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Another Breed of “Service” Animals: STARS Study Findings about Pet Ownership and Recovery from Serious Mental Illness

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Abstract

This study elucidates the role of pets in recovery processes among adults with serious mental illness. Data derive from interviews with 177 HMO members with serious mental illness (52.2% women, average age 48.8). Interviews and questionnaires addressed factors affecting recovery processes and included questions about pet ownership. Data were analyzed using a modified grounded theory method to identify the roles pets play in the recovery process. Primary themes indicate pets assist individuals in recovery from serious mental illness by (a) providing empathy and “therapy”; (b) providing connections that can assist in redeveloping social avenues; (c) serving as “family” in the absence of or in addition to human family members; and (d) supporting self-efficacy and strengthening a sense of empowerment. Pets appear to provide more benefits than merely companionship. Participants’ reports of pet-related contributions to their well-being provide impetus to conduct more formal research on the mechanisms by which pets contribute to recovery and to develop pet-based interventions.

Keywords

Schizophrenia; bipolar disorder; social support; pets; therapy; recovery; STARS study

While the notion of dog as “man’s best friend” has been commonplace for more than 150 years, the dog’s potential for satisfying specific psychological needs first emerged more than 40 years ago. Child psychologist Boris Levinson (1962) used dogs as co-therapists and advocated using animals in therapeutic settings. Since then, animals have been used effectively in therapeutic environments and across various age groups (e.g., Banks & Banks, 2002; Martin & Farnum, 2002). While animal-assisted therapy can be beneficial, pets outside of a structured therapy setting also provide physical (Friedmann & Thomas, 1995; Allen, Blascovich, & Mendes, 2002) and psychological benefits (Jennings, 1997; Wood, Giles-Corti, & Bulsara, 2005) and can lead to decreased health expenditures (Headey, 2003; Siegel, 1990; Headey, 1999). The means by which pets influence mental health have not been adequately addressed, however. We present reports from individuals with severe mental illness about the influence of pets on their recovery process. Recovery from serious mental illness is an approach to mental illness that emphasizes the restoration of self-esteem and identity and attaining meaningful roles in society beyond merely relief from symptoms (U.S. Department of Health and Human Services, 1999).

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Serious Mental Illness

Serious mental illnesses can negatively affect social, educational, and occupational functioning, while limiting social networks and increasing loneliness (American Psychiatric Association, 2000). Although serious mental illnesses have been viewed as chronic and deteriorating disorders, recent work on recovery (Warner, 1994; Harding, Zubin & Strauss, 1992; DeSisto et al., 1995) has found that up to 70% of people with schizophrenia either make a complete recovery (return to pre-illness functioning) or demonstrate social recovery (economic and residential independence and low social disruption). Several models of recovery from serious mental illness are emerging (e.g., Davidson & Strauss, 1995; Green, 2004; Spaniol, Wewiorski, Gagne & Anthony, 2002). For example, Green's (2004) model emphasizes the role of such factors as personal development, learning, healing, and adaptation as key to recovery. Reducing social isolation can also be an important part of the recovery process, and understanding mechanisms for reducing isolation and improving quality of life could help facilitate recovery. Pet ownership has been identified as one such method of reaching these goals (e.g., Hennings, 1999).

Pets and Health

Several studies have demonstrated stress reduction resulting from owning and exposure to pets (Allen, 2003; Allen, Blascovich, & Mendes, 2002; Allen, Shykoff & Izzo, 2001). Improved quality of life, increased social interactions, and improved health outcomes are also associated with pet ownership (McCabe, Baun, Speich, & Agrawal, 2002; Wood, Giles-Corti, & Bulsara, 2005; Headey, 1999). Pet owners have lower blood pressure and heart rate levels than non-owners, lower blood pressure increases following stress-inducing tasks, and quicker post-stressful-task recovery times (Allen et al., 2002; Allen et al., 2001). Blood pressure readings taken after stress tasks suggest that in comparison to spouses, pets provide a more calming effect (Allen, 2003). The presence of pet dogs has also been shown to reduce perceptions of psychological threat during stressful situations (Allen, Blascovich, Tomaka, & Kelsey, 1991) and to relieve stress among women (Allen et al., 1991) and the elderly (Siegel, 1990).

