The effects of pets on schizophrenics in a day treatment program

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THE EFFECTS OF PETS ON SCHIZOPHRENICS
IN A DAY TREATMENT PROGRAM

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Date
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ABSTRACT

In an effort to record the therapeutic effects of animals, three rabbits were introduced into a group therapy setting. Eight subjects (two female, six male) having the diagnosis of schizophrenia, chronic type and participating in a day treatment program were observed by four trained observers. Two observers recorded ten behaviors with the Behavioral Observation System and two observers scored observable psychotic behaviors on the Psychotic Inpatient Profile and adjustment on the MACC Behavioral Adjustment Scale. A reversal design was used which consisted of four phases: Phase 1 - baseline, Phase 2 - treatment, Phase 3 - treatment removal, Phase 4 - treatment. Each phase consisted of five days, with a two hour group each day. Results showed that during the treatment phases, both the frequency and duration of passive entertainment (observing the rabbits) as well as the frequency of active entertainment (interacting with the rabbits) increased significantly while the duration of nervous mannerisms decreased significantly. One subject (initially communicative) responded favorably on 14 out of the possible 24 measures. Additionally, five of the seven subjects decreased their seclusiveness during the treatment phases.
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DEDICATION

Reetsie:

Thank you for holding on. You fought long and hard with much courage and determination. I have learned much from you. Rest now.

I love and miss you.

Good-bye Mother
ACKNOWLEDGEMENTS

There are many people to whom I am grateful for their contributions. Cornel Ormsby, in the Psychology Department lab, who created the panels for the Esterline Angus Event Recorder. Ann Neimeyer, the Psychology Department secretary, was always receptive to my many questions and saved my neck a few times. My advisor, Dave Lutz, who gave me much help and guidance from beginning to end. The remaining two committee members were Lynda Warren who planted the seed for my research and Al Thomas who opened the door for me to work in the day treatment program and continued to trouble shoot for me.

During the data collection and analysis process, there were seven individuals who worked as research assistants. Kathy Peterson and Kelly Taylor helped score an enormous amount of data; Pamela Renk then helped to plot it. In addition to scoring the data, Dave Begin, Shelly Begin, Cara Forth, and Evelyn Haggard had the exhausting job of collecting the data. All of them were competent and dedicated and due to their creativity and determination, the study was successful. I also appreciate their kindness and warmth in their dealings with the day treatment patients.

The New Day staff was quite accommodating in the changes that took place during the seven weeks of the study.
Special thanks go to the day treatment patients who were willing to trust us all and risked letting us into their lives. I felt honored to share some of the beautiful moments with the patients during the therapy hours.

However, for me, the most important people during this time have been my family. My children, Jason and Hilary, helped to socialize and care for the rabbits while exhibiting a great deal of patience and understanding. My husband, Del Morris, was a true friend who had an overabundance of love and comfort. He was always willing to listen or help whenever he was asked. His concern helped to keep me alive, healthy and sane.
INTRODUCTION

Many theories have been proposed as to why animals have been domesticated. The most popular and enduring theory is the one which hypothesizes that the dog, and later the cat, were domesticated purely as pets, regardless of their usefulness (Messent & Serpell, 1981). It is estimated that there are more than 26 million dogs and 30 million cats in this country alone (Collier's Encyclopedia, 1980). The sheer numbers alone would suggest that pets are a very important element in people's lives.

If humans have domesticated and cared for pets for 12,000 years, these animals must fill a certain need. It has been suggested that humans have the need to give and receive affection and that animals easily fill that need (Bossard, 1944; Brickel, 1980-81; Cass, 1981; Kidd & Feldman, 1981; Levinson, 1962, 1969, 1978, 1980). Pets give their owners attention, at times responding to their owners in a seemingly enthusiastic manner. Most pets are small and fuzzy, which makes them conducive to stroking and petting. By the fact that many pets are silent it helps the owner to feel that he or she is not being judged or criticized by the animal as may so often happen with other people. Also, the pet may greet its owner enthusiastically, helping the person to have a sense of importance.

The pet is of great comfort when the owner is lonely or troubled (Bossard, 1944; Kidd & Feldmann, 1981; Levinson,
They will remain quietly with their owners during times of grief or anger, listening to words the owner can share with no one else. This allows the owner to feel heard and understood by the quiet, receptive animal (Levinson, 1962, 1967, 1969, 1978, 1980; Rynearson, 1978). In addition, the pet allows the owner to feel important and always needed because the owner must take care of a majority of the pet's needs (Bossard, 1944; Brickel, 1980-81; Cass, 1981; Levinson, 1962, 1969; Siegel, 1962). The owner is responsible for feeding and grooming the pet as well as the general health of the pet, much the same as he or she would have for an infant. However, a pet is not as demanding or helpless as an infant (Brickel, 1979; Levinson, 1962, 1967, 1978). The pet is in a dependent position vis-a-vis the owner, which allows the owner to be dominant, yet not overly burdened by total responsibility for the animal.

Pets can be loyal animals (Bossard, 1944; Brickel, 1980-81; Cass, 1981; Levinson, 1962, 1969, 1969A, 1978; Siegel, 1962). They may respond when spoken to by their owner, yet this loyalty may also be sensed by the owner, because the pet often remains in close proximity to the owner. Often when there are social or individual prescriptions against touching or showing affection to another individual, it may be acceptable to stroke or caress a pet.

