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The Effect of Paranormal Healing on Tumor Growth

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Abstract — Four experiments are reported in which professional paranormal healers treated groups of rats with an implanted malignant tumor. The results of all experiments, with one exception in the third experiment, point to an effect of the healer's treatment, expressed as effect-size. In the third experiment healer 1 was more successful than healers 2 and 4 combined when treating female rats: the difference in mean survival-time is significant ($p < 0.01$). In the fourth experiment a significant difference in mean survival-time was found between the distance healing group and the control group ($p < 0.05$) as well as between both treated groups and the control group ($p < 0.05$). In the first experiment a solid tumor was used, weight being the dependent variable. In the other three experiments an ascites tumor was used, survival-time being the dependent variable. It is suggested that the possible effects of direct healing, when combined with gentling (cuddling), cancel each other out causing a non-significant result. One healer seemed to be responsible for the positive results obtained for his group of female rats (experiment 3) in which four healers cooperated. The most interesting results, represented as effect-size of the treatment, were found when the distance healing method was used, which, from an experimental point of view, is the least confounding method. It is suggested that future research be a combination of several healing methods.

Introduction

In The Netherlands, with a population of over 15 million citizens and an estimated 1000 paranormal healers, each year over 2 million patient contacts are made. It has been calculated that a patient receives, on average, at least 25 treatments (Maassen van den Brink, Oort and Vorst, 1986), after which 60–80% (self)report an improvement in their sense of well-being (Bakker, 1969; Cassee, 1970; Strauch, 1958, 1960; Attevelt, 1981). About 80% of a healer's patient population consists of people with chronic diseases from which they suffer for at least 5 years (Snel & Millar, 1984). These patients are mostly convinced that, after treatment, something has changed for the better. When medically examined, however, no physical improvement(s) could be objectively established (Richmond, 1946; Rose, 1954; Strauch, 1958,1960). Attevelt (1981) made an inventory of the illnesses with which people in The Netherlands visit professional paranormal healers. From his study it appeared that less than one percent (30/3200) were patients with cancer. In the Dutch population in general, 25% of the yearly deaths are caused by this disease. Why do people with cancer not consult a paranormal healer more often? Nu-

merous arguments can be put forward, but five of the most obvious ones are: (1) patients themselves have lost heart and family and acquaintances have accepted, as inevitable, that the illness will be fatal; (2) nearly all human patients with cancer are treated in hospitals by specialists until they have run out of possibilities to arrest a tumor's growth and/or spreading; (3) sometimes a patient's physical condition has deteriorated to a stage that does not allow him to travel to a healer's practice; (4) a number of healers do not treat people with cancer; they either feel that they cannot overcome or influence a tumor (growth), or they are afraid of the confrontation with a patient having a terminal disease; (5) the disease is fatal too quickly (too little time for a healing effect) or healing does not affect cancer.

Only two studies comparable to the research reported here have been published. Elguin & Onetto-Bachler (1967) and Onetto & Elguin (1966) reported on the effects of psychokinesis on tumor-growth in mice. The pilot study with nine animals was successful: The experimenters found a difference between the experimental and control group (no further information is given about the pilot experiment). This positive result motivated a larger study with 60 mice in two experimental groups and 30 in the control group. The healer was asked to stimulate tumor-growth in the first experimental group and to try to inhibit tumor-growth in the second group. The dependent variables in this study were tumor-weight, tumor-surface and tumor-size. No differences were found between the experimental and control conditions. The data, however, show a significant difference between both the experimental conditions, but the authors do not discuss this. The second published study is by Snel & Van der Sijde (1990-1991) concerning five experiments in which the influence of non-healers on the increase of weight-gain is discussed. Healing is simulated by 'gentling' (cuddling animals with the intention to be 'nice' to them), as opposed to 'handling' (picking the animals up and putting them back in their cages with no intention whatsoever). In the experiments with healthy animals (experiments 1, 2 and 3) a significant difference was only found in the second experiment: handling resulted in more weight-gain than gentling. In the second series (experiments 4 and 5) we reported on the effects of gentling and handling with sick rats (who had received a tumor by injection) by non-healers. A significant difference between handling and gentling was found in the fourth experiment, but only for the female rats.

