problem did occur with one rater related to eye forms; this was considered an error of observation. Although the error affected the eyes-alone category, it did not affect overall symbol analysis.

Results

Treatment of Data

Raw data were recorded according to participant ID number, drawing identification (A-E), group designation (R, M, and C), and rater ID number. Both a symbol analysis and a drawing analysis were performed. Analysis of vari-

Table 1 Symbol Analysis: Eyes Plus Wedges

		Drawings									
		A		**B**		**C**		**D**		**E**	
Group	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Rape [R]	15	5.09	3.52	4.49	3.84	5.73	3.34	4.73	3.53	6.91	3.73
Multiple [M]	15	6.24	3.93	6.00	4.95	6.87	3.31	5.49	3.92	6.51	4.03
Control [C]	15	2.91	2.51	2.11	2.14	2.73	3.49	2.36	2.86	2.40	2.72
ANOVA - Between Subject Effect - Group: $F(2, 42) = 10.42$, $p < 0.01$											

Table 2
Drawing Analysis: Number of Drawings with Eyes Only, Plus Number of Drawings with Wedges Only, Plus Number of Drawings with Both Eyes and Wedges

		Raters					
		1		**2**		**3**	
Group	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Rape [R]	15	4.33	1.18	4.53	0.74	3.47	1.25
Multiple [M]	15	4.47	1.06	4.13	1.46	4.07	1.33
Control [C]	15	3.20	1.52	2.67	1.40	2.20	1.15
ANOVA - Between Subject Effect - Group: $F(2, 42) = 10.48$, $p < 0.01$							

ance (ANOVA) using Wilkinson's (1980, 1986) Multivariate General Linear Hypothesis and Post Hoc Tests on groups was employed and raters determined frequency distributions of distinct graphic forms. An alpha level of .05 was used for all statistical tests.

Analyses

Scores for each graphic form were analyzed to determine frequency of occurrence between and across groups. Scores for wedges alone, wedges plus eyes, and wedges and eyes together were significantly different between victim groups and the control group. Eyes-alone scores did not reach a level of statistical significance but indicate victim groups produce more disembodied eyes than controls. Controls produce more *normal* placement of eyes than victim groups. Drawings were scored to determine number of drawings containing recurring graphic forms; scores reveal 96% interrater reliability. The average for all raters shows significant separation for use of distinct forms in each drawing, and for the number of drawings containing these recurring forms for each group.

Findings are based on statistical analysis of the five-drawing series. Means from each group were compared to determine if the occurrence of each graphic form was statistically different between groups. Statistical analyses indicate that regardless of type of sexual abuse-assault, victim groups express posteffects in a similar fashion through a visual *code system* of distinct, recurring graphic forms. Controls exhibit no recurring graphic forms; absence was designated as zero. Lack of traumatic experience leads to generic compositions. Nonvictims have no reason to code communication to express a trauma-specific category of experience; there is none.

Symbol analysis (Table 1) determined the frequency distribution of graphic forms in each drawing. Significant statistical difference is revealed in frequency distributions between Groups R and M and Group C. Mean scores for Groups R and M were significantly higher than those for Group C. Table 1 shows increased production of graphic forms between Drawings A and E for Groups R and M, but a decrease for Group C. The decreased result for Group C supports the absence of a traumatic history for controls. Elevated results suggest emotional engagement with a traumatic memory for victim groups. This result may be influenced by different foci for Groups R and M (past) and Group C (present).

Drawing analysis (Table 2) determined the number of drawings in each of the three groups that contained distinct graphic forms. The most frequently observed pattern in victim drawings was disembodied eyes and wedges together in the same drawing. Table 2 shows a higher frequency distribution of recurring distinct forms across drawings for Groups R and M than across drawings for Group C. Mean scores for Groups R and M were significantly higher than those for Group C.

Groups R and M used less normal eye placement, such as two correctly placed eyes in one face, and drew fewer people than Group C. Groups R and M tended to use one disembodied eye or multiple disembodied eyes entangled or commingled with other forms. When eyes were placed in faces, either open or closed, these tended to dominate the face. Groups R and M used more combinations of dis-

embodied eyes and wedges together than Group C, while producing more abstract or fragmented compositions. When wedges or eyes appeared in controls' drawings, they were displayed in a manner designating logical use of those forms as part of an organized visual narrative.

