

An exploratory study on psychosocial variables of people participating in Zoophilic Blogs/Websites

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Abstract

Objectives; This study aimed to investigate sociodemographic and psychometric features of people participating in zoophilic blogs/websites.

Methods: One-hundred six subjects provided information through an online questionnaire. Measures of drug misuse, sexual impulsivity, and depression symptoms were included.

Results: Childhood sexual abuse, earlier onset of sexual interest in animals, preference for male animals, and higher levels of sexual impulsivity were associated with higher zoophilic interest.

Conclusion: The strength of sexual interest may be associated with negative events in childhood, early onset of anomalous sexual interest, and higher sexual impulsiveness, characteristics commonly seen among paraphilic persons.

Introduction

Human sexual relations with animals have been described since the beginning of human history in diverse cultures worldwide [1]. However, only in the middle 20th century did researchers on sexual behavior begin to report instances of animals mating across distinct species [2]. Causes, consequences, and zoophilia-related psychosocial factors have been recently investigated.

Although zoophilic behavior provokes strong emotional reactions and political debates, research is lacking on its prevalence and psychosocial aspects [3]. Kinsey *et al.* [2] showed that 8% of the male and 3.5% of the female populations of the US had had at least one zoophilic encounter in their lifetimes with a higher prevalence in the rural population, reaching up to 40%. Twenty years later, Hunt [4] reported that 5% of American men and 2% of American women had had at least one sexual encounter with an animal. Although this behavior is thought to be limited to rural areas, historical data show that it reaches urban communities as well [1]. Out of general population context, a small-sample study showed that half of psychiatric inpatients used animals as a sexual outlet (in both fantasy and activity) compared with 15% of psychiatric staff and 10% of medical inpatients [5]. A Brazilian study involving 200 male outpatients with erectile dysfunction showed that about 26% had had sexual relation with an animal during adolescence [6]. In another examining 118 patients with penis cancer (and 374 healthy men), about 45% (32% in controls) had had sexual relation with an animal in their lifetimes [7].

Some studies examine the association between previous sexual activities with animals and later physical/psychosocial problems. Authors have suggested zoophilic behavior as a risk factor for penile cancer [7], infectious diseases [8,9], and anal or genital injuries [10-12]. Prisoners who admitted having sex with animals in childhood were more likely to commit interpersonal crimes on more occasions than prisoners who denied this behavior [13,14].

Despite the possible deleterious consequences of sexual activities between persons and animals, there is few data on the psychosocial aspects of zoophilia as defined by medical manuals. In fact, “zoophilia” is used to describe an exclusive or predominant desire for sexual contact with animals including an emotional connection [3, 15]. Moreover, self-identified zoophiles make a distinction between themselves and others who use animals as sex objects without emotional attachment or even who are curious about this type of sexual activity or interest [15-17]. Unfortunately, many studies on this theme provide no detailed assessment of the behaviors subsumed under the terms “zoophilia,” “bestiality,” or “sex with animals” nor investigate the strength of the desire for animals to distinguish zoophilia from other sexual activities with animals. This distinction is of utmost importance if researchers want to understand zoophilic behavior, verify related factors, and develop management strategies for riskier cases. Clinical samples of people who enjoy sex with animals are extremely rare, with the most recent data gathered from people participating in zoo-specific sites [16, 18].

Self-identified zoophiles emphasize the emotional rather than the sexual aspect. Thus, having a higher sexual interest in animals could be closer to a paraphilia. Currently, according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V) [19], some factors, such as comorbid Axis I and impulsive control disorders, differentiate individuals with a certain sexual preference from those with a Sexual Preference Disorder or paraphilia [20].

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Authors have suggested that zoophilia can be more prevalent in men of low educational level living in rural areas and hypothesized that this disorder is more frequent in patients with mood disorders and substance abuse [21-25]. Despite the lack of studies on its etiology, some neurobiological mechanisms have been proposed, mainly among people who developed this behavior when were treated with dopaminergic medications [24,26-30].