The results of these studies are mixed. From a general review of 131 studies with psychokinesis and healing, Benor (1990) identifies 77 studies with a positive effect. He concludes his review with the observation that if paranormal healing were a medicine, it would be accepted on the basis of that evidence. But since the 'medicine' of paranormal healing seems to be able to cure almost anything in a mysterious way, we need to know more about the mechanisms of different methods of healing.

Here we report on four experiments designed to investigate whether a professional paranormal healer can influence malignant tumor cell growth. To avoid the (probably unconscious) aversion to treating patients with cancer,

and to eliminate subjective influences and impressions of patients, we conducted a series of experiments with animals. Several (combined) methods of healing were investigated: direct healing (with the intention to heal; the healer is allowed to touch the cages, but not the animals), distance healing (no contact with cages or animals, only a photograph) and gentling (the healer is allowed to touch and cuddle the animals) (Snel & Van der Sijde, 1988-1989).

Hypotheses

In experiment 1 we studied the effect of direct healing on tumor-growth. We expected the tumor in the experimental condition to weigh significantly less than the tumor in the untreated control condition. In experiment 2 the effect of direct healing together with gentling on female rats was studied. Gentling, defined as cuddling, stroking and giving close attention to subjects for a defined period of time (resulting in 'better' health and more 'resistance' to disease), can be considered as a facet of healing (Snel & Van der Sijde, 1988-1989). Our hypothesis was that rats that are treated and gentled would survive for a longer time than the rats in the untreated control group. In experiment 3 the effect of distance healing on larger groups of rats was explored. We hypothesized that overall the rats in the experimental groups should live longer than those in the untreated control groups. Secondly, based on the outcome of experiment 1 (and results obtained earlier, Snel & Van der Sijde, 1988-1989), we expected the treated male rats to live significantly longer than the untreated control male rats. Thirdly, based on the outcome of experiment 2, we expected to find if not a significant difference, at least a positive effect-size in survival-time in favor of the female experimental groups. In experiment 4 two methods of paranormal healing are compared: direct healing together with gentling and distance healing, both groups being compared with an untreated control group. The hypotheses for this experiment were: (1) there is no significant difference in survival-time between the direct healing plus gentling group and the control group; (2) rats in the distance healing group should live longer than the rats in the direct healing plus gentling group; (3) distance healing, as the least confounding of healing methods, has a positive effect on survival-time (rats live longer) when compared with the untreated control group.

Materials and Methods

Experimental Animals

The rats in all experiments were matched for age, weight and sex before randomization. Details of the number, sex and age of the experimental animals in the four experiments are presented in Table 1 (see also note 1).

Macrolon cages were cleaned, bedding (wood shavings) refreshed (and the animals therefore handled, which consists of taking the animal up and returning it into the cage) by a professional animal caretaker not otherwise connected with the experiments. Room temperature at the healers' homes (19.4 + 1.2

C) and at the laboratory (19.9 ± 1.1 C) were recorded daily during the experiments; they did not differ significantly.

TABLE 1

Exp. No.	Rat Strain	number	Sex	Mean Age in Days on Day 0	Treatment Days
1	A x C	21	male	182 ± 3.0	31
2	Lewis	12	female	167 ± 1.6	35
3	Lewis	118	male/female	42 ± 2.0	33
4	Lewis	18	male	203 ± 4.0	35

Details of Experimental Animals of Four Experiments

Healers

The healers were contacted by telephone by the first author who knew about their interest in working with animals in an experimental condition. All healers participated voluntarily. Experiment 1: a professional male healer 55 years of age. He is interested to try his 'healing gift' on animals with a malignant tumor. Experiments 2 and 4: one professional female healer, age 37. She is very interested in experimental work with animals. Experiment 3: four professional male healers between 35 and 50 years of age. They lived from 25 to 70 kilometers from the laboratory. All were very keen to participate in research with animals.

