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Articles

Experiences with Bilateral Art: A Retrospective Study

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Abstract

Recent advances in neuroscience describe the effect of experience on neural architecture. Paralleling these advances in neuroscience, recent explorations in the field of art therapy speculate on the relationship between specific therapeutic interventions and neuroplasticity, which underlies the changes in neural architecture. One such intervention, bilateral art, purposefully engages both left and right hemispheres of the brain, as well as multiple sensory systems, in responding to client-identified conflicted elements of experience. This paper summarizes experiences using bilateral art over an eighteen-month period with individuals at a university family therapy center. The bilateral art intervention was applied to a range of presenting problems including relationship issues, depression, anxiety, and trauma. Outcome measures include client-reported scalings, as well as client-reported and/or therapist-observed changes in behavior over time. Additionally, this paper presents indicators for the use of bilateral art an as intervention, as well as contraindications for its use.

Introduction

Recent advances in neuroscience describe the effect of experience on neural architecture (Cozolino, 2002; Kandel, 1985; Schore, 1997, 2000; Siegel, 2001a, 2001b). From this perspective, one goal of therapy is to provide experiences that alter or augment an individual's neurobiology. Paralleling these advances in neuroscience, recent explorations in the field of art therapy speculate on the relationship between specific therapeutic interventions and neuroplasticity, which underlies the changes in neural architecture (Chapman, 2002, 2003; Malchiodi, 2003; Malchiodi, Klorer, Chapman & Riley, 2004; McNamee, 2003, 2004a, 2004b; Riley, 2004). These explorations include theoretical speculations on underlying neurological processes, as well as neurologically informed interventions and clinical case studies providing preliminary evidence of the effectiveness of these interventions.

One such intervention, bilateral art, is described in detail by McNamee (2003, 2004a). The bilateral art intervention purposefully engages both left and right hemispheres of the brain, as well as multiple sensory systems, in responding to client-identified conflicted elements of experience. Positive and negative thoughts associated with the element of experience are associated with left and right hands for responsive drawings and tactile explorations by opposing hands. The goal of the protocol is to facilitate integration of both positive and negative thoughts and to strengthen the client's belief in the positive thoughts.

This paper summarizes the author's experiences using bilateral art with twelve individuals over an eighteen month period at a university family therapy center. The bilateral art intervention was applied to a range of presenting problems including relationship issues, depression, anxiety, and trauma. Outcome measures include self-reported scalings of strength of beliefs or feelings associated with the identified conflict, as well as self-reported and/or therapist-observed changes in behavior over time. Indicators for the use of bilateral art as an intervention, as well as contraindications for its use are discussed.

Rationale

Gazzaniga (1998a, 1998b) has written extensively on the structure and function of the brain, particularly the functions of the two hemispheres of the cerebral cortex—the left hemisphere associated with language and speech and the right hemisphere associated with visual-motor activities. More recently, researchers have described the presence of experience-dependent memories embedded in our neural network architecture, providing a continuously evolving personal neurobiology (Cozolino, 2002; Kandel, 1985; Schore, 1997, 2000; Siegel, 2001a, 2001b).

Art therapy has long been regarded as a modality that integrates left and right hemispheric activity (Nucho, 1987; Silver, 2001). It has been used as a modality for language impaired populations and for children who are often more comfortable with right brain activities than language. Addi-

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tionally, art therapists have argued for the "visual voice" of the right brain in highly verbal, left brain dominated populations as well (Rubin, 2001; Cappachione, 2001). The right brain's visual thinking facilitates self expression and personal growth. This paper summarizes experiences using an art therapy protocol, first proposed by Cartwright (1999) and enhanced by McNamee (2003, 2004a, 2004b), that explicitly seeks responses from both the left and right hemispheres for the purposes of integrating and balancing polarized beliefs, cognitions, or feelings.

One hypothesis for the use of bilateral art is that it serves to perturb maladaptive neural organization. This hypothesis is consistent with Cozolino's (2002) view of the need to integrate and balance the experiences and memories embedded in the neural architectures of the various parts of the brain, including the specialized right and left hemispheres.