In an attempt to explore these claims, Cain (1978) conducted a survey of pet owners. The survey was designed to explore what roles pets play and needs they fill within a
family. Those questioned had a variety of pets including dogs, cats, fish, hamsters, chickens, birds, rabbits, and others, with the number of pets per family ranging from one to thirty-seven.

Concerning why the family chose their pets, almost half the sample (49%) stated pleasure and companionship as their primary reason. Other reasons, such as rescuing an abandoned pet and protection were given by no more than 11% of the sample. Forty-eight percent stated that their pets were most important to them when sad or during crises (i.e., illness, death, moving, unemployment). When asked how important their pets are: 7% said extremely important, 55% stated very important, 10% stated important, and 8% stated moderately important. Eighty-seven percent saw their pets as members of the family, 56% considered their pet to be an animal, while 36% considered them to be as human as another individual, with 8% considering the pet somewhere between animal and human. In interactions with their pets, 36% of the respondents stated that their pet "acted out" the feelings of family members (i.e., frisky, sad) and 53% reported pets reacting to crises in the family (i.e., staying close, hiding). Concerning the phenomenon of triangling (two individuals bringing a third, uninvolved person into a two party interaction), 48% of those responding were able to describe instances where the pet was one side of a triangle involving two family members. Concerning interaction outside of the family, 37% of the respondents stated that they not
only had made friends, but maintained and increased social contacts through their pets. For this obviously non-random sample, pets were an integral part of family and social life.

Given this unique process of bonding and interaction which some humans (such as those surveyed by Cain) have with their own pets, it would seem that animals could be used in therapeutic settings to enhance rapport. However, very little had been written on the subject until Boris Levinson (1969) began describing some of his personal experiences involving contacts between his clients and his own dog. Levinson also conducted three surveys in an attempt to examine how widespread the use of pets in therapy actually was. First, Levinson (1968) surveyed 121 residential and day schools caring for physically, emotionally, and mentally handicapped children. He discovered that 10% used animals, but for educational purposes. Secondly, Levinson (1971) surveyed 112 training schools for delinquent children. Forty-one percent permitted the children to own pets, and in most schools, the staff cooperated in caring for the animals. In 39% of the settings, the staff believed that owning the pet was beneficial to the child.

Levinson (1972) also surveyed psychotherapists within New York state regarding their use of pets. Out of 435 therapists 73% replied, 39% of whom were familiar with the use of pets and 16% of whom had used pets in therapy at sometime. The respondents found pets valuable in working with "withdrawn, asocial, isolated, or lonely children and
adults". Subsequently, a survey was conducted by Rice, Brown, and Caldwell (1973) which questioned psychotherapists across the country. Of 318 questionnaires sent, 65% were returned. Of these, 21% reported some use of animals or animal content as a component of psychotherapy. Animal content was used within imagery in conjunction with systematic desensitization and real animals were used to help in establishing rapport and in modeling appropriate interpersonal interaction for the client.

Until recently, using pets within the framework of therapy happened by chance as with Levinson (1969). Levinson's dog was in his waiting room and was responded to warmly by a previously non-responsive client. As with Levinson, other therapists have been surprised by similar unexpected positive contact between their pets and clients (Corson, Corson, Gwynne and Arnold 1977; Rynearson, 1978; Siegel, 1962). The therapists have used the pet during the rapport building stage of therapy only, or continuously throughout the course of therapy with hard to reach clients. As a result of their successful experiences, these therapists have published anecdotal accounts of pets being used in the course of therapy. These authors have asserted that pet animals can be used as therapeutic aids for the very reasons that prompt individuals to own pets of their own. The following is a scenario evolved by these therapists and authors as to how a pet enhances the therapeutic process.

It has been suggested that animals are non-verbally
responsive (Brickel, 1979; Corson & Corson, 1978, 1980). They willingly allow individuals to stroke, caress and talk to them. Many animals purposefully seek out this human contact. However, the individual has the ability to set limits and choose a comfortable level of involvement which he or she desires with the animal (Levinson, 1969). While reducing the need for words the animal also reduces the anxiety the client feels by having an accepting, supportive friend nearby that he or she can reach out for and make both emotional and physical contact (Cass, 1981; Corson & Corson, 1978; Levinson, 1965, 1969).

After the bond has been established between the client and the animal, the animal can then be used by the therapist as a bridge to form a human relationship with the client (Brickel, 1979; Cass, 1981; Corson et al., 1977). As the client receives the pleasure of stroking the animal he or she may quite possibly begin to perceive the therapist in as non-threatening a light as the animal. This may then engender the client's trust in the therapist (who is associated with the animal). With each new risk taken during the therapy by the client, he or she can use the established relationship with the animal as support. Hopefully, the client will then begin to deal one to one with the therapist and use the animal to a lesser degree.

As the client gains confidence in relating to the therapist, he or she can then widen the circle of involvement. A pet may be used again at this point to
facilitate interaction with others outside the therapy session (Cass, 1981; Corson & Corson, 1978). The pet might be an excellent initial focus of conversation. From there the individual can again use the animal as support to begin establishing a friendship.

