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Randy O. Frost

*Smith College*, [rfrost@smith.edu](mailto:rfrost@smith.edu)

Gary Patronek

*Center for Shelter Dogs*

Elizabeth Rosenfield

*Smith College*

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## A Comparison of Object and Animal Hoarding

Randy O. Frost<sup>1</sup>, Gary Patronek<sup>2</sup>, and Elizabeth Rosenfield<sup>1</sup>

<sup>1</sup>Smith College

<sup>2</sup>Center for Shelter Dogs, Animal Rescue League of Boston

### Abstract

Recent research has highlighted the prevalence and harmful consequences of hoarding,<sup>[1]</sup> and investigators have proposed inclusion of hoarding disorder in DSM-5.<sup>[2]</sup> An unanswered question about the proposed disorder is whether people who hoard animals would meet diagnostic criteria for it. This paper discusses the similarities and differences between object and animal hoarding. People who hoard animals appear to meet the basic diagnostic criteria for hoarding disorder. Their homes are cluttered, disorganized, and dysfunctional. They have great difficulty relinquishing animals to people who can more adequately care for them, and they form intense attachments (urges to save) that result in significant impairment. However, they differ from people who hoard objects in several ways. These differences are significant enough to warrant comment in the text description accompanying the diagnostic criteria and consideration as a subtype of hoarding disorder. More research is necessary to determine the exact relationship between object and animal hoarding.

### Keywords

hoarding disorder; animal hoarding; DSM-5

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Significant research on hoarding has led investigators to recommend its inclusion in DSM-5 as a distinct disorder.<sup>[2]</sup> The major features of hoarding disorder are excessive acquisition, difficulty discarding or parting with possessions, and significant clutter and disorganization in the living areas of the home.<sup>[3,4]</sup> The symptoms are only considered to be part of hoarding disorder if they are not due to other mental or medical disorders. While research on hoarding disorder has increased exponentially since 1996, very little of it has examined differences in the nature of objects saved by people who hoard. A special case of hoarding that is defined by the nature of the objects saved is the hoarding of large numbers of animals in one's home. Animal hoarding is characterized by an accumulation of an unusually large number of animals, failure to provide adequate care and living environment for the animals, and impairment in health, safety, and social or occupational functioning.<sup>[5]</sup> It is estimated that there are 700 to 2,000 new cases of animal hoarding in the United States every year.<sup>[6]</sup> An important unanswered question regarding animal hoarding is whether it is simply a special form of hoarding disorder, or something quite different. This paper seeks to examine the similarities and differences between animal hoarding and compulsive object hoarding, and to inform decisions about its inclusion in DSM-V. See Table 1 for a summary.

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Randy O. Frost, Ph.D Department of Psychology Smith College Northampton, MA 01063 Phone: (413) 585-3911 Fax: (413) 585-3786 rfrost@smith.edu.

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## Symptom Similarity

There are both similarities and differences between object and animal hoarding with respect to the 3 main features of hoarding (clutter/disorganization, difficulty discarding, and excessive acquisition). Clutter and disorganization of possessions that fill living spaces making them difficult or impossible to use are the hallmark of object hoarding and are required for diagnosis of hoarding disorder.<sup>[2]</sup> Clutter inhibits normal movement through the house and access to furniture, and interferes with personal hygiene as well as food preparation and storage.<sup>[7]</sup> It appears that a large percentage of people who hoard animals also hoard objects. Of the 49 animal hoarders whose homes were visited in his study, Patronek<sup>[6]</sup> described 78% of them as “heavily cluttered and unsanitary”. Among these cases, clutter inhibited movement in 84% of them, as well as inhibited access to furniture (73%), the kitchen (71%), and the bathroom (63%). In a report on 71 animal hoarding cases collected from community agency case files, moderate to severe hoarding of newspapers, clothes, and containers occurred in approximately two-thirds of the cases.<sup>[5]</sup> Hoarding of food or garbage was apparent in 80%. In a smaller sample of individuals interviewed about their hoarding, only 5 of 16 (31%) hoarded objects.<sup>[8]</sup> Worth & Beck<sup>[9]</sup>, reported that “many” of their 31 animal hoarding cases accumulated other objects, but noted that not all did so.<sup>[9]</sup> Patronek and Nathanson<sup>[10]</sup> suggested that object clutter in animal hoarding might result from having a large number of animals in the home rather than excessive acquisition or difficulty discarding the objects themselves, although no data are available on this question. Regardless of whether people who hoard animals also hoard objects, the inability to use living spaces in the home because of disorganization and clutter (objects and/or animals) appears to characterize both object and animal hoarders. Both object and animal hoarding are associated with neglect of the home environment resulting in impairments in normal activities of daily living.<sup>[7,8,11]</sup> Most reports of animal hoarding emphasize the difficulty sufferers have in keeping the home organized and the animals well cared for.<sup>[5,6,9]</sup>