Group C drawings contain more normal eye placements, thus revealing a higher eye count than victim groups. Although not disembodied, some eye forms were drawn with a stylized quality or styled in a comic fashion to enhance a visual statement. This detail often confused raters. In contrast, Group C produced fewer wedge forms in individual drawings than victim groups. Based on analysis, when triangular or wedge forms appear in controls' drawings, they are a different style from those produced by victims. The wedge forms have less intensity and are appropriately placed within logical context of the visual statement.

Drawing analysis of visual dialogues across Group C shows expression of current, varying life experiences. Controls make generic visual statements directly related to a variety of personal experiences rather than a category of experience. Groups R and M focus on past experience and traumatic posteffects remaining in the present. Analysis reveals a relationship exists between sexual abuse-assault and a specific symbolic communication produced only by Groups R and M. No incident-specific experience defined by distinct graphic forms is found across Group C.

Results address the study questions to support the following: (a) a relationship exists between sexual abuse-assault with resultant PTSD and an artistic symbolic language; (b) artistic language reflects a category of experience; (c) recurring common graphic forms used by victims are not used by nonvictims; and (d) significant statistical difference exists in the frequency distribution of wedges and disembodied eyes between women who experienced sexual abuse-assault and women who did not. Current understanding of the neurological base of traumatic effects, and trauma integration assisted by artmaking, supports the outcome of this study. The art therapy modality addresses the three critical factors necessary to process trauma.

Discussion

The concept of a five-drawing series as a visual dialogue was initiated when the study began in 1973. Post-analysis supports the importance of consistent visual dialogues created over a period of time. Visual dialogues capture the consistency of recurring graphic forms, give shape to content, identify patterns, and provide knowledge about the influence of visual shapes on each other and the influence of experience on art expression.

The original theoretical base considered that artmaking binds image to experience as stress binds to trauma. Binding processes function as nonverbal communication while forms retain holding power to condense effects by symbolizing symptoms, sensations, affects, and perceptions (Arnheim, 1974). The process of binding and holding in art expression results in the translation of artistic form to linguistic form through retrocognition. Artmaking assists in integrating traumatic effects through the bilateral stimulation of brain hemispheres and synthesizing visual and verbal narratives into coherent traumatic autobiographical memory (Chapman et al., 2001). This theory resonates with recent neuroscience research on trauma and the range of psychological disorders related to stress. Bremner (2002) refers to these as "trauma spectrum disorders."

In keeping with the concept that artmaking, a kinesthetic activity, serves as a neurological stimulant to activate the limbic system, the production of an artistic symbolic language is supported as being reasonable. However, an open-ended question about the choice of particular graphic forms persists. Supposition is that disembodied eyes and wedges are ancient symbols used worldwide. Wedges (e.g., pyramids) link to power, and disembodied eyes link to sin and punishment related to religious beliefs (e.g., guilt, eye of God). Interestingly, during an international art therapy conference in Taiwan, this author and colleagues viewed art expression by Taiwanese women known to have experienced sexual abuse-assault; they used identical disembodied eye and wedge forms to symbolize incident-specific posteffects of trauma (Spring, 2001a). This observation of drawings by Asian and Western women suggests a familiarity with universal symbols that follows Meares' (1957) definition of universal symbols.

Speculation on linkage to universal symbols appears relevant to the content of symbolic forms produced by victim groups. Drawings by Groups R and M suggest a link to guilt, threat, power of the offender, powerlessness of the victim, and a desire to acquire power and control over traumatic experience. Although specific types of sexual abuse-assault did not statistically differentiate, frequency distribution of forms in individual drawings points to different types of sexual abuse-assault incidents. Symbol analysis (Table 1) indicates a spike in the production of eyes and wedges for Group M in Drawing C (autobiographical history). Findings show this spike was caused by increased production of disembodied eyes linked to guilt influenced by repeated incest. Cumulative trauma included combinations of incest, molestation, and rape. This finding links to symbolized ongoing guilt caused by repetitive trauma (Herman, 1992a). In contrast, Table 1 shows a spike for Group R in Drawing E (self-portrait, end of drawing series). Findings show this spike was caused by the increased production of wedges. This result links to symbolization of threat and lingering fear related to "return of the rapist," an expressed concern across this victim group.

Increased production of disembodied eyes across Group M and increased production of wedges across Group R suggest differences in levels of guilt and threat felt in the present. These affects, symbolized by form, relate to specific experience that influences art expression in individual drawings used in this study. Group R reported feeling continuously threatened; Group M reported feeling continuously guilty. Although findings between Groups R and M do not reach statistical significance, indications are strong that levels of guilt and threat are differentially significant to victims of different types of sexual abuse-assault.