Bilateral Art Protocol

This section provides a brief description of the bilateral art protocol and an example of its use with a young female client. The bilateral art protocol engages both dominant and non-dominant hands in the creation of images in response to polarized beliefs, cognitions or feelings. Additional details are provided in McNamee (2003, 2004a, 2004b).

1. Identify a focus; an event or experience and conflicting elements associated with the experience, typically positive and negative.
2. Scale the strength of belief in each of the opposing elements using a scale of 1-7 where 1 means this element is "not true at all for me" and 7 means the element is "completely true for me."
3. Associate dominant and non-dominant hands with each of the conflicting elements of experience. Decide which "wants" to be "drawn" first.
4. Draw in response to first element.
5. Draw in response to second element with the opposite hand.
6. Trace/explore drawings with opposite hands one at a time.
7. Trace/explore both drawings with hands together.
8. Re-scale the strength of belief in each of the opposing elements using the scale described above.
9. Reflect using narrative and/or drawing.

The following example demonstrates the application of the protocol in a session with Barbara, a young college student, who presented with symptoms of chronic post-traumatic stress disorder. She had experienced extended periods of time during her childhood where her life was in danger. Separated from her family of origin at the age of 14, she had a successful academic career and social life. Current experiences that were reuniting her with her family of origin were bringing the early trauma to attention and caused her to seek therapy. Her treatment included 28 sessions over a period of seven months. Bilateral art interventions were used in three of these sessions and one of her drawings is included here as an example of the technique.

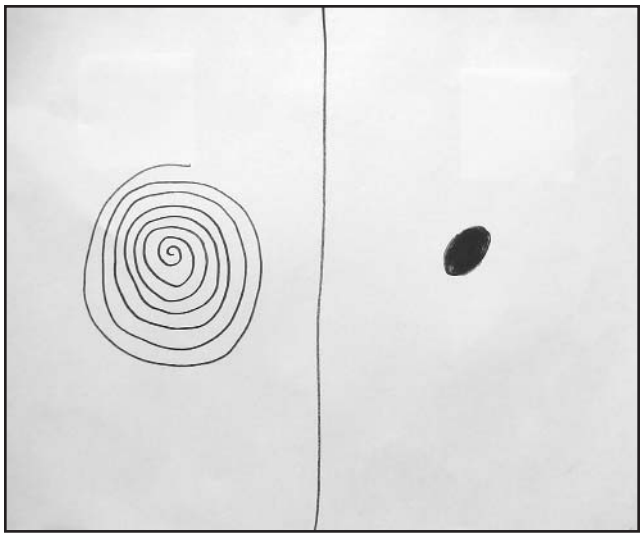

Figure 1 Barbara's bilateral art drawing with positive element "it is good to be patient, to give myself time" on the left and negative element "I want this done now" on the right

Barbara's second use of bilateral art occurred in session eight when she presented with extreme impatience with the therapeutic process and herself. She wanted to be "fixed now." Appealing to her highly developed intellect, we contrasted the lengthy duration of her trauma with the short amount of time she wanted her therapy to take. She acknowledged the truth of the situation but was still intent upon wanting to be "done now" and bilateral art was used with this issue to see if it could help Barbara be more at peace with the process. Barbara identified "it is good to be patient, to give myself time" as her positive belief and "I want this done now" as her opposing negative element. The bilateral art drawing in Figure 1 shows Barbara's response to the negative element, drawn first, on the right, and her response to the positive element on the left. In a session the following week, Barbara reported that she could "appreciate giving [herself] time."

Results

A retrospective review of clinical records revealed twelve different adults had used the bilateral art protocol on a total of 31 different occasions during an eighteen month period at a university family therapy center where the protocol was applied to a wide range of presenting problems (McNamee, 2004a). This review considered change in pre- and post-intervention strength of beliefs in the positive and negative elements that were a focus of the bilateral art protocol, handedness, color selection, and, most importantly, observed and/or reported changes in behavior. Because the images appearing in the bilateral art drawings were responses to highly individual elements, no content coding was attempted. The following sections summarize the results of this review.