While both object and animal hoarding are characterized by clutter and/or disorganization, object and animal hoarding appear to differ in the extent to which problems in sanitation are present. Squalor characterizes the homes of a minority of object hoarded homes,<sup>[12]</sup> but nearly 100% of homes in which animals are hoarded, including feces and urine in the living areas and sometimes even dead animals.<sup>[6,10,13]</sup>

There is also a difference in the nature of the items saved. In object hoarding virtually everything imaginable is saved, with the most frequent items including paper, magazines, clothes and containers.<sup>[1,14]</sup> There are few reports of object hoarders who limit their collection to a single type of object. In contrast, most people who hoard animals concentrate on only one species - most frequently dogs or cats.<sup>[6,9]</sup>

Besides clutter/disorganization, the major criterion for hoarding disorder is “difficulty discarding or parting with personal possessions, even those of apparently useless or limited value, due to strong urges to save items, distress, and/or indecision associated with discarding” (p. 558).<sup>[2]</sup> People who hoard animals appear to display similar difficulty, often refusing to give up animals who are clearly sick, dying, or even already dead.<sup>[5,6]</sup> Intense distress accompanies attempts by authorities to remove animals.<sup>[15]</sup>

Between 80 and 95 percent of people with problems hoarding objects acquire actively and excessively, including compulsive buying and the acquisition of free things.<sup>[16]</sup> Those who acquire excessively have significantly more severe hoarding symptoms than those who do not.<sup>[16]</sup> The small number of people with hoarding disorder who acquire passively simply allow their homes to fill up with the normal flow of mail, newspapers, and packaging from purchased products.

People who hoard animals acquire them through a variety of active and passive means as well.<sup>[17]</sup> Many acquire excessively through print or internet advertisements, or by “rescuing” animals from shelters or off the streets. This excessive acquisition has been likened to an addiction.<sup>[13,18]</sup> Others acquire large numbers of animals more passively by not spaying and neutering their pets, and find themselves with an excessive number of animals as a result of excessive breeding.<sup>[6,9]</sup> There may be significant differences between those who acquire actively versus passively. Patronek, Loar and Nathanson<sup>[17]</sup> suggest that the “overwhelmed caregiver” who hoards animals acquires passively which may reflect a less severe form of animal hoarding than “mission-driven” animal hoarding where the acquisition is more active. The percentage who acquire actively vs. passively is unknown.

## Comorbidity

Hoarding of possessions has been associated with a variety of Axis I and Axis II disorders. Frequencies of major depressive disorder, generalized anxiety disorder, social phobia, obsessive compulsive disorder and attention deficit/hyperactivity disorder<sup>[19,20,21,22]</sup> are high in people with hoarding disorder. In addition, numerous studies have found Axis II disorders to be prevalent in hoarding. Samuels et al.,<sup>[22]</sup> found that 68% of subjects with hoarding symptoms had a personality disorder, compared with only 29% of a non-hoarding group of OCD patients.<sup>[22]</sup> In particular, paranoid, schizotypal, avoidant, and obsessive-compulsive personality disorders appear most frequently found among people who hoard.<sup>[23]</sup> No studies have examined the frequency of mental disorder in animal hoarding cases although clinical experience indicates that Axis II traits are common. However, some have speculated that animal hoarding may be connected to personality, dissociative, and attachment disorders, and perhaps delusional disorder.<sup>[10,13]</sup>

Hoarding disorder is not diagnosed if the hoarding behavior can be attributed to other mental or medical conditions. For instance, hoarding behavior is sometimes seen as secondary to schizophrenia, dementia, OCD, or certain forms of mental retardation.<sup>[2]</sup> In these cases, hoarding disorder would not be diagnosed.