The aim of this study is twofold: firstly, to describe the sociodemographic and psychometric features of participants in a zoophilia blog website and, secondly, to investigate if these sociodemographic and psychometric variables are associated with a greater sexual interest in animals. Based on the literature, we hypothesized that those with the highest sexual interest in animals will have lower educational levels, higher levels of depression and sexual impulsiveness, and more alcohol and drug use problems than their counterparts. Moreover, we hypothesized that those with the highest sexual interest in animals could be taking psychotropic medications, mainly dopaminergic drugs, more frequently. A higher sexual interest in animals can be closely related to zoophilia diagnosis. As we did not use diagnostic criteria to separate groups, strength of interest was used as the criterion in this study.

Methods

Procedure

This study was carried out using the Internet. We located a website catering to a network of people with sexual interest in animals and contacted the director to ask whether an academic study would be feasible. The director explained that all members should show affection toward animals and that no ill treatment or cruelty against animals was tolerated. This recommendation was printed in capital letters on the site. After receiving permission, we made an online questionnaire available to members of this network.

Given that sex between persons and animals is stigmatized and illegal in different societies, we decided not to create anxiety or discomfort by contacting these people directly. We embedded diverse questions from validated instruments in a questionnaire and posted it on this site at each visit.

University computer center specialists designed a procedure system to guarantee participants' anonymity during this investigation. Google Docs was used to create a computerized questionnaire system. A Google account was created solely to manage data for this research. Questionnaires were programmed to allow a simple read and complete push-button format. The responses were formatted so all questionnaire data could be moved to separate spreadsheets for subsequent analysis. Moreover, a confidential login system was developed that allowed secure data collection, following previous literature recommendation [31]. Forms were configured to reject incomplete questionnaires, and the system allowed participants to go back and change an item without recording both responses. Once a participant submitted responses, it was not possible to return and change responses, avoiding multiple submissions from a same person. A "thank you" page appeared at the end of the survey.

Researchers made themselves familiar with this virtual community for instance, reading the messages in a newsgroup for some time before initiating invitation. Researchers made diverse visits at different times. At each visit, researchers introduced themselves and posted messages including the link to the questionnaire, explaining the purpose of the study; assuring anonymity; and giving the opportunity

to withdraw from the study, newsgroup, and/or community without any prejudice. All researchers identified themselves with their real names and university positions. Participants who wanted more information could contact the Ethics Committee or any researchers at their institutional departments. Moreover, the interviewers offered participants the possibility of discussing assessment results by e-mail or Skype.

This study was approved by the Ethics Committee of ABC Medical School, Santo André, São Paulo, Brazil.

Measures

This was a cross-sectional study in which subjects provided information through an online questionnaire. We inserted some questions evaluating sociodemographic aspects and factors possibly associated with zoophilic behaviors and the following validated instruments:

The Drug Abuse Screening Test (DAST)

This test is a quantifiable self-report instrument for use in clinical and nonclinical settings to detect drug misuse pertaining to a range of psychoactive drugs. The original version contains 28 yes-no questions, and a cutoff score of 6 or more (score range 0–28) indicates a probable drug use problem [32]. A cutoff score of 6 to 7 reaches a sensitivity of 0.96 and a specificity of 0.85.

The Sexual Addiction Screening Test (SAST)

This test assesses sexually compulsive or addictive behavior. Designed through cooperation with hospitals, treatment programs, private therapists, and community groups, the SAST provides a profile of responses that discriminate between sexually addictive and non-addictive behavior. It contains 25 yes-no questions, and a cutoff score of 6 or more (score range: 0–25) indicates a probable addiction to sex [33].

The Beck Depression Inventory (BDI)

This inventory measures behavioral responses related to depression among adults and adolescents. In this 21-item instrument, scores above 10 (score range: 0–63) indicate the presence of a depressive syndrome [34, 35]. Sensitivity of 100% and specificity of 0.83 are obtained with a cut-off score of 9/10.

These instruments were chosen for their ability to assess symptoms and their theoretical and empirical support. In general, they are brief; easy to administer, score, interpret, and understand; and have adequate psychometric properties. All are adapted to Brazilian samples.