Table 1
Strength of belief in opposing positive and negative elements pre- and post-bilateral art intervention by case, changes in pre- and post-intervention values, means, and standard deviations

	Number of interventions scaled	Scaling positive element		Scaling negative element		Positive element scaling change	Negative element scaling change
		Pre	Post	Pre	Post		
Individuals							
Case 1	3	5.5	5.5	5.5	1	0	-4.5
		3.5	5	6	2	1.5	-4
		5	5	8[a]	6	0	-2
Case 2	0	-		-		-	-
Case 3	0	-		-		-	-
Case 4	1	4	5	3	2	1	-1
Case 5	3	4.5	6	7	6	1	-1
		1	3.5	7	6	2.5	-1
		6	7	7	4	1	-3
Case 6	1	3.5	5.5	4.5	2.5	2	-2
Case 7	1	6	7	5	3	1	-2
Case 8	2	3	5	5	3	2	-2
		2	6	7	1	4	-6
Case 9	1	7	7	2	1	0	-1
Case 10	1	2	7	6	2	5	-4
Case 11	1	5	6	4	2	1	-2
	1	3	5	5	2.5	2	-2.5
Case 12	1	5	6	6	3	1	-3
Total	16						
Mean		4.1	5.7	5.5	2.9	1.6	-2.6
StDev		1.7	.98	1.6	1.7	1.4	1.4

Note. Scale is 1 to 7 where 1 means element is "not true for me at all" and 7 means element is "completely true for me."
[a] Client unable to respond within requested 1-7 scale.

Comparison of Pre- and Post-Intervention Scaling

Only 16 of the 31 intervention instances were scaled, a consequence of the evolving nature of the intervention. Thus, in considering questions associated with scale values and changes in scale values, only the 16 scaled intervention instances are used.

Pre- and post-bilateral art intervention scale values from 1-7 for the 16 scaled instances are shown in Table 1. The strength of belief in the positive element remained the same or increased in all 16 intervention instances and increased in 13 (81%) of the 16 instances. More significantly, the strength of belief in the associated negative element decreased in all 16 (100%) of the intervention instances.

Additionally, the results, shown in Table 1, indicated that the mean strength of belief in the positive element post-intervention (M = 5.7, SD = .98) was greater than the mean strength of belief in the positive element pre-intervention (M = 4.1, SD = 1.7). The mean difference between the post- and pre-intervention 7-point scale values for strength of belief was 1.6 points, although there was significant overlap in the distributions, as shown in the box plots in Figure 2.

Similarly, the results, shown in Table 1, indicated that the mean strength of belief in the negative element post-intervention (M = 2.9, SD = 1.7) was less than the mean strength of belief in the negative element pre-intervention (M = 5.5, SD = 1.6). The mean difference between post- and pre-intervention 7-point scale values was -2.6 points, although there was significant overlap in the distributions for the two scalings, as shown in the box plots in Figure 3.

Additionally the results, shown in Table 1, indicated that the magnitude of the mean change in the strength of belief in the positive element (M = 1.6, SD = 1.4) was less

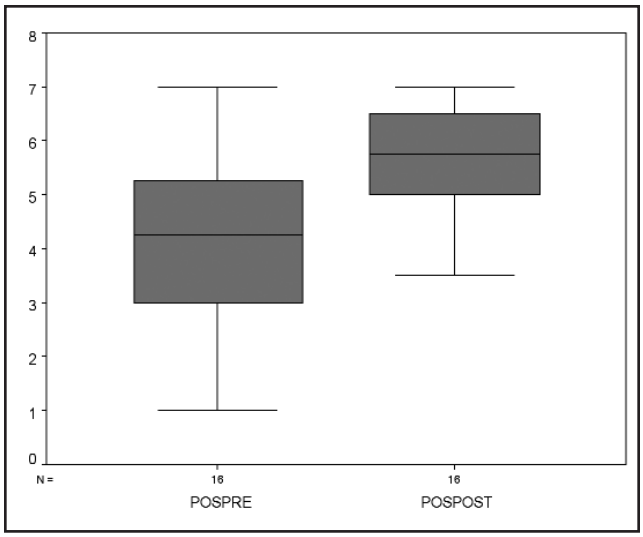

Figure 2 Distribution of pre and post intervention scalings of strength of belief in the positive element.