Little information about animal hoarding secondary to mental or medical disorders is available. The overlap between squalor and both animal hoarding and severe mental illness (e.g., dementia), suggests that it is at least plausible that some cases of animal hoarding may be due to severe mental illnesses. However, Steketee et al.<sup>[8]</sup> failed to find differences in self-reported mental health symptoms between people who hoard animals and multiple pet owners, although the animal hoarding participants did report poorer overall functioning in adulthood. Nathanson<sup>[24]</sup> stated that a high percentage of the people who hoard animals with whom she has worked appear competent on psychiatric screening. In court proceedings, only one quarter of people hoarding animals are ordered to get pretrial psychiatric evaluations.<sup>[6,25]</sup> Although no information about the outcome of the evaluations is provided, Patronek<sup>[6]</sup> reported that 26% of the animal hoarding cases in his sample were placed under guardianship, institutional care, or supervised living following legal proceedings<sup>[6]</sup>, suggesting serious mental or physical difficulties. These findings suggest the possibility that a minority of animal hoarding cases may be due to other mental disorders. In reviewing potential models for animal hoarding, the Hoarding of Animals Research Consortium (HARC)<sup>[13]</sup> suggested that it could be a highly specific form of delusional disorder since it is often accompanied by claims that animals are well-cared for in the face of clear evidence to the contrary and frequent paranoia about animal protection officials.

Researchers have hypothesized that among people who hoard animals, dissociation may be related to their lack of insight and apparent indifference to squalor, and animal suffering.<sup>[10]</sup> A 1997 study that examined levels of pet attachment and dissociation among 305

undergraduate students found a significant correlation between pet attachment and dissociation ( $r = .24$ ). Participants with levels of pet attachment one standard deviation or greater above the mean were three times more likely to exhibit clinical levels of dissociation than were participants with lower levels of pet attachment.<sup>[26]</sup> The author's replicated their findings in a later study of 113 veterinary technician students. Results revealed a significant correlation between pet attachment and dissociation ( $r=.37$ ). Furthermore, 43% of participants with high levels of pet attachment presented with clinical levels of dissociation compared to zero percent of the participants who had levels of pet attachment one standard deviation or more below the mean.<sup>[27]</sup> Since people who hoard animals tend to display high levels of emotional attachment to their animals,<sup>[8,24]</sup> these findings have potentially important implications for understanding the mechanisms of animal hoarding, and suggest that dissociation may be an important feature in relation to insight and attachment in animal hoarding. Further research is needed to fully understand this relationship.

Patronek et al.<sup>[17]</sup> suggested that certain types of animal hoarding (those described as “overwhelmed caregivers”) may be precipitated by factors such as medical illness, loss of financial resources, grief, and mood and/or psychotic disorders. These cases show the excessive attachment characteristic of other animal hoarding cases but are able to maintain a reasonably healthy environment and limited animal population until something happens to change their available resources or ability to cope. They also show less intense reactions to giving up their animals. In such cases, the hoarding behavior appears to be secondary to another disorder or condition. There is no information on the frequency of this form of animal hoarding, however. Another form of animal hoarding (“exploiter” hoarders) may result from antisocial or borderline personality disorders. These individuals appear to lack empathy for their animals, and although they may be articulate and good at self-presentation, they are manipulative, reject the legitimacy of animal care authorities, and experience little guilt or remorse over the condition of their animals. Even so, very few hoarding cases fit what is described as the “exploiter” category.<sup>[17]</sup>