Tumors

Two different tumors were used. Experiment 1: the rat hepatoma cell line Reuber H35 (Pitot et al. 1964) was cultured as a monolayer in Dulbecco's modified Eagle's medium buffered with 25 mM HEPES at pH 7.4. Fetal calf serum (Flow Laboratories) was added to a final concentration of 5%. Stock cultures were grown at 37 C until subconfluency and screened routinely for Mycoplasma (Hana Media Inc., California). Cells were trypsinized (0.05% trypsin, 0.02% EDTA) and innoculated in appropriate numbers into six 25 cm' flasks containing Leibowitz (L15) medium (Flow Laboratories) supplemented with 10% fetal calf serum (Schamhart et al.,1984). The cells were harvested after 3 days (200–300 x 10^6 cells), washed twice in serum free medium, centrifuged (1 minute, 1000 g) and resuspended in serum free medium to a concentration of 30 x 10^6 cells per ml. The rats received 0.5 ml of the suspension subcutaneously in the left side. Experiments 2, 3 and 4: the experimental tumor used in these experiments was the same as described earlier (Snel & Van der Sijde, 1988-1989). Briefly, the tumor is an ascites tumor which is passed on intraperitoneally. Ascites is collected, washed and diluted to a 0.05% suspension. Each rat received 0.5 ml of the suspension by intraperitoneal injection on day 0 at 07:00 h.

Procedures

Experiment 1: The rats were randomly divided into 3 groups. Group 1 (control condition) consisted of 6 rats; the animals received an injection with NaCl and remained in the laboratory. Group 2, the experimental control condition, consisted of 9 rats; they were injected with the tumor cells and remained in the laboratory as well. The remaining 6 rats in group 3, the experimental condition, were injected with tumor cells and placed at the home of the healer in two cages with 3 rats each on a table in the middle of the room. The healer was asked to try to prevent the development of the tumor. He treated the rats once a day from day 3 for 31 days through direct healing, at his own chosen time for ± 10 minutes. All rats were sacrificed on day 36, the tumor dissected and weighed. Tissue samples of lungs, liver, spleen, kidneys and the tumor were fixed in 4% buffered formaldehyde and embedded in paraffin-wax, cut in 5 mm sections and stained with haematoxylin-eosine according to standard laboratory practice.

Experiment 2: The rats (from a larger pool) were injected and randomly divided into two groups of 6 rats. The experimental group was treated with direct healing and gentled; the control group was neither treated nor gentled. Both groups were located at the healer's home in the same room. The rats in the experimental condition were treated by the healer once a day (minimum 10 minutes per rat) at her own chosen time. Rats that died during the night were supposed to have died at 07:00 h in the morning.

Experiment 3: All rats (from a larger pool) were injected with the ascites tumor (at 07:00 h) on day 0 and randomly divided into 10 groups by a laboratory technician not connected with the experiment (Table 2). A photograph was made of each group. The rats remained in the laboratory during the experiment.

The experimental and control groups were randomly assigned to a healer by a person otherwise unconnected with the experiment. The experimenters were blind with respect to which group belonged to which condition. Experimental groups were treated from distance by the healers using the photograph of his target group beginning at day 1; they were asked to try to increase the survival-time. One healer treated two groups (healer 1; he wanted to try to treat one

TABLE 2

	Experimental number	Control number	Sex
Healer 1	12	12	Male
Healer 1*	12	12	Female
Healer 2	12	12	Female
Healer 3	11	11	Male
Healer 4	12	12	Female

Division of rats into groups. Experiment 3.
Additional information about the mean weight of the rats (day 0) is presented in Table 3.
*Treated by the healer from day 0.

TABLE 3

	number	Weight in gm (s.d.)	t-test
Experimental Males	23	146.8 (13.4)	$t_{44} = 0.61$
Control Males	23	144.5 (12.3)	p 0.55
Experimental Females	36	103.2 (13.6)	$t_{,,,} = 0.24$
Control Females	36	103.2 (13.4)	p 0.79

Mean Weight of Male and Female Rats in Grams (Day 0), Experiment **3**

group immediately after the randomization on day 0 to see whether his results would be better for this group than for the group he treated from day 1). The rats were treated once a day at the healers' own chosen time for as long as they thought was necessary. Rats that died (scored by an animal caretaker not connected with the experiment) during the night were supposed to have died at 07:00 h the next morning.