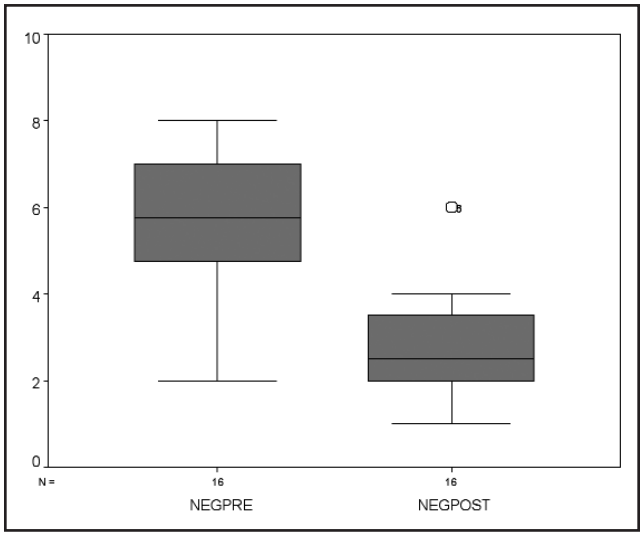

Figure 3 Distribution of pre and post intervention scalings of strength of belief in the negative element.

than the magnitude of the mean change in the strength of belief in the negative element (*M* = -2.6, *SD* = 1.4). The mean difference between change in the strength of positive and negative elements was -1.0 points, although there was significant overlap in the distributions for the two measures, as shown in the box plots in Figure 4. This result is congruent with the investigator's intuitive belief that the negative beliefs represented more distorted viewpoints and that a client's strength of belief in the distorted element would change more than the belief in the more logical positive element.

Handedness and Association with Positive and Negative Elements

The review of case records revealed that of the 12 individuals, 11 were right handed and one was left-handed. While this sample's ratio of right to left-handedness is consistent with that of larger populations, it is certainly not sufficiently large to consider the relevance of handedness.

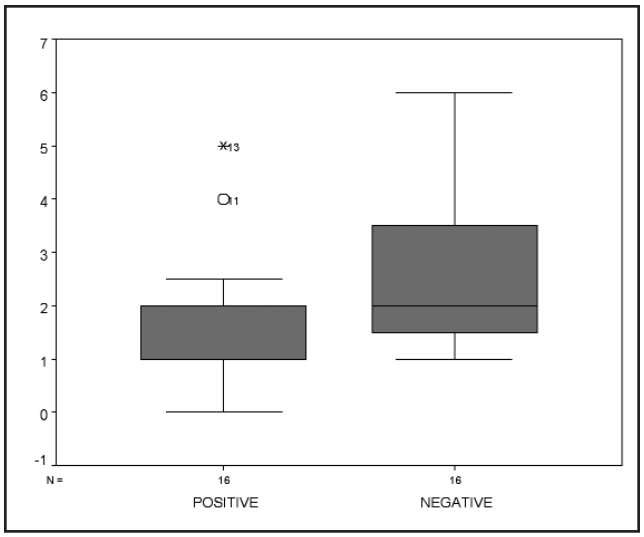

Figure 4 Distribution of changes in scalings of strength of belief in opposing positive and negative elements.

Additionally, of the 31 intervention instances, the positive element was associated with the dominant hand 14 times and with the non-dominant hand 17 times, reflecting a reasonably balanced distribution. The client in Case 1 with nine intervention instances was the only client who might reveal a significant preference for association of positive and negative elements with dominant or non-dominant hand. However, preference is balanced for that client, just as it is for the entire group.

Comparison of Positive and Negative Element Color Selections

While the discussion of change in scalings provides evidence of intervention effectiveness, this section's discussion of color selection serves as a form of data triangulation. Color and content of drawings are reflective of the element being expressed and provide confidence that the artwork did, in fact, reflect the identified positive and negative elements. As mentioned earlier, content was not coded due to the varying nature of the expressed elements. However, color selections for positive and negative element responses for all 31 intervention instances were identified. In cases where more than one color appears in the art work, they were recorded in order of dominance (as perceived by the investigator) and the most dominant color is used for coding purposes.