Pets are associated with improved social interactions and quality of life, particularly among institutionalized populations such as nursing home residents (McCabe et al., 2002; Motomura, Yagi, & Ohyama, 2004). For example, Kaiser, Spence, McGavin, Struble and Keilman (2002) found that among elderly nursing home residents, visits from pets provided as much benefit as from young, upbeat volunteers with no obligation to visit. Domestic animals can also aid social interaction (Wood, Giles-Corti, & Bulsara, 2005), be effective in therapy programs (Martin & Farnum, 2002), and reduce loneliness (Banks & Banks, 2002; Jennings 1997). Further, pet ownership is associated with greater civic engagement and social capital because pet owners interact more with neighbors, other pet owners, and the community at large (Wood et al., 2005).

Pets have been identified as influencing other health outcomes as well. Animal-assisted therapy may positively influence the mental state of dementia patients (Motomura, Yagi, & Ohyama, 2004) and resident dogs decrease disruptive behavior in this population (McCabe, Baun, Speich, & Agrawal, 2002). Among individuals who experienced an acute myocardial infarction, dog owner mortality was significantly lower than that of non-owners (Friedmann & Thomas, 1995). Jennings (1997) noted that pets increase physical fitness and decrease anxiety. Pets have also been found to decrease the need for medical service use among both elderly and general populations (Siegel, 1990; Headey, 1999).

Service animals provide assistance with specific disabilities (e.g., guide dogs for the blind) and are different from pets, although they provide some similar benefits, such as companionship (Valentine, Kiddoo & LaFleur, 1993). Several authors have also suggested that pet-facilitated

therapy may be beneficial for people with specific mental health problems (e.g., Cusack, 1988). In particular, Post-traumatic Stress Disorder has been identified as amenable to pet-related interventions, because pets may help alleviate some of the anxiety and fear that these individuals experience (Altschuler, 1999). Similarly, Hennings (1999) suggested that pets may enhance other mental health treatments and provide structure, support, and love for patients with serious mental illness.

The Current Study

Positive effects of pets include reduced stress reactions, anxiety and perceptions of threat, and improved social interaction and mood. Based on this evidence, pets may plausibly benefit people whose mental health problems are accompanied by such difficulties as anxiety and mood disturbances. These benefits, however, have been explored only in small, controlled studies, and have not been assessed within larger, naturalistic populations of individuals. Furthermore, many existing pet studies have significant limitations. Some studies have focused on an exclusive species of pet (i.e., cats), while others have not included the special needs of those with severe mental illness or have focused on specific populations, such as nursing home residents. The role pets may play in recovery of individuals with mental illnesses has not been explored in a large, naturalistic study. The present study addresses this gap in the literature, qualitatively analyzing consumers' perceptions of the roles pets played in their process of recovering from serious mental illness.

Methods

Setting

The setting for this study was Kaiser Permanente Northwest (KPNW), a non-profit prepaid, group model, integrated health plan serving about 480,000 members in northwest Oregon and southwest Washington State. KPNW provides comprehensive outpatient and inpatient medical, mental health, and addiction treatment to its members.