Experiment 4: The rats (from a larger pool) were injected with the tumor and randomly divided into three groups of six. Mean weight of all rats on day 0 was 388 ± 16.2 grams; there were no overall differences in weight between the groups (Kruskal-Wallis $H = 0.17$, $p = 0.92$) (Table 4). The rats in group 1 were treated by direct healing and gentled. The rats in group 2 were treated by distance healing. Group 3 was the control condition and these rats were not treated. All animals were located at the healer's home in one room, with several meters between the cages. The healer was satisfied that no contamination of groups could occur when treating. Rats that died during the night were supposed to have died at 0:700 h in the morning.

The experiment lasted 35 days (rats that did not die were supposed to have died on day 35; one animal in group 1 and two in group 2); the animals were treated once a day for about 10 minutes at a time convenient for the healer.

TABLE 4

	Weight in gm (s.d.)
Group 1 (Direct Healing + Gentling)	390.0 (19.8)
Group 2 (Distance Healing)	385. 8 (14.3)
Group 3 (Control)	388. 3 (16.9)

Mean Weight of Male Rats in Grams on Day 0, Experiment. 4.

Data and Data-Analysis

Experiment 1: The dependent variable in this experiment is tumor weight. The Mann Whitney *U* test was used to analyze the differences between groups (note 1). In addition the effect-size (E) of the treatment was calculated (E is defined as the difference of the mean value between the experimental and the control condition divided by the standard deviation of the control condition, and is used to identify trends). Experiment 2, 3 and 4: the dependent variable in these experiments is survival-time measured in days. The effect-size was calculated as described for experiment 1. Experiment 2: the difference be-

tween the conditions is assessed using the Mann-Whitney U test. Experiment 3: differences between the conditions were assessed using the Student t-test. Experiment 4: differences between the conditions were assessed using the Kruskall-Wallis test, while the comparison between two conditions separately were made using the Mann-Whitney U test.

Results

Experiment I: Gross findings: all rats in groups 2 and 3 had a subcutaneous tumor in the left side. Two rats in group 3 (experimental condition) had congenital defects: the first one did not have a left kidney and had a small left testicle; the second one was missing a right kidney and had a small right testicle. In group 2 (experimental control condition) one rat had a congenital defect: he did not have a right kidney and had a small right testicle.

Histology: all the rats with tumor (groups 2 and 3) showed non-immunological lymph node reaction, characterized by increased numbers of macrophages in the sinus system. LUNG: all rats (group 1 included) had a slight interstitial pneumonia. KIDNEY: three rats in the experimental control group (group 2) had cystic tubules in the kidneys, considered to be a congenital defect. TESTICLES: the testicles of the three rats mentioned above were small, without spermatogenesis. Only Sertoli cells were present. TUMOR: the nodules consisted of hepatoma tissue with various amounts of cell necrosis and hemorrhage. Hepatoma cells were growing around the blood vessels, ? 10 rows thick. There was an increase in capillary vessels and mitotic figures were prominent. Some of the tumors were encapsulated (non-infiltrating), suggesting slow expansive growth; in others the tumors partly infiltrated the capsule. The changing amounts of haematoma and necrosis in the tumor determined its size. No indication of spreading of the tumor to other organs was found.