These indications support clinical knowledge about guilt and threat related to different types of sexual trauma.

Dynamics of abuse are connected to cumulative trauma caused by repetitive incest that connects concepts of sin and punishment to religious beliefs. Guilt related to incest is distinct; the family offender is known and trusted (Herman, 1992a, 1992b; Hess, 1982). Incest is likely to be repetitive as access to child victims is unrestrained; hence, offenders may abuse one individual frequently or abuse numerous victims infrequently.

Rape associates with sudden, unexpected attack. Rape victims define guilt as related to "not knowing better," lack of strength to protect against or stop the attack regardless of circumstance, and helplessness to overpower the offender or escape. Guilt may be linked to circumstances, rapist typology, or modus operandi. Rape is generally a one-time event, but has exceptions such as spousal rape, multiple offenders, and incidents occurring at different ages or times by different offenders.

The results of this research are probably generalizable to the general population when disembodied eye and wedge forms consistently recur across generic drawings. Findings can be interpreted as probability that dissociated memory related to traumatic autobiographical material remains unsymbolized, not at a conscious level, or not yet translated to linguistic form. "Trauma must be brought into awareness and put into perspective [otherwise] …repressed material will return in the form of intrusive thoughts, reenactments, or disruptions in emotional functioning" (van der Kolk, 1987, p. 7).

Clinical observations along with neuroscience findings and this empirical study combine to support artmaking as important to neurological function during integration of traumatic effects. Findings indicate symbolic content in art expression is significant to integration processes. Wedges appear directly linked to posttraumatic stress and threat. This interpretation is based upon the frequency distribution of wedge forms in drawings across victim groups and other studies that link wedge forms to threat. These studies include Leonard, Rothberg and Sieden (1984) on cystic fibrosis; Rhyne (1979) on mind states and directed drawings of "threatened"; and Siden and Rosenthal (1987) on adolescents, sexual abuse, and graphic indicators. In the context of image formation connected to threat, Kris (1952) contends, "Imagination tries to cope with threat, fantasy arises in part as a defense against danger" (p. 350).

The nature of secrecy related to sexual abuse-assault, coupled with threat related to exposing secrets, suggests the formation of an intraphysic mechanism for developing a nonverbal coding system free from detection by outsiders. How that phenomenological mechanism forms is unknown. Because victims are customarily the only witness, a type of creative intelligence may prompt this population to phenomenologically devise and use graphic forms to express unsymbolized internal chaos.

Freud (1896/1962) suggested the existence of a symbolic communication system. After execution and release of symbolic language, a significant nonverbal dialogue is relayed, then translated at a verbal level. "Symptoms can only arise with the cooperation of memories…that, according to unanimous accounts of patients themselves, these memories did not come into consciousness at the moment when the symptom first made its appearance" (Freud, p. 197). Unhealed memories attach to artistic symbolic language through neurological function. The image becomes the *message,* the art expression becomes the *sender;* the victim-artist becomes the *receiver* who translates the message into linguistic form (Langs, 1983; Spring 2001b).

Some drawings across Groups R and M exhibit a regressive drawing style not found in Group C drawings. Regressive artwork, combined with the observed regressive behavior of adult victims, may logically refer to developmental arrest that occurred at the traumatic moment in childhood or adolescence (Hagood, 2000; Herman, 1992b; Waites, 1997). Children do not ordinarily recognize sexual acts by relatives or friends immediately as taboo; the connection may not be made or accepted until adulthood. Hence, formation of a symbolic language may be exhibited in a regressive, repetitive-compulsive style as observed in some visual dialogues. The manner in which images are exhibited may be attempts to find emotional relief through symbolic communication (Fliess, 1973; Freud 1896/1962; Langs, 1983).

Artistic symbolic language may appear spontaneously without conscious awareness of its meaning or antecedent. Use of repetitious graphic forms often aligns with repetitive-compulsive behavior patterns frequently exhibited by this population. This type of behavior is observed in treatment as reenactment or emotional protection, as well as armor to insulate and guard secrets. In addition to coded messages, other protective strategies include emotional numbing and dissociative processes.

> [Dissociation]…allows the original distress to be walled off, while leaving the patient with a tendency to react to subsequent stress as if it were a recurrence of the trauma. The patient experiences the emotional intensity of original trauma without conscious awareness of the historical reference. (van der Kolk, 1987, p. 7)

Implications

This research, based on years of direct clinical observation, was the first statistical validation to provide evidence that victims produce a visual language not produced by nonvictims. The result was the discovery of a clinical instrument to be used to investigate the possibility of dissociated or undisclosed specific trauma experience.