Other questions were prepared focusing on the following topics: sociodemographic data, history of childhood sexual abuse, employment history, sexual orientation, onset age of sexual interest in animals, age at first access to a zoophilia website, type and sex of preferred animal, and age at the first sexual activity with an animal. We also questioned if the participant had already had penetrative sex with animals.

The following question was presented to evaluate the intensity of sexual interest in animals in a numeric input scale with midpoint: "On a scale of 0 to 10, how much has your sexual interest in and desire for animals been in the last 6 months?"

Participants

Only participants who visited the zoophilic blog website and consented to participate were included in the analysis. Researchers visited the site several times to invite people to participate between August 2013 and December 2014.

Participants were assured that participation was voluntary, that the questionnaire would be submitted to a Google server using a secure website, that only the researchers would see the data, and that all data would be kept confidential. We also informed them that no guarantees could be made regarding third-party interception of data sent via Internet. No financial reward was provided because this is not allowed by Brazilian legal determinations [36].

Analysis

The intensity of sexual interest in animals was the main outcome measure and was evaluated on a scale of 0 to 10 in a numeric input scale with midpoint; after, the values were converted into T-scores. Those with a T-score greater than 50 were classified as having “greater zoophilic interests,” and participants with a T-score equal to or less than 50 were classified as having “lower zoophilic interests.” To verify if this measure would be adequate and minimally reliable, we hypothesized that all participants who reported having sex exclusively with animals in the last six months would fall into the group with T-scores greater than 50. Only after this, other analyses would be carried out.

Univariate analyses were then conducted to verify the associations of zoophilic interest with the remaining variables. Categorical variables were compared using the χ^2 or Fisher’s exact tests, following Monte Carlo’s method. The continuous variables monthly income and DAST were log-transformed to reach normality. Afterward, a multiple logistic regression was used to predict group membership using simultaneous forced entry. Only the independent variables with significance levels below .10 in univariate analyses were retained in this model [37].

Subsequently, to further explore associations between the variables with significance levels below .10 and sexual interest in animals, data were analyzed using Structural Equation Modeling (SEM). The Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Goodness of Fit Index (GFI), Adjusted GFI (AGFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR) were used to evaluate model fit. Some recommendations regarding values for global model fit were adopted. Specifically, CFI, TLI, GFI, and AGFI values greater than .90, and RMSEA and SRMR values lower than .08 were deemed indicative of an acceptable model fit [38, 39]. All analyses were performed with SPSS AMOS for Windows, version 20 (Chicago, IL, USA), with the alpha set at $p < 0.05$ level.

Results

Descriptive statistics

One-hundred and six people participated in this study. As shown in Table 1, the mean age was 35.1 (SD = 9.1; Median = 34; Range = 21-58) years, 71% were male, 46% were single, 77% were White, 79% had completed seventh grade or more, and 77% were heterosexual. The mean monthly income (in “Reais”, the Brazilian currency) was \$R 4,246.82 (SD = 4,097.80), corresponding to approximately \$US 1,900. Twenty-five (23%) participants had histories of sexual abuse in childhood. Eight-six (81%) participants had already had sex with animals with a mean age at the first sexual relation with an animal of 19. Seventy-five (70%) participants preferred dogs, and 52% chose male animals for sexual arousal. Amongst psychometric variables, the mean level on the SAST (mean = 7.7) suggests our sample is composed of individuals with high sexual impulsiveness. Few participants (8%) reported taking prescribed medications (antipsychotics, antidepressants, and others). Only 11% of the participants reported having sexual relations

Table 1. Sociodemographic and psychometric features among people visiting zoophilia websites