The preceding scenario describes what may happen with outpatients; however, pets can also be beneficial in inpatient settings. In addition to the aforementioned benefits, a pet can enhance an institutional setting (Brickel, 1979; Corson & Corson, 1978). Both staff and patients respond to the pets, allowing for greater and more positive interactions on the ward. The activity of the animal helps to increase the activity level of the patients. Also, the patients can assume responsibility for the care and maintenance of the pet, while learning the limits of behavior that the animal will tolerate (Cass, 1981; Corson et al., 1977). This then allows the patient dominant status and the privileges accorded that status in a setting where the patient is always in an inferior position in relation to others.

However, much more research is needed within the area of pet facilitated therapy beyond case studies and anecdotal information. The following four studies attempted to examine just how effective pets can be when used in a therapeutic situation.

Corson et al. (1977) introduced dogs to 50 hospitalized psychiatric patients, many of whom had not responded to other
forms of therapy. Five were studied in depth with videotapes in order to collect data on the verbal and temporal aspects of their interactions. Four changes across sessions were documented: (a) the time interval between the therapist's questions and the patient's response decreased, (b) the number of words per patient response increased, (c) the number of answered questions increased, and (d) the amount of silent time between responses decreased.

As a result of their study, Corson et al., concluded that the pet was a link between the patient and the therapist, and the defined pet facilitated therapy as follows:

The essence of Pet-Facilitated Psychotherapy is the introduction of a non-threatening loving pet to serve as a catalytic vehicle for forming adaptive and satisfying social interactions. The patient often relates positively to the pet in nonverbal communication and tactile interactions. Then, gradually, the circle of social interaction widens to include at first the therapist who introduced the pet, and later other patients and medical personnel. Gradually, there is a progressive expansion of positive social interactions outside the hospital milieu. The initial nonverbal forms of positive social interactions are eventually enriched and strengthened with verbal communication and wholesome emotional expressions and warmth (p.71).

Mugford and M'Comisky (1975) explored the effect small colorful birds had on elderly people. Old age pensioners between the ages of 71 and 85 were divided into five groups (six subjects per group). One group with and another group without televisions were given begonias. A third group with and a fourth group without televisions were given budgerigars (small birds). The fifth group was used as a control group
Questionnaires were given before and after the five month treatment (which also included monthly visits by a social worker). The questionnaire asked for demographic information plus information concerning the subjects' attitudes both toward themselves and others. As a result of the treatment, both budgerigar groups showed significant improvement over the other groups in their attitude toward themselves and others (there was no improvement in the other groups). Mugford and M'Comisky concluded that "the presence of budgerigars generally had a beneficial effect on the social and psychosocial conditions of the old people".

Doyle (1975), as did Corson et al., studied an inpatient population by placing a rabbit in a unit of a psychiatric hospital for 12 weeks. Six patients were given a pre-study and a post-study questionnaire concerning their self-concept, attitude toward and need for others, and response potential. In addition, the staff filled out an observation questionnaire twice a week on the patients. The less regressed patients used the rabbit as a means to increase interactions and saw the animal as both a source of joy and irritation. The more regressed patients incorporated the rabbit into their own reality, relating to it in a very primitive manner, yet used it as a "bridge to external reality". Doyle concluded that the presence of the rabbit on the unit was quite valuable.

Brickel's approach (1979) was slightly different than the three previous studies. He chose to survey the patients
and staff on a ward where cats had been adopted as a part of the ward for 2 years prior to being surveyed. Brickel surveyed 19 nurses who cared for hospital based geriatrics, the majority of whom were diagnosed as having chronic brain syndrome. The ward had two cats which were referred to as mascots. The nursing staff was asked open-ended questions concerning the effect the pets had on the patients. The author made five observations: (a) the overall level of patient responsiveness was enhanced by the mascots, (b) the mascots gave the patients personal pleasure, (c) the environment was much more home-like, (d) the mascots aided the staff in keeping the patients in touch with reality, due to their care and maintenance, and (e) the mascots helped in building rapport among the patients and with the staff. He therefore, concluded that the cats were successful adjuncts to the already existing treatment.

While some researchers examine the psychological benefits of pets, Friedman, Katcher, Lynch, and Thomas (1980) assert that pets are also very salient factors in physical health. They interviewed 96 patients admitted to the hospital for coronary heart disease. The interview consisted of collecting demographics and an adjective checklist for psychological mood status. When followed up one year later, it was ascertained that significantly more (50) of the 78 survivors were pet owners (which was independent of physiological status). The authors state that "pet ownership can add significantly to the variance in survival explained
by the severity of cardiovascular disease.

Katcher, Friedman, Messent, and Lynch (1981) measured blood pressure and heart rate of dog owners in various settings. The subjects (adults) were observed while resting, while reading a portion of an uninteresting text, and while petting their dogs. The blood pressure of the subjects was lower while petting the dogs than while resting and significantly lower than when the subjects read. In addition, Katcher et al. (1981) measured blood pressure and heart rate of children in a home setting. The subjects were observed while reading or resting, with or without a dog present, without active interaction between subject and animal. The blood pressure of the subjects was significantly lower as a result of just visual contact with the dog. In a subsequent study by Friedman, Katcher, Thomas, Lynch and Messent (1983) the impact of the dog was greater when it was present initially rather than being introduced in the second half of the experiment. Together these three studies suggest that pets may be a therapeutic factor in stress reduction for healthy individuals, especially when used during the initial stages of a stressful situation.