A natural or human-initiated current traumatic event, superimposed upon existing PTSD caused by specific trauma, can compound response. Cumulative trauma causes complex psychophysiological effects and behavior to create lifetime consequences in some cases with neurological dysfunction that may not respond to current treatment protocols (Herman, 1992b). Differentiation between acute stress disorder and existing PTSD is a consideration not to be ignored.

When childhood sexual abuse remains dissociated or undisclosed, a subsequent rape will aggravate existing symptomatology (Briggs & Joyce, 1997). When existing symptoms are exacerbated by a current traumatic event (e.g., dis-

aster), the condition is intensified. Without identification of prior traumata, it may erroneously be assumed that development of PTSD is linked to a current event rather than already being in existence (Freedy, Shaw, Jarrell, & Masters, 1992). Development of PTSD is *not* a normal adaptation to trauma; it develops over a period of time (Bremner, 2002; O'Donohue & Elliott, 1992; Spring, 1993b, 2003; Tierney, 2000). Prior traumata must be identified if effective treatment is to be achieved; effective trauma treatment is incident-specific. Although dissociation is part of posttrauma effects, the complexity of maladaptive dissociation is not completely understood, and integration of traumatic effects is not always possible.

> Dissociation is defined as a coping mechanism or psychic defense, which blunts emotional distress often creating amnesia for traumatic events. When it is prolonged, outside acute traumatic response, it is considered maladaptive. Dissociative symptoms represent hidden phenomena that may go unrecognized and teaches about state-related conditions during trauma under which specific learning takes place. (Spring, 2001b, p. 165)

Study Informs Theory

Thousands of evidentiary drawings were viewed during the 30-year study of this incident-specific population. From all data collected during the study, a theory evolved for using artmaking in trauma treatment. The primary consideration was the nature and specificity of traumatic effects caused by sexual abuse-assault and the reflection of those in victims' art expression. Not only are acts deliberate, but they are also personal and isolated. Sexual abuse-assault trauma cannot occur without purposeful, direct contact with invasion of the body in some form by an offender. The single element that binds this incident-specific group to a category of experience is abusive, nonconsensual sexual contact, the only trauma of its kind.

> Artmaking serves as a neurological stimulant for converting Kinesthetic-optical, Imaginal-emotional, and Sensory-perceptual elements to Speech within a natural altered state of consciousness (*KISS*). This process symbolizes form as content to visually express effect of intrinsic and extrinsic experience on individuals. (Spring, 2003, p. 72)

KISS is an organizing principle, considered as an explanatory structure applicable to integration of trauma, specifically *intimate* trauma. It has pertinent relevance to the use of artmaking as bilateral stimulation of brain hemispheres. Artmaking is a conversion of image through sensory components leading to the interpretation of symbolic form through verbal narrative; it fills in or rearranges autobiographical memory as means to *make sense out of experience* (Spring, 1993b, 2003). The result is integration of traumatic effects created by a "visual, nonverbal narrative that is translated to a coherent linguistic narrative" (Chapman et al., 2001, p. 102).

The KISS theory is probably generalizable to integration of traumatic effects whenever artmaking is used in treatment. The use of art in trauma treatment addresses visual-spatial-cognitive connections that change how information is processed in the brain (Bremner, 2002; Chapman et al., 2001; Solomon et al., 2003). The enduring quality of traumatic effects is directly related to the function of events and the distinct individual manner in which trauma is experienced. This theory relates to the conversion of unsymbolized sensory knowledge to symbolized visual form, which is not dependent on external circumstances. Traumatic effects, dependent on external circumstances (events), are condensed, held, and represented by recurring distinct graphic forms. Conversion occurs through the collaborative activity of brain hemispheres. Kinesthetic, neurological interaction brings meaning to experience through complex integrative processes, a "language of images" (Read, 1960, p. 156).

Conclusion

The research reported in this paper shows identification of a *category of experience* that links specific trauma and present symptomatology through bilateral stimulation of brain hemispheres using artmaking. Investigating the possibility of undisclosed experience is relevant to effective treatment and trauma resolution. The study outcome points to the importance of individual experience within an incident-specific population as reflected in art expression. According to Anderson (2001) and Hagood (2002), documenting observations, rather than making assumptions or relying on projections, is vitally important to research. Production of a coded system as symbolic communication used by other incident-specific populations might be considered.

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