Study Design

Data are from STARS (the Study of Transitions & Recovery Strategies), a mixed-methods, exploratory, longitudinal study of recovery among individuals with serious mental health problems (schizophrenia, schizoaffective disorder, bipolar disorder, or affective psychosis). Additional information on the study is available in Green et al. (2008) and Young, Green and Estroff (2008). Four in-depth interviews explored mental health history and various personal experiences affecting mental health and recovery. Two initial interviews were conducted at the start of the study, totaling about 4 hours; additional interviews of 60-90 minutes were conducted at 12 and 24 months. At each wave of interviews, participants also completed paper-and-pencil questionnaires that included questions about pet ownership and pet importance. Results presented here were derived from the questionnaires and from analyses of all interview-generated text discussing pets. At the initial interviews, we asked if participants had a pet that depended on them, and at each follow-up interview, we asked about changes in pet status. No participants reported having a service animal. Most participants reported being primary caretakers or co-caretakers of their pets. Participants were also offered the opportunity, at the initial interview, to take photos of things they found helped or hindered their recovery. At the second interview we reviewed photos with participants and asked them to explain the importance of each one; many photos included pets as subjects, and this text was included in analyses.

The study was approved and monitored by KPNW's Institutional Review Board and Research Subjects Protection Office. All study participants provided informed consent prior to participation.

Participant Identification, Inclusion and Exclusion Criteria, and Recruitment

Participants were identified through health plan records. Inclusion criteria were as follows: having a diagnosis (for a minimum of 12 months) of schizophrenia, schizoaffective disorder, bipolar disorder, or affective psychosis; at least 12 months of health plan membership prior to study enrollment; age 16 years or older; and plans to stay in the local area for at least 12 months. To prevent problems with ability to provide informed consent, respond to interview questions or complete paper-and-pencil questionnaires, we excluded those with diagnoses of dementia, mental retardation, or organic brain syndrome. We also excluded those whose mental health clinician felt they were unable to participate.

We extracted a pool of potential participants ($N = 1827$), and prepared recruitment letters in batches to be signed by the principal investigator and the member's mental health clinician or primary care provider (the latter only when we found no specialty mental health visits). We asked 213 providers to sign letters for members they believed were able to participate in the study. Clinicians screened out 15.8% ($n = 286$) of potential participants as unable to participate; 15 clinicians (representing $n = 17$ potential participants) did not return letters. The remaining potential participants ($n = 1524$) were stratified on diagnosis (mood vs. schizophrenia spectrum) and gender and were randomly sampled within these groups to balance the sample.

We mailed recruitment letters in small batches over a 10-month period and telephoned people who did not respond to the letter. We surpassed our recruitment goal ($n = 170$) after attempting to recruit 418 individuals from the recruitment pool. Of 418 attempts, we contacted 350 individuals, had 127 refusals, and determined that 22 individuals were not eligible. Overall, we enrolled 44% ($n = 184$) of the 418 people we attempted to recruit and 46% of those who were eligible. Of these, 3 did not complete both initial interviews, and 4 were excluded because study staff determined that medical record diagnoses had been in error. Data from these latter 4 individuals were not included in analyses.

Participants

Study participants were 177 KPNW members, 93 women (52.2%) and 85 men (47.8%) with schizophrenia, schizoaffective disorder, bipolar disorder, or affective psychoses. The average age of participants at the initial interview was 48.8 ($SD = 14.8$) years and ranged from 16 years to 84 years. Additional descriptive information, including more about clinical problems, can be found in Green et al. (2008) and Young, Green and Estroff (2008).

Quantitative Data Collection and Analysis

Participants completed surveys concurrently with each wave of interviews. The surveys included demographic information (e.g., gender, age, household income) in addition to questions about recent mental health symptoms, lifetime psychiatric hospitalizations, social support, pet ownership and other topics. Questionnaire data were linked to health plan records of diagnoses. To assess whether pet ownership was associated with psychiatric symptoms, we used the Colorado Symptom Inventory (CSI) (Shern et al., 1994). The CSI is a 14-item self-report measure of psychiatric symptom status for the prior 30 days and produces an overall score that measures anxiety/depression, psychoticism, and dangerousness to self/others. To assess differences in social support, we used a single item from the Wisconsin Quality of Life Inventory. The item assesses quality of social support for the prior four weeks on three levels — (1) infrequent support from family and friends or only when absolutely necessary, (2) receiving only moderate support from family and friends, and (3) having good relationships

with other and receiving support from family and friends. Descriptive information from the questionnaire and health plan records appears in Table 1.