Other studies have shown how pet ownership can benefit those who function without the need for therapy and without medical problems. Kidd and Feldman (1981) surveyed 104 adults (male and female ranging from 65 to 87 years of age). Each was asked to give demographic information and fill out the Adjective Check List. Pet owners were significantly more
self-confident, dependable, self-sufficient, helpful, and optimistic, while non-owners were less self-accepting and more self-centered, pessimistic, and dependent on others. In addition, Brown, Shaw and Kirkland (1972) surveyed 48 adult college students. The subjects were compared on the Fundamental Interpersonal Relations Orientation-Behavior (FIRO-b) test (Schutz, 1958). Those individuals who expressed little affection for dogs also had low affection for people and in the case of men, a low desire for such affection. However, it is impossible to determine in either study whether pet ownership produces these results, or more adaptive personalities tend to choose to own a pet.

A final study by Messent (1982) measured to what extent a pet can facilitate social interaction. Dog owners were asked to take walks with and without their dogs. It was discovered that the walk lasted significantly longer and significantly more interpersonal contacts were made while walking with the dog than without the dog. The author states that the dog facilitates both an increase in exercise and in social contacts for their owners.

Since there is some evidence to suggest that association with a pet may contribute to the physical, emotional, and interpersonal well-being of a broad spectrum of people, then a pet quite possibly could be a salient factor in working with a schizophrenic population. Anecdotal accounts (Keith, 1982; Levinson, 1962, 1969, 1978, 1980; Searls, 1960; Siegel, 1962) claim that relationships with pets have helped
schizophrenics avoid or move out of their psychosis. Authors state than an animal may be the patient's only contact with reality.

One characteristic symptom of schizophrenia is the tendency for the individual to withdraw from the external world (Arieti, 1974; DSM III, 1980; Mosher & Gunderson, 1979; Mosher & Kieth, 1980; Stauss & Carpenter, 1981; Zuerling, 1979). The individual gradually becomes preoccupied with his or her own thoughts and delusions and avoids any personal contact. As a result, the schizophrenic has an impaired ability to establish and maintain relationships.

This isolation and withdrawal may quite possibly be exacerbated when the individual spends many years within the mental health system. Many authors have described a condition which Wing (1962) has termed institutionalism. This condition consists of symptoms similar to those of schizophrenia: social withdrawal, blunted affect, poverty of speech, and indifference to leaving the institution. This is the result of long periods of hospitalization (Barton, 1966; Goffman, 1959; Strauss & Carpenter, 1981; Wing, 1962; Wing & Brown, 1970). Therefore, a hospitalized schizophrenic is doubly handicapped having to cope with the symptoms of the disorder, combined with the symptoms brought about by hospitalization. For example, Harmatz, Mendelson, and Glassman (1975) observed 15 schizophrenics in an inpatient setting and recorded their behaviors using a Behavioral Observation System. They discovered that null behavior (i.e.
non-involvement and self-stimulatory behavior) accounted for 50.8% for the patients' time, functional behavior accounted for 28.5%, social behavior accounted for 8.1%, and pathological behavior 2.3%. Broken down along different lines, patients spent 64.6% of their observed time in nonadaptive behavior and 37% in adaptive behavior. They concluded that the most probable behavior for hospitalized schizophrenics was noninvolvement.

Mendelson and Harmatz (1977) took this one step further. They observed 42 hospitalized schizophrenics who differed in length of hospitalization. Group 1 (seven subjects) had been hospitalized up to four months, group 2 (seven subjects) had been hospitalized from four months to one year, group 3 (seven subjects) had been hospitalized from one to two years, and group 4 (twenty-one subjects) had been hospitalized eight or more years. The subjects were observed for amount and duration of behaviors on the Behavioral Observation Scale for ten minute intervals. The results showed group 2 as having the greatest and most frequent amount of functional behaviors and the smallest and least frequent amount of null behavior of all the short-term groups. Compared to group 4, group 2 had a significantly greater amount of functional behavior, significantly more frequent functional and social behavior, and significantly smaller and less frequent amounts of null behavior. The authors concluded that the optimal hospitalization period may be four months to one year, asserting that the longer a patient remains past that point,
the greater the possibility of increased uninvolvement. However, the authors' conclusions should be accepted only tentatively. Due to the selection process (selection based on length of hospitalization), group 4 as a group could have, as selected, been more dysfunctional. A longitudinal study needs to be done in order to confirm the authors' conclusions.

Although today schizophrenics are not warehoused in back wards of hospitals, they may still spend many years in the mental health system - shifting from family, to group homes, to inpatient wards, to day treatment programs, and back again. Wing and Brown (1970) quote a social law that may apply here: "The longer a person persists in one form of activity, or undergoes one form of experience, the more difficult it will be for him to choose any other and the less he will do so". Just as in the hospital, the schizophrenics have taken on the role of patient, relinquishing all other previously held roles (worker, parent, student), the schizophrenic shifting through the system may relinquish all functional roles other than patient. Therefore, they show many of the symptoms of institutionalism: apathy, blunted affect, insufficient desire or motivation to leave the system, and social withdrawal.