Variables	Subjects (n = 106)
Age, mean (SD)	35.31 (9.15)
Gender, n (%)	
Male	75 (70.75)
Female	31 (29.25)
Marital status, n (%)	
Married / Common-law	40 (37.73)
Single	49 (46.23)
Divorced / Widowed	17 (16.04)
Race, n (%)	
White	82 (77.36)
Black	4 (3.77)
Mixed Races	20 (18.87)
Educational level, n (%)	
7 th grade or less	22 (20.75)
More than 7 th grade	84 (79.25)
Sexual orientation, n (%)	
Heterosexual	82 (77.36)
Homosexual	6 (5.66)
Bisexual	18 (16.98)
Monthly Income (in Reais, the Brazilian currency), mean (SD)	4246.82 (4097.80)
History of being sexually abused in childhood, n (%)	25 (23.58)
Onset age of sexual interest in animals, mean (SD)	19.91 (9.13)
Age at the first access to a zoophilic website, mean (SD)	26.24 (9.45)
Current zoophilic desire intensity, mean (SD)	6.96 (2.82)
Type of preferred animal, n (%)	
Dogs	75 (70.75)
Equines	14 (13.21)
Both	17 (16.04)
Animal’s sex, n (%)	
Male	55 (51.89)
Female	24 (22.64)
Both	27 (25.47)
Subject has already had sex with animals, n (%)	86 (81.13)
Sexual activities exclusively with animals in the last 6 months, n (%)	12 (11.32)
Age at the first sexual activity with an animal ^a , mean (SD)	19.33 (8.50)
Zoophilic websites influenced sexual practices with animals, n (%)	46 (43.40)
Zoophilic sexual activities preceded website accesses, n (%)	65 (61.32)
Currently taking prescribed medication, n (%)	9 (8.49)
Type of medication currently used, n (%)	
Antipsychotic	2 (1.89)
Antidepressant	3 (2.83)
Others (anti-diabetic)	4 (3.77)
DAST, mean (SD)	4.59 (5.24)
SAST, mean (SD)	7.74 (5.88)
BDI, mean (SD)	6.07 (8.32)

^a Calculated for those that admitted having sexual activity with an animal.

DAST, Drug Abuse Screening Test; SAST, Sexual Addiction Screening Test; BDI, Beck Depression Inventory

exclusively with animals. All of these participants with exclusive sexual activities with animals showed high zoophilic interest, with T-score > 50. Thus, the remaining analyses were performed. It is important to note that T-score higher than 50 was equivalent to sexual interest in animals of 7 or more on the scale used in this study.

Comparison between groups

Univariate analyses (Table 2) showed that participants with a “greater zoophilic interest” had more frequent history of childhood sexual abuse, earlier onset of sexual interest in animals, and higher mean level on the SAST. Moreover, the “greater zoophilic interest” group chose male animals more frequently than the “lower zoophilic interest” group. A multivariate adjustment found that earlier onset age of sexual interest in animals, higher level on the SAST, and preference for male animals increased the odds of belonging to the “greater zoophilic interest” group (Table 3). In this multivariate analysis, the model was statistically significant ($\chi^2(6) = 35.34, p < .01$), with a low group membership variance ($R^2 = .38$), and an overall predictability of 75%. We also checked model fit using Hosmer and Lemeshow test ($\chi^2(7) = 11.88, p = .11$).

SEM analyses

For the purposes of our SEM analyses, we used a robust maximum likelihood estimation procedure to estimate the fit of the structural model [40]. As sexual impulsiveness, paraphilias in general, and drug use problems are commonly associated with childhood sexual abuse [41-45], we arranged the model so that childhood sexual abuse was

considered an exogenous variable, that is, an independent variable that can affect the model without being affected. Then, the sample was evaluated using bootstrapping (500 bootstrap samples) with the Bollen-Stine Bootstrap statistic being conducted to verify absolute fit. The first SEM, shown in Figure 1, fitted the data reasonably well, with $2/df = 3.08$; CFI = .95; TLI = .89; GFI = .97; AGFI = .89; RMSEA = .06 [95% CI = .01 .15]; SRMR = .06, and a Bollen-Stine statistic of $p = .29$. Then, all significant paths were retained, and all non-significant paths were removed to create a more parsimonious model. This simpler model fitted better the data, with $2/df = 2.00$; CFI = .99; TLI = .99; GFI = .97; AGFI = .93; RMSEA = .02 [95% CI = .01 .12]; SRMR = .05, and a Bollen-Stine statistic of $p = .57$, as illustrated in Figure 2.