Table 2 provides frequency distributions of color selections for response to positive elements. It is perhaps not surprising that 42% of the positive responses used blue (22.6%) and green (19.4%). Blue/light blue and green are both colors that are often associated with serene, happy mood states. Adding black (19.4%) and red/pink (12.9%) into the mix covers 73.3% of the positive responses. It is worth noting that of the positive responses using black (6), 50% used black for the corresponding negative response.

Table 2
Frequency distribution of positive element color selections

Positive Elements		
Colors	**Frequency**	**Percent**
Lt blue/blue	7	22.6
Green	6	19.4
Black/gray	6	19.4
Red	4	12.9
Flesh	2	6.5
Purple	2	6.5
Yellow	2	6.5
Brown	1	3.2
Orange	1	3.2
Total	31	100

Table 3
Frequency distribution of negative element color selections

Negative Elements		
Colors	**Frequency**	**Percent**
Black/gray	11	36.7
Purple	5	16.7
Red/pink	5	16.7
Brown	4	13.3
Blue	2	6.7
Green	1	3.3
Flesh	1	3.3
Yellow	1	3.3
Total	30	100

Similarly, of the positive responses using red (4), 50% used red for the corresponding negative response. Because this study relies upon case notes, it is not possible to determine if the protocol was implemented in such a way that the client was able to avoid making a second selection.

Table 3 provides frequency distributions of color selections used in response to negative elements. Similarly, it is not surprising that 83.4% of the negative responses used black/gray (36.7%) purple (16.7%), red/pink (16.7%), and brown (13.3%). Black, purple, and brown are often associated with negative, depressed mood states and red is often associated with angry, aggressive mood states (Malchiodi, 1998; Furth, 2002).

Tables 2 and 3 clearly illustrate the differences in frequency of color sections for expression of positive and negative elements.

Observed and Reported Changes in Behavior

While the change in self-reported scalings reported above may provide some indication of effectiveness to therapists and/or researchers, the important measures of effectiveness of clinical interventions are changes in behaviors. Case notes were reviewed for evidence of observed or reported changes in behavior. This review revealed observed and reported behavioral changes along several dimensions, including change in affect, change in physical appearance, cessation or reduction in the number of complaints relevant to the elements addressed in the bilateral intervention, change in relational interactions, change in functioning and finally, change in the pre- and post-intervention drawings depicting the focus of the intervention. Table 4 provides a summary of these observed changes. With the exception of Case 1 where bilateral art was a primary treatment modality, and Cases 10, 11, 12 where the only intervention used was bilateral art, bilateral art was just one of several treatment approaches and the reported and observed changes are undoubtedly due to many factors. Thus, while most of these individuals reported and demonstrated improved functioning, only changes relevant to the elements addressed in the bilateral art interventions are included in the summary in Table 4.

The individual in Case 1 manifested several of these indicators. Following the individual's second session using bilateral art, she presented with brighter affect, increased energy, and was more kempt, and following her third bilateral art session she had returned to work part-time. She also manifested a cessation of complaints associated with some of the elements of her bilateral art activities. For example, the "I am defective" complaint that was a focus of her first intervention did not resurface during the remainder of our work. Other elements, such as self-care, recurred although an increase in self-care activities was reported.

The individuals in cases 2, 3, 4, 5, 7, and 8 all exhibited a cessation of complaints associated with the elements of their bilateral art activities. Additionally, the individuals in Cases 2, 5, and 8 reported improvements in their relational interactions. The individual in Case 2 reported improved interactions with her roommates following her third bilateral art drawing, which focused on a relational difficulty. The individual in Case 5 reported improvements in relational interactions following a bilateral intervention focused on setting limits with her daughter. In the session following the intervention, she reported being able to set limits more consistently and that her daughter's behavior had improved. This improvement was also observed in subsequent family sessions.

The individuals in Cases 5 and 8 both reported improved functioning. For example, the individual in Case 5 struggled to leave her children to go grocery shopping or even to take a walk around the block. In the week following the bilateral art intervention focused on this difficulty, she reported leaving her children with her spouse to go the grocery store, not just once, but twice in the same day.