Many experts agree that in order to be successful in working with a schizophrenic patient, the therapist must decrease the isolation by becoming actively involved with the patient (Arieti, 1974; Mosher & Keith, 1980; Mosher, Gunderson, 1979; Strauss & Carpenter, 1981; Zwerling, 1979).
The therapist must begin a rehumanizing process with the schizophrenic as a result of their relationship. However, the therapist must not be intrusive, respecting the defenses of his or her client. This is a very difficult task, especially when the patient has moved lock-step through many programs and has learned to come through unchanged. Quite possibly a pet can make a difference here. The animal could add a warm, home-like feeling to the agency. The patient could bond first with the animal at his or her own pace and use the animal as a buffer between him or her and others. Gradually, the patient, with the support of the animal, could then begin to make contact with the others in the program and eventually the staff. Hopefully, what will be seen as a result of this human animal bonding is an increase in involvement behavior – more functional and social behaviors.

This experiment focused on the differences in behavior that can be brought about when an animal is introduced into a day treatment environment. The day treatment may be the next stop after a patient has been stabilized on medication in a psychiatric ward of a hospital or the patient may have come from a locked care facility. Whatever the previous placement, the patient is sent to the day treatment program by the family or conservator to prepare the individual to function as independently as possible in society.

One important aspect of independent functioning is to be able to interact with other individuals. The vast majority of individuals who make up day treatment programs, including the
program used in this experiment, are guarded and withdrawn. It was hypothesized in this study that the introduction of animals into an unstructured therapy setting with the individuals in the day treatment program would foster a greater degree of social interaction among the group members and between the individuals in the day treatment group and staff members.

Rabbits were used due to their convenience. They are docile animals who can tolerate being stroked for periods of time. They can be caged while cared for without becoming agitated. In addition, they were easily transported to the day treatment facility.

It was expected that an initial involvement with the animal would generalize to involvement with others participating in the group where the animals are introduced. It was also expected that this initial interaction between individuals while the animal was present would foster additional interaction between the group members and the group leader. Thus, the animal would be a bridge between the participants in the day treatment program and help to foster the social interaction needed for that person to eventually live independently when leaving the program.
METHOD

Subjects

There were ten subjects randomly selected from a test population of 18. The patients were from a day treatment program at New Day, a mental health clinic in Rialto, California. However, two subjects dropped out of the program, resulting in a total of eight subjects (two female, six male) who were studied. All subjects had the DSM III diagnosis of schizophrenia, undifferentiated or paranoid type and had been stabilized on medication. The ages ranged from 17 to 53 with length of time within the mental health system ranging from 2 years to 35 years. All subjects lived in a group home setting and attended the day treatment program for four hours a day, five days a week. Each subject signed a consent form and each conservator was contacted about the experiment. The subjects did not know the exact purpose of the experiment, but were told that the observers were there to rate the group leader and observe the animals' behavior.

Apparatus

The apparatus used recorded the duration as well as the frequency of ten behaviors. The behavior recording apparatus, originated by Harmatz et al. (1975), consisted of three units - two ten-button operating panels and a 20 pen Esterline Angus Event Recorder. When a button was pressed, a corresponding pen on the recorder was activated until the button was released. The pen then marked on a moving sheet of paper. The buttons were arranged on the panel so as to be
pressed with one hand only.

Each of the ten buttons corresponded to one of ten behaviors of the behavioral observation system (BOS) of Harmatz et al. (1975). The behaviors included: (a) nervous mannerisms, (b) active entertainment - involving some physical activity, (c) passive entertainment - involving minimal physical activity, (d) atavistic behavior - annoying or destructive behavior, (e) reinforcement seeking - attempts to gain group leader's attention, (f) non-verbal interpersonal behavior, (g) verbal behavior 1 - toward another group member, (h) verbal behavior 2 - toward a non-group member, (i) bizarre behavior, and (j) non-involvement - no observable behavior.

Measures

Two additional measures were used. First was the Psychotic Inpatient Profile (PIP) by Lorr, Norris, and Vestre (1968). This profile consists of 74 questions which rate 12 behaviors from zero (not at all) to three (nearly always) and 22 questions which were answered true or not true. Five of the 12 behaviors (care needed, grandiosity, perceptual distortion, depressive mood, and disorientation) were eliminated due to the institutional nature of the category, the lack of psychiatric training of the observers, or the inability to detect the behavior in the group setting. The remaining behaviors included: (a) excitement - high in mood, (b) hostile belligerence - including both language and behavior, (c) paranoid projection - suspicion, (d) anxious
depression, (e) retardation - including movement, speech and response, (f) seclusiveness - withdrawal from contact, (g) psychotic disorganization - motor disturbances and indication of conceptual disorganization.

The second measure was the MACC Behavioral Adjustment Scale (Ellsworth, 1971). The MACC Scale assesses the behavioral adjustment of psychiatric patients. The scale consists of 16 objective questions about behaviors rated from one (always) to five (never). Scores are provided on: (a) mood, (b) cooperation, (c) communication, (d) social contact, and (e) total adjustment.