## Course and Demographics

Research on the gender distribution for the hoarding of objects presents a confusing picture. In sample drawn from people seeking help or solicited for their hoarding behavior, hoarding appears more frequently in women.<sup>[4]</sup> In epidemiological studies of object hoarding the gender ratio is equal or more frequent in men.<sup>[23,28,29]</sup> The discrepancy may be accounted for by women being more willing than men to volunteer for studies and/or treatment. Four studies of animal hoarding provide information on demographic characteristics. Each of them reviewed case files from animal control agencies<sup>[5,6,9]</sup> or solicited interviews based on those case files.<sup>[8]</sup> In studies reviewing case files, the frequency of women ranged from 70 to 83 percent.<sup>[5,6,9]</sup> Since these represented all cases at these agencies, the preponderance of women in these samples can't be attributed to differential willingness to volunteer. In the study soliciting interviews, women accounted for 94% of the cases.<sup>[8]</sup> Thus it appears that animal hoarding is more prevalent in women, while object hoarding is not or perhaps even more prevalent in men. With respect to other demographic characteristics, people with either object or animal hoarding are more often single or divorced than for the general population, and they more often live alone and are socially isolated.<sup>[5,8,13,14, 30]</sup>

Object hoarding often begins in childhood or adolescence with a mean age of onset between 11 and 15 years although it only becomes clinically significant several decades later.<sup>[1,31,32]</sup> Animal hoarding does not typically appear until much later,<sup>[5,6,9]</sup> although this conclusion is based on the ages at which animal hoarding problems get identified by animal control agencies and not on studies of onset. Later onset in animal hoarding may be due to the fact that children and adolescents do not have enough control over their environment to collect

animals, making the difference more logistic than real. It is also possible that other compensatory behaviors begin earlier and shift to hoarding animals when individuals have more control over their environment. Among people who hoard objects, most (73%) report a chronic course with a significant minority (21%) describing a worsening one.<sup>[33]</sup> The course in animal hoarding appears to be chronic as well with a tendency to worsen overtime and a very high recidivism after the removal of animals, although few data are available on the topic.<sup>[6,10]</sup>

## Environmental Risk Factors

Several studies have found higher frequencies of trauma or traumatic life events among people who hoard objects.<sup>[21,23,32,34]</sup> Samuels et al.<sup>[33]</sup> found excessive physical discipline and psychopathology in parents to be associated with the later development of object hoarding. Some limited evidence suggests that problems with exacerbation of object hoarding has been linked to interpersonal violence.<sup>[33]</sup> Similarly, anecdotal reports suggest high rates of abuse, neglect, inconsistent or absent parenting, and trauma in people who hoard animals.<sup>[5,10,13]</sup> Furthermore, Steketee et al.<sup>[8]</sup> found significantly greater reports of chaotic home life during the childhoods of people who hoard animals compared to multiple pet owners, as well as negative family relationships early in life and poorer attachments to parents. Patronek and Nathanson<sup>[10]</sup> suggest that such dysfunctional attachment early in life may lead to a compensatory over attachment to animals. Loss of an important adult relationship, a significant health crisis, or another traumatic triggering event have all been hypothesized to exacerbate animal hoarding.

## Insight

People who hoard objects often display a lack of awareness of the severity of their behavior.<sup>[4,33]</sup> They frequently resist attempts at intervention while denying any problem and rationalizing their behavior. A survey of family members of people who hoard objects found the family members described more than half of their hoarding loved ones as having “poor insight” or “lacks insight/delusional”.<sup>[33]</sup> Similar descriptions have been used for people who hoard animals.<sup>[35]</sup> In fact, lack of insight seems to characterize most if not all people who hoard animals. Most people who hoard animals live in unsanitary conditions and often with dead or sick animals, yet most do not admit to the existence of a problem. Such observations have led to the suggestion that animal hoarding may be a form of delusional disorder.<sup>[8,13,18]</sup> The deficits in insight exhibited in animal hoarding are also consistent with the failure to mentalize noted in other attachment-related disorders.<sup>[36]</sup>

## Cognitive and Emotional Processing Deficits

Information processing deficits have been found to be associated with object hoarding. Difficulties with attention, decision-making, memory, and organization play a major role in hoarding behavior.<sup>[3,4]</sup> Unfortunately, no information is available on whether such deficits play a role in animal hoarding cases. However, anecdotally, people who hoard animals frequently appear to have difficulties staying on task. For instance, Nathanson<sup>[24]</sup> stated that nearly 70% of her animal hoarding cases demonstrated poor information processing, planning, and organization.