The rats in the control condition (group I) did not (spontaneously) develop a tumor. Mean tumor-weight of the rats in the experimental control condition (group 2) was 6.11 grams (s.d. 4.84), while the mean tumor-weight for the rats treated by the healer (group 3) was 5.08 grams (s.d. 2.50). The difference in tumor-weight between groups 2 and 3 was not significant (MW – $U = 25$, $p = 0.58$). The tumors of the rats in the experimental condition (group 3) showed less infiltration through the capsule; the difference was not significant. The effect-size (E) of the treatment was 0.21. Experiment 2: the mean weight of the animals on day 0 in the experimental condition (218.3 ± 10.3 gram) and the rats in the control condition (219.2 ± 14.3 gram) did not differ significantly (MW – $U = 17.5$, p = 0.58). One rat in the experimental condition did not die and did not, over time, develop a tumor. The rats in the experimental group (n = 5) survived for 27.4 ± 4.6 days; in the control group mean survival-time was 25.5 ± 5.1 days. The difference in survival-time between the groups was not significant: MW – $U = 13.5$, $p = 0.44$. The effect-size is 0.37.

Experiment 3: of the 118 rats at the start of the experiment 76 died during the experimental period. The remaining 42 rats — 20 male and 22 female rats,

all with tumor — were sacrificed on day 34; the rats that survived the experiment did not significantly differ with respect to the conditions and the sexes (overall: $\chi^2_1 = 0.15$; male rats $\chi^2_1 = 1.39$; female rats $\chi^2_1 = 0.18$). The difference in overall mean survival-time in days between the rats in both conditions was not significant ($t_{,,} = .01, p = n.s.$). Mean survival-time for all the male rats in both conditions did not differ significantly ($t_{22} = 1.08, p = 0.29$); neither did the mean survival-time for the female rats between the conditions: $t_{50} = .92$, $p = 0.36$. (S). (Table 5).

TABLE 5

	number	mean (s.d.)	number	mean (s.d.)	E
Overall	39	23.4 (2.6)	37	23.4 (2.6)	0
Male	14	22.8 (2.4)	10	24.1 (3.6)	–0.36
Female	25	23.9 (2.7)	27	23.2 (2.1)	0.29

Mean Survival-Time in Days of all Male and Female Rats that Died, Experiment 3.

Healer 1 treated 12 female rats from day 0; healers 2 and 4 treated 12 female rats each from day 1. The differences in mean survival-time of the rats that died in the experimental and control groups of these healers are presented in Table 6.

TABLE 6

	Experimental			Control			
	number	Mean	(s.d.)	number	Mean	(s.d.)	E
Healer I	6/12	23.81	(3.49)	6/12	21.97	(2.45)	0.75
Healer 2 & 4	19/24	23.16	(2.50)	21/24	22.89	(2.40)	0.13

Mean Survival Time of the Experimental and Contol Groups (Female Rats) of Healers 1, 2 & 4

The effect-size of the treatment given by healer 1 is about six times larger than the effect-size of healers 2 and 4 combined. Further, 50% of the rats of healer I survived during the experimental period, while only 17% of the experimental rats of healers 2 and 4 survived in the same period (Table 2). This difference appears to be significant: $\chi^2_1 = 8.87$; $p < 0.01$. Healer 1 also treated 12 male rats from day I, as did healer 3. The differences in mean survival-time of the rats that died in their experimental and control groups are presented in Table 7.

The mean survival-time of the experimental rats from healer 1 is shorter, but not significantly so. However, 67% of the (male) rats of healer 1 survived during the experimental period, while only 27% of the experimental rats of healer 3 survived the same period (this difference is significant: $\chi^2_1 = 7.06$; $p < 0.01$). The effect-size of healer 1 is two times larger than the effect-size of healer **3.**

Experiment 4: There were no significant overall differences in survival-time between the conditions (Kruskall-Wallis $H = 3.53$, $p = 0.17$). The difference between groups 1 (direct healing and gentling) and 2 (distant healing)

TABLE 7

	Experimental			Control			
	number	Mean	(s.d.)	number	Mean	(s.d.)	E
Healer 1	5/12	22.23	(1.96)	3/12	25.40	(5.34)	−0.59
Healer 3	9/11	22.42	(2.07)	7/11	23.14	(2.63)	−0.27

Mean Survival Time of the Experimental and Control Groups (Male Rats) of Healers 1 & 3.