Procedure

The experiment used a reversal design and consisting of four phases: baseline (Phase 1), treatment (Phase 2), removal of treatment (Phase 3), and reintroduction of treatment (Phase 4). In Phase 1, the subjects were observed in a two hour unstructured group therapy setting by four observers. Each subject was observed for five ten-minute intervals over a one week period (involving five two-hour group therapy sessions per week) in order to establish a baseline of behaviors. These intervals were randomly selected for the eight individuals within five 100-minute blocks. While observing, two observers recorded behaviors using the BOS. After the two hours of group therapy, the remaining two observers filled out both the PIP and the MACC Scale. The observers were not blind to the experiment.

At the end of the first week, three rabbits were
introduced in Phase 2 in the unstructured therapy setting. The subjects were given instructions on handling the animals and then invited to interact with the animals only by their choice. The group was then conducted as it was during Phase 1, with all observations and measures similar to those in Phase 1.

This was followed by one week of no treatment in Phase 3, with observation and behavior rating as in Phase 1 and one week of treatment in Phase 4, with observation and behavior rating as in Phase 2.
RESULTS

To discover which measures showed treatment effect, the data were analyzed by several different methods. Reliability coefficients were computed between the scores of the two observers for each measure. This was followed by visual observation of graphs for each subject on each measure as well as the computation of repeated measures analyses of variance across the subjects as a group (with the understanding of the restricted efficacy due to the small sample size) to confirm the results found with the individual graphs. Only those results which at least approached significance will be reported.

Inter-rater Reliability

Since two observers scored each of the measures for each of the subjects, inter-rater reliability was computed before the data could be combined across the observers. One measure (PIP: anxious depression) was discarded due to poor inter-rater reliability \( r = .58 \). Seven other measures (both frequency and duration for atavistic behavior, reinforcement seeking, bizarre behavior, and PIP: retardation) were discarded due to the fact that they were not observed with sufficient regularity to be scored by the observers. All but one (frequency of non-group verbal behavior, \( r = .69 \)) of the remaining 24 measures were above .80, with more than half greater than .90 (see Table 1).
Table 1

Inter-rater Reliability Coefficients

<table>
<thead>
<tr>
<th>Behavior</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td></td>
</tr>
<tr>
<td>Nervous Mannerisms</td>
<td>.8183</td>
</tr>
<tr>
<td>Active Entertainment</td>
<td>.9699</td>
</tr>
<tr>
<td>Passive Entertainment</td>
<td>.9254</td>
</tr>
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<td>Non-verbal Behavior</td>
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<tr>
<td><strong>Duration</strong></td>
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</tr>
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<tr>
<td>Cooperation</td>
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Each subject was used as his or her own control, due to the impossibility of finding a comparable control group in a comparable day treatment setting. Therefore, the behavior of each subject during the treatment phases (Phases 2 and 4) was compared to the behavior in phases without treatment (Phases 1 and 3). This was done by means of visual inspection of 24 graphs per subject showing each day's score for each measure. Inspection involved looking for four different types of change between the phases: mean (shift in the average), level (shift between the end of one phase and the beginning of following phase), trend (systematic changes across the phase), and latency (period between onset or termination of treatment and change in behavior) (Kazdin, 1982). In addition, the five days of each phase were combined across subjects in order to detect any group differences across the phases.

In total, there were eleven separate measures which tapped the social involvement of each subject (with the rabbits, group members or the group leader) and were therefore of particular interest. These measures included: both frequency and duration of active entertainment (petting or speaking to the rabbit), non-verbal interpersonal behavior (shaking head in agreement with discussion), verbal behavior 1 (toward a group member), and verbal behavior 2 (toward the group leader); the seclusiveness scale on the PIP; and the communication and social contact scales on the MACC. It was expected that the social involvement would increase in Phases
2 and 4, due to the presence of the rabbits, compared to a lower level of social involvement in Phases 1 and 3. In contrast, 25 seclusiveness was expected to decrease in Phases 2 and 4 compared to elevated levels in Phases 1 and 3.

**Unexpected Group Findings**

Two group measures (one of them interpersonal in nature) approached significance according to the repeated measures analyses of variance. However, the patterns were unexpected. The frequency of group verbal behavior (verbal interaction with other group members, $F(3, 21) = 2.43, \ p = .09$), rather than showing an increase in Phase 2, fall in Phase 3, and rise again in Phase 4, increased across the four phases (see Figure 1). The second measure, duration of non-involvement (detachment from group process, $F(3,21) = 4.56, \ p = .01$), rather than decreasing in Phase 2, increasing in Phase 3, and again decreasing in Phase 4, follows a different pattern (see Figure 2). There is an increase in Phase 2 followed by continual decrease across Phases 3 and 4.

**Individual Findings**

Some individual changes were noticed on the graphs. Every subject did increase some social involvement: one subject in one measure, three subjects in two measures, and two subjects in three measures. These were seen as increases in the mean of their behavior while the rabbits were present.
Figure 1

Group Verbal Behavior: Frequency

(ten minute observation period)
Figure 2
Non-involvement: Duration
(ten minute observation period)
Subject A.