Interview Procedures and Qualitative Data Analysis

All interviews were semi-structured and audiotaped and were transcribed verbatim. Study investigators and interviewers reviewed transcripts each week during data collection. This ensured transcript accuracy and appropriate interviewing and was also used to develop descriptive coding schemes. Interviews were coded using the software program Atlas.ti (Muhr, 2004).

We used a grounded theory approach for data analysis (Strauss & Corbin, 1998) and, as such, did not begin with explicit hypotheses to be tested. All data coded as pet-related were analyzed via an iterative process. We developed a secondary, detailed coding scheme, specific to relationships with pets, by reviewing all material assigned to codes for pets and identifying themes and ideas present in the text. In the sections that follow, we describe the most commonly discussed and important themes derived from these interviews. Check coding was completed throughout the coding process to ensure coder consistency; inconsistencies were discussed and resolved by the coding team, and code definitions were revised to clarify code application when needed. We took several steps to increase methodological rigor: (a) multiple researchers participated in data collection and analysis to ensure multiple viewpoints and discussion of perceptions of data, (b) we sought consensus on coder agreement to ensure more accurate coding, (c) we considered rival explanations while analyzing data to facilitate trimming and validating the theoretical scheme, and (d) we compared researcher and theoretical findings to validate our findings (Boyatzis, 1998).

Results

Table 1 reports the characteristics of pet owners and non-owners in the sample. About 59% of participants reported having a pet. The study sample distributions for age and gender, within diagnosis, did not differ from the study-eligible population of health plan members, which, in turn, is a reasonable approximation of the metropolitan area general population.

We found no differences between pet owners and non-owners for the following measures: gender, age, social support, annual income, or self-reported social class. Pet owners compared to non-owners were more likely to have a diagnosis of bipolar disorder or affective psychosis than a schizophrenia-spectrum diagnosis, $\chi^2(1, n = 171) = 7.471, p = .005$, were more likely to have a co-occurring addiction $t(169) = -2.06, p = .041$, less likely to be hospitalized $F(1) = 4.27, p = .04$, and more likely to live with others than alone $\chi^2(1, N = 171) = 10.04, p = .001$

Nearly 75% of pet owners reported that their pets were “very important” to them. Among participants who did not have pets, 67% indicated that they would like to have a pet, although 25% were prevented from doing so by their living situation and 23% were prevented for other reasons. Species ranged from standard domestic cats and dogs, to birds, chinchillas, chickens, horses, and guinea pigs.

Four major themes were extracted from participant interviews about how pets assisted in their recovery from serious mental illness by (a) providing empathy and “therapy”; (b) providing connections that could assist in redeveloping social avenues; (c) serving as “family” in the absence of or in addition to human family members; and (d) supporting participants’ self-efficacy and strengthening their sense of empowerment.

Theme 1: Empathy and Therapy

Social isolation, reduced social network size, and loneliness are common among individuals with serious mental health problems, often constricting opportunities to interact with others or to feel understood by others. For some in the sample, pets provided a sense of being known and understood.

When I was depressed she would lay down on the bed next to me and put her paw across me, and I didn't even have to tell her I was depressed, she'd just sense it.

In sensing their owners' depression or other symptoms, pets could make their owners feel that someone empathized with their struggles. In fact, in some cases, pets were described as therapeutic.

...it sounds funny, but I've had this dog for about 8 years now, she's 18 pounds, and she's willful and demanding, and takes a lot of attention, and I think she's been therapeutic for me.

Regardless of the pet species, participants felt that animals sense human emotions and respond accordingly. They also were seen as giving more and expecting less than human companions—as one participant put it, “animal companions are unconditional love.”