The need for control over possessions is a significant factor in compulsive hoarding of inanimate objects. People who hoard express an excessive desire to maintain control of possessions and became distressed when others touch their objects without permission.<sup>[3]</sup> Steketee, Frost, and Kyrios (2003) found a correlation between control over possessions (“I like to maintain sole control over my things”, “no one has the right to touch my possessions) and hoarding severity.<sup>[36]</sup> Similarly, a central feature of animal hoarding is the need for



control over their animals. People who hoard animals typically become extremely distressed at the suggestion of another person or agency caring for their animals.<sup>[35]</sup> People with animal hoarding problems strongly resist any attempts by authorities to take control over their animals, often insisting that they are the only ones capable of providing adequate care for the animals, despite evidence to the contrary.<sup>[6]</sup>

People who hoard objects report strong feelings of responsibility for being prepared, for protecting the well-being of possessions, for finding uses for their possessions, and for not wasting them.<sup>[3,37]</sup> Similarly, a key feature of animal hoarding is a distorted view of responsibility. People who hoard animals often maintain that it is their sole responsibility to “save” or “rescue” abandoned animals.<sup>[9,13]</sup> In addition, they frequently feel an overwhelming urge to acquire animals in order to prevent harm from befalling them.<sup>[6,13]</sup>

People who hoard possessions report a variety of intense emotional attachments to objects including seeing them as extensions of themselves and loving them the way they love people. Objects are also perceived as providing comfort and getting rid of them feels like losing or abandoning a loved one, or like a part of them is dying.<sup>[3,37,38]</sup> People who hoard possessions also frequently attribute human-like characteristics to their possessions.<sup>[3,39]</sup>

People who hoard animals also show excessive emotional attachments to their animals. They view their pets as members of their family and as possessing human-like qualities to a much greater extent than normal pet owners.<sup>[8,24]</sup> Additionally, when forced to choose, they have been known to favor keeping animals over relationships with human family members. They often refer to their animals as their children, grandchildren or siblings.<sup>[8,18,35]</sup> In one study, animal hoarding participants considered their animals as part of their family and insisted that the animals had the same characteristics and intelligence as humans to a significantly greater extent than did multiple pet owners.<sup>[8]</sup> In addition, some believe that they have a unique, almost magical, ability to communicate and empathize with their animals.<sup>[13]</sup>

## Family History

A large proportion of people with hoarding problems report at least one first-degree relative with similar problems.<sup>[1,14,23,40]</sup> Object hoarding among OCD patients also suggests that hoarding is familial.<sup>[41]</sup> Among female twin pairs, Iervolino et al.<sup>[28]</sup> found that genetic factors accounted for approximately 50% of the variance in hoarding severity. To date, no studies have examined familial or genetic factors in animal hoarding. Intergenerational hoarding of animal is encountered, but it is not clear whether all parties actively participate.

## Neural Substrates

Research focusing on the neural substrates of hoarding has implicated the frontal limbic circuits in the mediation of hoarding symptoms. Specifically, fMRI studies suggest that the anterior cingulate cortex and other ventral and medial prefrontal areas play a role in people with hoarding symptoms<sup>[42,43]</sup> as well as excessive activity in the lateral orbitofrontal cortex and parahippocampal gyrus.<sup>[44]</sup> Furthermore hoarding symptoms may be associated with lower at rest glucose metabolism in bilateral dorsal and ventral anterior cingulate cortex.<sup>[43]</sup> These areas are involved in decision-making, attention, and emotional regulation. At present, no data are available concerning the neural substrates of animal hoarding.

## Legal Issues

While hoarding of objects can lead to code violations, eviction, and condemnation of the home<sup>[7]</sup>, animal hoarding typically involves an additional layer of legal problems, including criminal prosecution.<sup>[45]</sup> Criminal prosecutions for animal abuse and neglect occur

frequently, and at least one state (Illinois) has made animal hoarding itself a criminal offense.