One subject differed noticeably from the others in her range of response. The graphs for this female subject showed changes in the means of seven of the eleven social involvement measures. In addition there were changes in the means of 14 of the total 24 measures. As can be seen in Figure 3, she chose to interact with the rabbits many times. This coincided with a decrease in both seclusiveness (see Figure 4) and the duration of her nervous mannerisms (see Figure 5). The only observable difference between this subject and the other seven subjects was her greater willingness to interact with others. While outside of group she carried on casual social conversations with group and non-group members alike. During group, she was willing to disclose her thoughts and feelings and confront others when she felt uncomfortable with what they were doing or saying.

Seclusiveness/passive entertainment.

Although the subjects did not respond consistently to most of the social involvement measures, there were three measures to which the subjects responded in a consistent manner. These measures were seclusiveness and both frequency and duration of passive entertainment. Eight subjects observed the rabbits more often while seven subjects observed the rabbits for longer periods of time. In addition, while the rabbits were present five subjects were observed and rated as being less seclusive. Moreover, half of the
Figure 3

Nervous Mannerisms: Duration

Subject A
(ten minute observation period)
Figure 4

Active Entertainment: Frequency

Subject A

(ten minute observation period)
Figure 5

**PIP Seclusiveness Scale**

**Subject A**

![Graph showing the PIP Seclusiveness Scale for Subject A. The graph displays the score over days/phases with a general trend of fluctuation.](image-url)
subjects responded in all three of these measures.

**Group Findings**

Passive entertainment/active entertainment/nervous mannerisms/seclusiveness.

The significance of passive entertainment was verified statistically. Repeated measures analyses of variance were conducted (see Table 2). It was found for the group, as was seen in the individual graphs, that both frequency ($F(3,21) = 30.24, p < .001$) and duration ($F(3,21) = 21.79, p < .001$) of passive entertainment increased significantly during the treatment phases. Therefore, the amount of different times (see Figure 6) and the length of time (see Figure 7) the subjects observed either the rabbits or someone else interacting with the rabbits was purposeful in nature.

Two additional group measures were found significant. As anticipated, the frequency of active entertainment (interacting with the rabbit) was significant ($F(3,21) = 3.48, p = .03$). Compared to the base levels of Phases 1 and 3, subjects did show a positive response and did interact with the rabbits during the Phases 2 and 4 (see Figure 8). Additionally, the duration of nervous mannerisms decreased significantly ($F(3,21) = 7.90, p = .001$) when the rabbits were present (see Figure 9).

An additional measure, seclusiveness discussed previously (see Figure 10), is of importance to note although it was not shown to be significant by group analysis ($F$
Table 2 (cont.)

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*p<.05. **p<.01. ***p<.001
Figure 6
Passive Entertainment: Frequency
(ten minute observation period)
Figure 7
Passive Entertainment: Duration
(ten minute observation period)
Figure 8

Active Entertainment: Frequency
(ten minute observation period)
Figure 9

Nervous Mannerisms: Duration

(ten minute observation period)
Figure 10

PIP: Seclusiveness Scale
(3,21) = 1.70, p = .19). Each time the rabbits were present, the observers rated five of the eight subjects to be less seclusive (see Figures 11 and 12). This shows that a majority of the subjects responded to the rabbits by becoming less isolated.

Anecdotal Information

There were changes seen in the subjects which were not recorded because these changes did not fall into any of the categories listed. They were very general in nature and difficult to describe. For example, one male subject, although he was willing to interact with others, appeared lifeless. His affect was flat, his face was masklike, his eyes were dull, his movements were stilted and all of these characteristics gave him an unreal appearance. During the final phase of the experiment while he was doing some therapeutic work, he came to life: his face softened, his eyes cleared, his voice and movements were animated. The subject's reaction to his experience was one of shock and confusion, yet fascination with this enlivened state. The group as a whole stated that they felt more comfortable with him because he appeared more open.

Another male subject, with the diagnosis of Schizophrenia Paranoid Type, remained uninvolved and guarded for the majority of the research. Even when asked a direct question by the group leader, he would use his words to avoid disclosing any information about himself. However, during
Figure 11

**PIP: Seclusiveness Scale**

Subject B
Figure 12

PIP: Seclusiveness Scale
Subject C
the final phase, his evasiveness began to disappear. He began by volunteering information about his family life which he had previously kept secret and next he helped another group member with her therapeutic work. The subject sat very close to the woman with his back to the door while continuously encouraging her to express her emotions and then validating each expression. He gave her reassurance that he would stay with her during her work and when she was finished he offered her realistic and appropriate feedback. Throughout the therapy hour he appeared to be unguarded while unaware of his surroundings.

The group as a whole appeared more willing to work therapeutically and would even request therapy time during the treatment phases. With a few individuals, this meant the disclosure of carefully hidden secrets. There was also more therapeutic interaction between group members during treatment. They appeared to be less afraid to give support or feedback to others.
DISCUSSION

It is important at this point to gain a perspective on the results which have been reported. Each will be discussed with possible explanations given for those unexpected results.

The first of the two unexpected patterns which evolved was the frequency of group verbal behavior. The continual rise across the phases may have been due to a Hawthorne effect with some of the factors being: participation in the experiment, added attention from the observers, or a change in routine, or the group verbal behavior reinforced in phase 2 is continued and even increased in the subsequent phases. The second pattern, duration of non-involvement, appeared erratic in nature. Yet, in addition to the Hawthorne effect, this unexpected pattern may be the result of each subject choosing to focus on his or her internal psychotic stimuli (i.e. hallucinations, delusions) and therefore randomly withdrawing from the group interaction.