Theme 2: Connections

For some individuals with mental illness, the outside world may feel intimidating and overwhelming. STARS participants indicated that their pets provided them with an avenue for re-connecting with others and subsequently finding social support to assist them in their recovery.

I think [having pets is] something that increases one's sanity, or one's connection with the rest of the world, just by having another creature you have to care for, because they do, even cats, seem to care for you, they seem to want closeness, jump on your lap, wanting to be petted and that sort of thing.

While pets may enable some to feel more connected to the world at large, others found them to be helpful in more intimate human interactions. One woman noted how her pet helped her become more open to the possibility of meeting others.

When I moved here from [state], the first couple of years I really didn't date, or anything, and then once I got my cat I started feeling more comfortable and open and wanting to meet more people. She just opened me up somehow.

Isolation can become intense during some phases of life with mental health problems. This participant noted that her pet helped her recover from drug and alcohol abuse that had been exacerbated by loneliness.

I just had other interests, like a lot of times in Hawaii I was alone by myself, like I am now, and I'd just drink and use drugs to get through the loneliness...Pets are pretty therapeutic, they ease the loneliness a little bit, going out for walks...

Some noted that very early on in life they used pets to help them overcome feelings of isolation and loneliness, thereby setting up a lifelong pattern of valuing pets as critical to their connection to the world. This participant spent time with horses.

... I just lived in the stables. That was my life and that was where I felt safe.

One woman noted that after being admitted to a mental hospital at age 18, her only friend was her dog.

I was working and I didn't have any friends. I would go shopping alone. I didn't have any transportation. I just walked to the shopping center. It was a long walk. It was so depressing. The only friend I had was my dog.

The means by which pets provided owners with a sense of connection across various life stages ranged from struggles during high school and adolescence to moving to a new locale. Yet despite these differences, it was apparent that in all of these cases, these pet owners experienced a stronger sense of belonging and integration into mainstream society. In some cases, pets served as companions, while in others they were a bridge to interacting with other humans. The most explicit commonality across these examples was ultimately an increased connection with others.

Theme 3: Pets as Family

For individuals recovering from serious mental illness, family may be a significant source of support. Yet for some, family relationships can be absent or strained. Moreover, individuals with mental illness may not feel comfortable having children. Participants noted that their pets filled these roles, often functioning as family.

A lot, they're like children for us, we thought we'd never get that way, but they are. They've taken the place of having a family. We do everything for them and they do everything for us, and it's really nice.

Theme 4: Self-Efficacy/Self-Worth

Participants also found that the control they were able to have over pets began to empower them, even if in a small way.

Right now I just feel so consumed by the whole diabetes thing that I'm not feeling like I do have all that much control, but I only have control over the checkbook, and the yard, and the dogs...

One woman saw her recovery as assisted by her pets, whom she found particularly helpful when feeling suicidal. The thought of her responsibility to her pets in part gave her the will to keep living. Rather than feeling mere obligation toward her pets, she realized that she contributed in an essential way to their continuing well-being.

They are something that is very important in my recovery and helping me not get too depressed. Even when I was so depressed, I was kind of suicidal. I never got really bad, but I was suicidal at one time. The thing that made me stop was wondering what the rabbits would do. That was the first thing I thought of and I thought, oh yeah, I can't leave because the rabbits need me. So they were playing a really big role in that.

Related to this notion of feeling responsible and in control, pet ownership also strengthened feelings of self-esteem and self-efficacy. One participant reported:

My best quality is that I love animals and I take care of animals... Other than that, I can't think of anything real outstanding.

Another remarked that to aid recovery, consumers should be allowed to have pets to develop a stronger sense of self and self-confidence. Participants suggested a variety of outlets to achieve this, including interacting with animals.

In reflecting upon her experience throughout STARS, one participant listed the main things that she needed to maintain her recovery. Her pet facilitated this process, as caring for her dog enabled her to have a sense of responsibility. Successfully fulfilling one's responsibilities enhances feelings of self-worth.