(MW – $U = 13$, $p = 0.27$) and 1 (direct healing and gentling) and 3 (control) (MW – $U = 11$, $p = 0.16$) was not significant either. The difference between groups 2 (distant healing) and 3 (control), MW – $U = 7$, $p < 0.05$, however, was significant. There was also a significant difference in mean survival-time between groups 1 + 2 (treated) and 3 (control): MW – $U = 18$, $p < 0.05$ (Table 8).

TABLE 8

Survival Time/Days	Mean	s.d.
Group 1 (Direct Healing & Gentling)	24.2	(5.8)
Group 2 (Distance Healing)	27.5	(6.7)
Group 3 (Control)	20.8	(1.3)

Between	*U*	P	E
Groups 1 & 2	13	0.27	0.6
Groups 1 & 3	11	0.16	2.6
Groups 2 & 3	7	0.05	5.2
Groups 1 + 2 & 3	18	0.05	3.8

Mean Survival Time in Days and s.d.; Differences Between Groups MW– *U* Test, Experiment 4.

Discussion

Experiment 1: In this experiment we chose to work with a solid tumor to investigate whether tumor-weight would make a useful clinical variable for parapsychological research. The results showed no significant difference between the conditions, and thus the hypothesis (the tumor weighs less in treated rats) was rejected. The standard deviation of the mean tumor-weight is rather large with respect to the mean. This is probably an indication that tumor-weight, for this particular tumor, is not a useful variable considering the small number of rats in this experiment (note 1). The healer did not, or could not, influence tumor-growth to the degree expected by him and by us. The healer was convinced that he had been able to prevent the tumor cells to grow; the same conviction was reported by Strauch (1958, 1960) in her studies with healers when humans were the subjects. The effect-size, however, indicates a 'result' in the expected direction ('hidden trend') when the dependent variables do not differ significantly.

Experiment 2: The rats in the experimental group lived for nearly two days longer, but the difference is not significant. It can be argued that direct healing and gentling are two treatments with an opposite outcome, which could be the

cause of the non-significant effect. The hypothesis (rats that are treated directly and gentled live longer) is rejected. The effect-size of the treatment is again, as in experiment 1, indicative of an effect on survival-time in the hypothesized direction.

Experiment 3: The first hypothesis (overall, rats in the treated groups live longer) had to be rejected. No overall differences between the treated and control groups (Table 5) were found. The second hypothesis (regarding the survival-time of the male rats) had to be rejected as well: the difference in survival-time between the treated and control male rats was not significant. In fact, the rats in the control condition lived 1.3 days longer ($E = -0.36$). The mean survival-time for all the female rats treated by the healers was longer than the mean survival-time of the control groups (0.6 days): the difference was not significant, but the effect-size of the treatment is positive. The third hypothesis (regarding the survival-time of the female rats) was confirmed: there was no effect of the treatment in the female groups for survival-time.

When the treatment effects between the healers are compared it appeared that the results of healer 1 were more successful than the treatment by the other healers, irrespective of the day (0 or 1) on which the treatment started. The group female rats (Table 6) treated by healer 1 lived longer than any of the other female groups; the male rats (Table 7) treated by him, however, lived for the shortest period (difference with healer 3 is 0.19 days). The effect-size for the treated male groups shows that they lived shorter. Healer 1, however, had significantly more surviving rats than all other healers combined. We have no rational explanation for this finding.

Experiment 4: No overall significant difference between the 3 conditions was found. There was no significant difference in mean survival-time between groups 1 (direct healing + gentling) and 3 (controls); the first hypothesis (no significant difference in survival time between groups) was therefore confirmed (there is, however, a large effect-size in favor of the treated group).

With respect to the second hypothesis, mean survival-time in group 2 (distance healing) is 3.3 days longer than the mean survival-time of group 1 (distance healing + gentling); the difference is significant in the hypothesized direction (with the effect-size in favor of distance healing). The second hypothesis is therefore also confirmed. There is a significant difference in mean survival-time, in the hypothesized direction, between groups 2 (distance healing) and 3 (control), as well as an impressive effect-size of the treated group.