Although only a few of the social involvement measures reflected the expected treatment effect, there were some promising findings. Some subjects (who would prefer, as is seen in schizophrenia, to remain detached and uninvolved) chose to come out of their isolation when the rabbits were present. In order to attend to the rabbits, they had to cease focusing on their internal psychotic process and become a part (however peripheral) of the external environment of which the rabbits were a part. For those subjects who chose to hold and
stroke the animals, their involvement meant a willingness to move from their position and risk becoming the center of attention. These people not only focused attention on but also made physical contact with the animals. Quite possibly, the process for the schizophrenics of redirecting the focus away from their own thoughts and psychotic processes and onto something in the external environment is what the observers noted and scored as reduced seclusiveness.

In addition, the amount of time spent involved in nervous behavior decreased in the rabbits presence. This may be explained two ways. First, the rabbit can be described as a pleasant distraction (Brickel, 1982) from either the schizophrenics themselves or something in the environment. Both the internal psychotic confusion and the external therapeutic discussion can be uncomfortable to a client and can be anxiety producing and result in nervous behavior. For someone who has been isolated and has felt uncomfortable being situated in close proximity to others is in itself alarming. A rabbit could be just the distraction to aid the subjects in turning off their nervous reaction to either internal or external uncomfortable stimuli.

The second explanation is that the animals may have introduced an element of safety into the group therapy environment. Possibly, the subject perceived that the animal could not judge, criticize, or demand too much and was also willing to be touched. As a result of this possible perceived safety, anxiety subsided and nervous behavior
decreased.

For whatever reason, as the subjects observed and approached the rabbits, the outward signs of their nervousness decreased and the observers noted a decrease in seclusiveness in 63% of the subjects. Quite possibly what was being recorded were the initial stages of the bonding process. The subjects were beginning to break their isolation and focus their attention outside themselves. They may have been moving toward a willingness to trust, thus decreasing their outward nervous behavior. Several subjects took the next step and approached the animals. Eventually, with time this approach toward the animals may have transferred to approaching others in the group as well as the group leader.

It is important to note that the one subject who responded favorably in many areas was initially more willing to speak about herself. Possibly, this facilitated a more rapid bonding with the animals and subsequently with the others more quickly. The treatment phases consisted of only two hours per day for five days. If the treatment process were lengthened, it is possible that the more chronically withdrawn subjects would have had sufficient time to complete their process of bonding with the animals and generalize to others.

Several limitations must be discussed at this point. First, regarding the research design, the number of subjects was small. Therefore, the results can be generalized only to those schizophrenics receiving group therapy in a day.
treatment program. Also, group measures which were found significant, although impressive due to the small sample size, must be seen as tentative in nature for this same reason. It is important to keep in mind that the smaller the sample size, the greater the chance of error. However, the single subject research design was used in order to report individual as well as these group findings. Finally, there was no control group for comparison; each subject instead was used as his or her own control.

During data collection, there were a few confounding elements related to the unobtrusive nature of the research. The subjects knew that they were in some way a part of the research. The observers as well as the Esterline Angus Event Recorder were within plain view of the subjects and therefore were a constant reminder of the research being conducted. This probably caused them to alter their behavior possibly in the direction of what they deduced was expected of them. For the four weeks of research, the day treatment schedule was altered to accommodate the data collection. The introduction of this new schedule as well as four observers and a clicking machine most certainly altered the group therapy environment (from what it had been before the research, consisting only of the patients and the group leader). These factors most certainly would have contributed to a Hawthorne effect, changing the patients' behavior in unintended ways.

It may be helpful in future research to improve the treatment phases of the design. If the treatment phases
could be lengthened, it would allow the subjects a longer amount of contact with the animals and subsequently a longer period of time within which they might begin to approach the animals and then eventually interact more with others in the group. In addition, if a greater number or variety of animals were available, this may encourage increased subject--animal involvement. It is possible that some subjects were uncomfortable with the rabbits used in the study and would have approached a dog or cat. Other subjects may not have wanted to become a focal point by playing with one of only three animals in the room.

However, in spite of the limitations discussed previously, there are a number of factors in this research which may be of benefit therapeutically. In a day treatment program, the treatment purpose is to equip the patients with the skills (i.e. social, educational, vocational) necessary to function independently in society. The majority of this training is done within a group therapy setting. As this research has indicated, the presence of the animals had a calming effect on the subjects as they were able to focus on and even approach the animals while relinquishing their seclusive posture. This in itself may be interpreted as one of the first steps in learning the social skills necessary for independent living (i.e. the willingness to move out of isolation, approach and communicate with others). Therefore, the animals can be seen as a useful tool in group therapy. Once the patients have bonded with the animals, the
stage has been set for the patients to generalize from the human--animal relationship and learn appropriate social skills in relation to other human beings. In addition, animals can be just the calming influence needed to allow the individuals to discuss the very problems which have caused them to become part of the day treatment program. The animals could also be used as moral support during threatening individual therapy sessions. Undoubtedly, the subjects in this study did not comprehend all of these ramifications, however, when the study was concluded, the group as a whole did request that the agency adopt a pet for their program.
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