The assessment of change in Cases 10, 11, and 12 used pre- and post-intervention drawings depicting relationships that were the focus of the bilateral art intervention. Detailed descriptions of the use of pre- and post-intervention drawings with the bilateral art protocol applied to relationships

Table 4
Observed and reported changes in behavior and drawings in clients using the bilateral art intervention

Case	Observed/reported changes
Case 1	Brighter affect (observed) More kempt (observed) Improved functioning (reported)
Case 2	Cessation of complaints associated with element addressed using bilateral art Improved relational interactions (reported)
Case 3	Cessation of complaints associated with element addressed using bilateral art
Case 4	Cessation of complaints associated with element addressed using bilateral art
Case 5	Cessation of complaints associated with element addressed using bilateral art Improved functioning (reported) Improved relational interactions (reported and observed in family sessions)
Case 6	Improved relational interactions (reported)
Case 7	Cessation of complaints associated with element addressed using bilateral art
Case 8	Cessation of complaints associated with element addressed using bilateral art Brighter affect (observed) Improved relational interactions (reported)
	Improved functioning (reported)
Case 9	None
Case 10	Change in drawing of relationship
Case 11	Change in drawing of relationship Change in drawing of relationship
Case 12	Change in drawing of relationship

are provided in McNamee (2004b). In all four instances, the change in the content of the drawings is significant.

Indicators for Use of Bilateral Art

Appropriate application of the intervention is as important as effectiveness. Initially, indicators for the use of bilateral art were "gut-level" responses to client presentations of polarities that they struggled to resolve. This was particularly true of the client in Case 1 where it was used nine times. As work with the technique progressed, this "gut-level" response became more transparent.

It appeared that bilateral art was most appropriately applied to situations where the individual expressed a cognitive awareness or belief but struggled to "feel" the truth of the belief—he/she believed "in their heads but not their hearts." There was a need to integrate the individual's cognitive awareness with his/her felt awareness.

Three patterns emerged from the review of the cases. In the first pattern, the individuals presented with disconnects between their cognitive or logical awarenesses and their actions or feelings. It would often look like "I know this to be true in my head, but not in my heart—I don't feel it." In the second pattern, individuals articulated their dialectical tension directly. It often looked like "I feel like this but I want to feel differently." In the third pattern, the individuals presented with a distorted belief and no apparent dissonance. In this case, the individual received help identifying an opposing positive, non-distorted belief to use in the bilateral art intervention. The application of bilateral art in both Cases 6 and 9 matched this pattern and in both cases the technique was felt to have failed to accomplish its intended purpose, although in both cases the experience was not a therapeutic failure: Perhaps the fact that these individuals did not initially identify their positive beliefs indicated that the positive elements were not sufficiently resonant. The bilateral art intervention's requirement that the client respond to the positive element was thus not possible. Perhaps alternative treatments that increase awareness of the positive element will be required before the bilateral art intervention is used.

Research and Clinical Implications

There are limitations to what can be claimed. This effort reflects the development of bilateral art protocols and initial experiences using these protocols. These experiences are provided by a retrospective review of clinical records. The number of clients and the range of their presenting problems is a function of their random assignment to clinicians and thus reflects a typically diverse agency client population. Similarly, the specific clients with whom the bilateral art interventions were used was a reflection of the therapist's response to both the client and the client's particular presenting problems. Thus, the results described in this paper are those of a scientist-practitioner, rather than those of the scientist directing a controlled study. The protocols were dynamic and evolving as can be seen with the

introduction of a scaling process half-way through one client's treatment.

This body of work provides evidence of effectiveness of bilateral art as a therapeutic intervention. In seven of the eight individual cases, behaviors following the intervention were more congruent with the positive elements than with the distorted negative beliefs holding their behaviors hostage prior to the intervention. The post-intervention drawings in Cases 10-12 using the relational bilateral art protocol reflect similar evidence of more integrated positive views of the focus of their interventions. Even in Cases 6 and 9, which did not serve to integrate polarized elements, the intervention provided insight and increased client awareness, hardly a therapeutic failure. Bilateral art may serve to integrate a client's cognitive or logical knowing with more emotional "felt" knowing. The results argue for controlled studies to further evaluate the effectiveness of the intervention.

Finally it is important to note that while current research describes in a limited way the relationship between experience and neural architecture, it is only possible to speculate on the possible relationship between the bilateral art intervention and any perturbation of neural architecture. For now, change in behavior will have to suffice.

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