The difference in mean survival-time between both the treated groups (1 + 2) and group 3 is also significant, with a large effect-size in favor of the treated groups. The mean survival-time in the distance healing condition suggests that a 'hands off' treatment by paranormal healers is more beneficial to subjects than the 'laying-on-off-hands.'

Concluding Remarks

In the four experiments we reported on in this paper three different types of general hypotheses (not formally stated) were explored. The first hypothesis was "healing has an effect on the dependent variable in favor of the treated animals." We were not able to confirm this hypothesis in experiments 1 and 2. However, a positive trend, in the shape of a small effect in favor of the treated groups, was found. In experiment 3 a similar outcome for the mean survival-time of the experimental female rats was found (but not for the male rats), together with positive effect-sizes for some healers. A significant difference in favor of the combined groups of treated animals in experiment 4, together with (huge) positive effect-sizes are a further indication for the trend identified. Reliable, robust effects are notoriously hard to come by in parapsychological research; effects are usually (very) small. Based on the results described above it seems plausible to suggest that an effect of paranormal healing in living systems can be found particularly within the standard deviation ('noise') of a measurement. The effect-size appears to be an appropriate and useful tool.

A derivation from this hypothesis is "healing has an effect on the dependent variable for the treated male animals." In experiment 1 we found a positive trend; in experiment 3 a negative one; and in experiment 4 a significant difference in favor of the male rats. It is therefore conceivable to hypothesize that paranormal healing has an effect on male animals. A second derivation from this hypothesis is "healing has no effect on the dependent variable for the treated female animals." Based on the results of experiments 2 and 3 (positive trends) it is plausible to hypothesize that paranormal healing also has an effect on female animals.

The second hypothesis was "One method of paranormal healing has better results than another method." We explored this hypothesis in experiment 4: Distance healing was shown to be a better method than direct healing together with gentling. The trend identified supports this hypothesis. In a previous study we explored the effects of handling and gentling, and in this study we combined direct healing only with gentling. If a superior method of paranormal healing exists, the combination with handling should also be explored.

The third hypothesis was "Some healers obtain better results than other healers." We explored this hypothesis in experiment 3. It appeared that one of the healers (healer 1) obtained far better results than the other healers. The occurrence of this phenomenon is a well known fact, but why and how do paranormal healers differ? This study does not answer this question, but studies to investigate this question further have been initiated (e.g. Snel & Van der Sijde, 1994).

In the introduction we mentioned five possible reasons why (some) healers do not treat patients with cancer. One of those reasons refers to the anxiety of healers when confronted by patients with this disease. Distance healing alone would probably overcome the (possibly unconscious) resistance of some healers to treat patients with cancer. However, patients traditionally visit a healer

in his practice and are generally treated with direct healing, which is not always supplemented with distance healing (via a photograph). Direct healing is the preferred method of treatment used by healers. Patients with cancer could probably benefit more from distance healing as the main form of treatment, supplemented by occasional direct healing sessions. A healer then remains in personal contact with his patient without being confronted too often with the disease. The (self)reported improvement in the patients' condition is of significant importance to healers as professionals. The results described in experiments 1 and 2 (the effect-sizes point to a small effect) indicate that direct healing is an important healing method for patients as well, which could account for the improved feeling of well-being of the healees. Nevertheless, it is essential to be aware of the normal values and ranges of the parameters used (clinical measurements) and to be able to distinguish between normal and paranormal effects (Snel & Van der Sijde, 1990-1991). For future research with human subjects we suggest the exploration of the different combinations of healing methods: distance healing together with direct treatment, direct treatment and handling and distance healing together with handling.

Note 1

All experiments described were part of ongoing research in the laboratory. The animals used in our experiments are the 'surplus' of other experiments, which were to be sacrificed. Experiments, reviewed by the IRB, are carried out under strict ethical guidelines to meet the criteria set by the government and the ethical committee. Rats used are inbred strains for at least 70 generations and genetically identical. Consequently, the use of smaller numbers of animals in these experiments is deemed sufficent and ethically responsible.

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