To have the support of my family, things I need, to have the hobbies I enjoy, and to have my fluffy, white dog to have something to take care of, and job security. Those are the main things I need for my recovery, so I can stay healthy and happy.

However, while pet ownership can enhance feelings of self-efficacy, in some cases, caring for animals also made their owners feel overwhelmed and, in feeling out of control, owners sometimes slipped into depression. While pets were not the only reason for this, they could add to the equation.

I was trying to care for 3 cats of my own that I loved, stray cats in the neighborhood I was feeding. I tried to spay the ones that appeared to be pregnant, and I was putting food out twice a day, and I was just feeling overwhelmed, just overwhelmed and more and more depressed, more a sense of failure, and finally it just got worse and worse and worse.

Similarly, losing a pet could trigger depression just as it might in persons without mental illness. Yet, some participants noted that they were eventually able to come to terms with their loss and still derive joy from memories of times past with their pets.

I was very depressed by [pet's] death. While she was getting worse, we had her home for a while and I had to make myself be strong [...] It was more after her death that I kind of broke down, and just thinking about her would make me cry for a couple of weeks or more. Gradually I got to the point where I knew that it was her time. The life that she had and what she had given to me, I could always think of that. It always makes me happy.

Like all human beings who need reassurance and a sense of self-worth, those with severe mental illnesses, likewise, need to feel a sense of empowerment. In some cases, pets provided a way in which patients were able to exercise control, feel that they mattered, and could make a difference in the life of another living thing. While caring for another creature could become overwhelming on occasion, most cherished this time. Perhaps most remarkably, one man reported regaining his will to live due to his sense of responsibility to his pets.

Discussion

Many individuals with serious mental illness view their pet-related experiences as contributing in important ways to their overall recovery. This research confirmed this effect and also found differences between people with serious mental illness who own pets and those who do not. For example, pet owners were more likely to have a co-occurring addiction, to live with others, and to have fewer hospitalizations over their lifetimes. Although we cannot determine causality in these relationships, these associations call for further research. We did not, however, find differences in symptoms or social support between pet owners and non-owners. It is possible that we were unable to identify such differences because of small sample sizes, or because our symptom measure covered a limited period (30 days) when effects on symptoms might become apparent over longer periods. Our quantitative findings of no differences in social support between pet owners and non-owners, in the context our qualitative findings, suggest that pets may provide *additional* forms of support rather than substituting for human support. The qualitative inquiry confirmed that pets serve several important roles for individuals with serious mental illness: pets provide empathy and “therapy,” facilitate connections that assist in redeveloping social avenues, serve as surrogates for “family,” and strengthen a sense of empowerment.

This work provides new insights into how people come to view their pets as therapeutic. STARS participants reported that pets both sense their emotions and respond in an empathic and understanding way. Further, in fulfilling their responsibilities to care for pets, individuals

indicated that pets actively contribute to their sense of empowerment and mastery. The role of pets in providing accessible forms of companionship, nonverbal communication, and opportunities for responsibility has direct applicability to recovery processes for individuals with serious mental illness.

Our findings are also consistent with previous research showing that pets facilitate development of social relationships (Hart, 2000; Harker, Collis & McNicholas, 2000) and can serve as surrogate family members (Cohen, 2002). Therefore, although individuals who own pets are not employing service animals per se, it appears these animals can serve a positive purpose in their owners' lives. Since there is a strong literature on the benefits of service animals, it would be useful to identify any differences between participants who own a pet of their choosing compared to those who employ service animals, as well as to describe whether effects of these animals on their owners are different. Patient choice of animal to adopt as a pet, and the unstructured nature of owner-pet interactions compared to more specifically delineated tasks of service animals, may contribute to differences between the effects of pets and service animals.