## Treatment

There is a growing literature on the treatment of object hoarding<sup>[46]</sup>, but virtually no research on the treatment of animal hoarding. This is particularly troublesome since treatment is frequently ordered as part of the legal resolution of these cases.

Recommendations from clinicians who have worked on this problem emphasize building a trusting relationship, reducing social isolation, and focusing on themes related to grief, loss, and attachment<sup>[10]</sup>.

## Summary

The paucity of research on animal hoarding limits the conclusions that can be made about its relationship to object hoarding. Although not as prevalent as object hoarding, animal hoarding is a severely dysfunctional behavior. The personal and public health consequences are substantial and in fact, may be more severe than those associated with the hoarding of objects.<sup>[2]</sup> The current wording of the proposed DSM-V diagnostic criteria for hoarding disorder does not specify type of possessions that are necessary for diagnosis. Since animals are legally considered property (i.e., possessions), it would appear that the hoarding of animals would qualify as hoarding disorder. Certainly the diagnostic features of hoarding disorder by and large characterize people who hoard animals. They display great difficulty letting go of animals, even after they are dead. The attachments they have for their animals are extreme and rigid, often at the expense of their own well-being. The urge to save animals and the distress experienced when they are removed are intense. The resulting disorganization and clutter create significant distress and impairment, probably more so than does the hoarding of objects. Based on these similarities, it would appear that the hoarding of animals meets each of the inclusion criteria for hoarding disorder. Although mostly anecdotal, it appears that some cases of animal hoarding may be secondary to other disorders or problems.

Several other similarities between animal and object hoarding are noteworthy. Both appear to follow a chronic course and are characterized by an exaggerated sense of responsibility, need for control over objects/animals, and intense emotional attachments to objects/animals. Both show impaired insight into the nature of the problem.

However, there are significant differences as well. The vast majority of animal hoarding cases are characterized by squalid living conditions while only a small number of object hoarding cases involve squalor. Differences in gender ratio are apparent, although differences in the way cases have been generated in object versus animal hoarding studies make conclusions about this issue somewhat tenuous. Age of onset may be different, although again no adequate studies of the onset of animal hoarding have been conducted. Much else about animal hoarding remains unknown.

Because of the dissimilarities, inclusion of a description of animal hoarding in the text accompanying the diagnostic criteria in DSM-V may be needed to clarify whether it should be considered as a separate subtype of hoarding disorder. Basic studies of animal hoarding, comorbidity, neural substrates, information processing deficits, and family features are all sorely needed.