Although most of the research addressing the role of pets in aiding people with mental health problems has focused on benefits, we also found that the responsibility of caring for pets, while often empowering, can sometimes exacerbate symptoms for already stressed and vulnerable individuals. Thus, studies examining the effects of pets should consider identifying factors that are associated with positive or negative outcomes among individuals with serious mental health difficulties.

This study has several limitations. A primary limitation is that it is a comparison study in which pet ownership was not randomized, so we cannot disentangle causality of whether there is something different about individuals who choose to have pets from those who do not choose to have pets, or whether the situation of actually owning a pet changes individuals. Several individuals in this study who were non-pet owners reported wanting a pet, suggesting the former explanation, but more research is needed on this topic. Second, our sample was drawn from a single health plan in one geographic area, which may limit its generalizability to individuals with other types of health insurance or in different geographic areas. Since the themes the participants raised in this study are consistent with findings from other studies on pet ownership, we anticipate adequate generalizability.

Implications

The study findings have significant implications for mental health providers. Because pet owners with mental health problems may not always volunteer information about their pets, it may be important for clinicians to inquire about whether the client has a pet, and to take pets into account when working with individuals as they make decisions that might affect their ability to maintain their pets (e.g., hospitalizations, housing). When taking patient histories, health professionals could ask about pets and their importance to clients. Plans should be made to care for pets, perhaps in advance, to manage situations during which consumers might become unable to care for their pets. Health care and social agencies may also be able to make temporary or permanent pet placements when needed (Cohen, 2002), easing clients' concerns about their animals' safety and well-being. Finally, clinicians may want to consider suggesting interactions with pets or pet ownership for individuals in the process of recovering from mental illnesses, particularly those who are lonely or socially isolated and who desire pets. Clinicians should be aware, however, that some individuals who desire pets and might benefit from them may need help to address housing or other barriers to pet ownership. Mental health agencies that own or operate housing for their clients could also address pet ownership as a policy issue, rather than as an issue of protecting property, and could consider the beneficial therapeutic affects of pet ownership. Agencies might also consider having facility pets for those who do

not feel they can assume the responsibility of full ownership but would benefit from regular access to a pet.

Future studies should address temporal relations and causality between pet ownership and recovery from serious mental illness. Addressing the association between having a pet and health outcomes, including symptoms and quality of life would be beneficial. Pet ownership promises as a low-cost adjunct to therapy that could substantially benefit recovery.

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Table 1
Characteristics of Pet Owners and Non-Owners

	Pet Owners (n = 101) (n or M [SD])	Non-Owners (n = 70) (n or M [SD])	Total Sample (overall N = 177) (n or M [SD])
Gender			
Male	51	31	85
Female	50	39	92
Average age (SD)	47.3 (14.1)	52.8 (14.1)	49.1 (14.7)
Average adjusted household income (SD)	\$18,223 (\$12,251)	\$21,592 (\$13,333)	\$20,554 (\$13,383)
Self-reported social class			
Lower class	12	12	24
Working class	38	23	61
Middle class	35	28	63
Upper middle class	12	7	19
Upper class	1	0	1
Diagnosis (N)**			
Schizophrenia or schizoaffective disorder	35	39	75
Bipolar disorder or affective psychosis	66	31	102
Average number of non-inclusion psychiatric comorbidities	.73 (1.07)	.71 (1.05)	.73 (1.06)
Average number of addiction comorbidities*	.38 (.61)	.21 (.41)	.31 (.54)
Lifetime hospitalizations, controlling for age (SE) *	2.47 (1.44)	2.97 (1.50)	2.66 (1.47)
Living situation***			
live with others	86	45	131
live alone	15	25	40
Colorado Symptoms Inventory Score	17.43 (10.63)	15.71 (10.77)	16.63 (10.70)
Wisconsin Quality of Life Inventory/Social support quality, past 4 weeks (SD)	2.5 (.69)	2.53 (.63)	2.52 (.66)

Note: Not all data add to N = 177 due to missing data.

$p < .05$

**
 $p < .01$

 $p = .001$