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**Table I**

## Comparison of Animal and Object Hoarding

	<b>Animal Hoarding</b>	<b>Object Hoarding</b>
Symptom Similarity	<ul style="list-style-type: none"> <li>-cluttered and disorganized living spaces, perhaps as a result of having a large number of animals and not due to excessive acquisition.<sup>[10]</sup></li> <li>-difficulty giving up animals even when sick or deceased.<sup>[5,6]</sup></li> <li>- frequent squalor, including presence of feces, urine, and dead animals.<sup>[6,7]</sup></li> <li>-frequently hoard only one species of animal.<sup>[6,9]</sup></li> <li>-excessive acquisition (active or passive).<sup>[17]</sup></li> </ul>	<ul style="list-style-type: none"> <li>-cluttered and disorganized living spaces.<sup>[2]</sup></li> <li>-difficulty discarding.<sup>[2]</sup></li> <li>-infrequent squalor.<sup>[12]</sup></li> <li>-multiple types of objects saved.<sup>[14]</sup></li> <li>-excessive acquisition (active or passive).<sup>[16]</sup></li> </ul>
Course and Demographics	<ul style="list-style-type: none"> <li>-more prevalent in women but epidemiological studies lacking.<sup>[6,9]</sup></li> <li>- more often single or divorced, and more likely to live alone than general population.<sup>[6]</sup></li> <li>-typically diagnosed in middle or older age.<sup>[6,10]</sup></li> <li>-chronic course</li> <li>-high recidivism after removal of animals.<sup>[6,10]</sup></li> </ul>	<ul style="list-style-type: none"> <li>- Gender variation is equal or more frequent in men.<sup>[23,28,29]</sup></li> <li>-more often single or divorced, and more likely to live alone than general population.<sup>[23]</sup></li> <li>-mean age of onset between 11 and 15 years, though often not serious until older.<sup>[11,31,32]</sup></li> <li>-chronic course in 73% of cases.<sup>[33]</sup></li> </ul>
Environmental Risk Factors	<ul style="list-style-type: none"> <li>-anecdotal reports suggest high rates of abuse, neglect and trauma.<sup>[5,13,17]</sup></li> <li>-chaotic home life, negative family relationships, and poor attachment to parents in childhood.<sup>[8]</sup></li> <li>-loss of stabilizing adult relationship or serious health crisis connected to exacerbation of animal hoarding symptoms.<sup>[10]</sup></li> </ul>	<ul style="list-style-type: none"> <li>-stressful or traumatic life events.<sup>[21,23,32,34]</sup></li> <li>-excessive childhood physical discipline and parent psychopathology.<sup>[23]</sup></li> <li>-interpersonal violence connected to onset or exacerbation of symptoms.<sup>[33]</sup></li> </ul>
Cognitive and Emotional Processing	<ul style="list-style-type: none"> <li>-No data available regarding connection between information processing deficits and animal hoarding</li> <li>-need for control over animals.<sup>[6]</sup></li> <li>- distorted beliefs about responsibility.<sup>[9,13]</sup></li> <li>-Excessive emotional attachment.<sup>[8,17]</sup></li> <li>-attribute human characteristics to animals.<sup>[8,15,18]</sup></li> </ul>	<ul style="list-style-type: none"> <li>-Difficulty with attention, decision-making, memory and organization.<sup>[3,4]</sup></li> <li>-need for control over objects.<sup>[37]</sup></li> <li>-distorted beliefs about responsibility.<sup>[3]</sup></li> <li>-Excessive emotional attachment.<sup>[37,38]</sup></li> <li>-attribute human characteristics to objects.<sup>[3,37]</sup></li> </ul>
Insight	<ul style="list-style-type: none"> <li>-low insight.<sup>[17]</sup></li> <li>-hypothesized as a form of delusional disorder.<sup>[8,13,18]</sup></li> </ul>	<ul style="list-style-type: none"> <li>-low insight.<sup>[4]</sup></li> <li>-more than half of object hoarders described by family members as having "poor insight" or "delusional".<sup>[33]</sup></li> </ul>
Comorbidity	<ul style="list-style-type: none"> <li>-no data available, but hypothesized that connected to personality, dissociative, attachment, and delusional disorders.<sup>[10]</sup></li> </ul>	<ul style="list-style-type: none"> <li>-Axis II personality disorders.<sup>[2,23]</sup></li> <li>-major depressive disorder, generalized anxiety disorder, social phobia, OCD, and AD/HD.<sup>[7,19,21,22]</sup></li> </ul>
Familiarity	No data available	<ul style="list-style-type: none"> <li>-large proportion of hoarders report at least one first degree relative with similar problems.<sup>[1,14,23]</sup></li> <li>-genetic factors account for 50% of variance in object hoarding severity.<sup>[26]</sup></li> </ul>

	<b>Animal Hoarding</b>	<b>Object Hoarding</b>
Neural Substrates	No data available	<ul style="list-style-type: none"> <li>-frontal limbic circuits involved in the mediation of compulsive hoarding</li> <li>-lower glucose metabolism in bilateral dorsal and ventral anterior cingulate cortex.<sup>[43]</sup></li> <li>-fMRI studies indicate activation in fronto limbic network including ventromedial prefrontal cortex.<sup>[42]</sup></li> <li>-excessive hemodynamic activity in lateral orbitofrontal cortex and parahippocampal gyrus when deciding whether to save or discard a possession.<sup>[44]</sup></li> </ul>
Legal Issues	-Code violations and criminal prosecution. <sup>[45]</sup>	-Code violations. <sup>[7]</sup>