Comparison between the models

The first model was compared to the second using the Bayesian Information Criterion (BIC) and Akaike Information Criterion (AIC). Although the BIC and AIC do not have conventional cutoffs, smaller values indicate a better fit [40]. The BIC and AIC values were 111.54 and 52.95 for the first model and 68.81 and 34.18 for the final model, respectively.

Discussion

Our sample has sociodemographic characteristics similar to other Internet studies (Miletski, 2000, 2002): on average, our participants are relatively young, the majority is white, half are single, most are men, the majority prefers male dogs, and the majority is heterosexual. Differently, all our participants report living in urban communities,

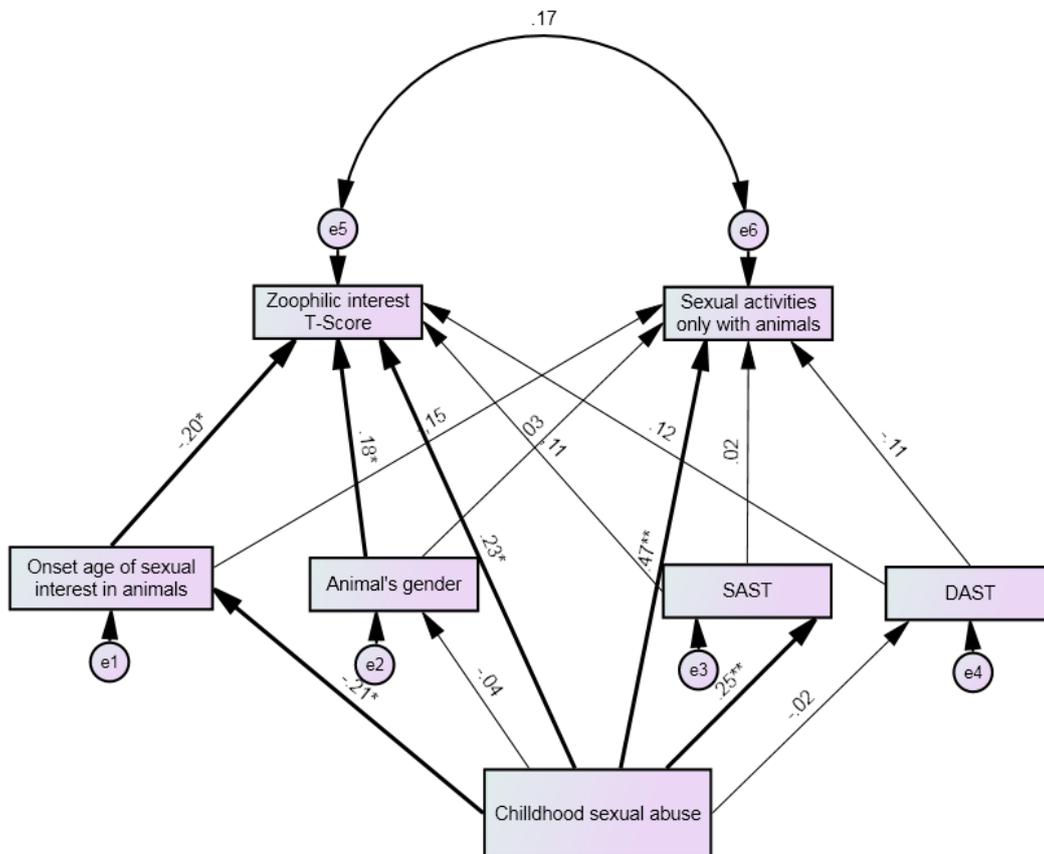


Figure 1. Factors Related to Sexual Interest in Animals: First Prediction Model Based on Structural Equation Modeling (SEM) approach (clearer lines mean non-significant associations) SAST = Sexual Addiction Screening Test; DAST = Drug Abuse Screening Test * $p < .05$; ** $p < .01$

Table 2. Comparing people with a higher and lower sexual interest in animals

Variables	Lower zoophilic interest (n = 45)	Greater zoophilic interest (n = 61)	Test	p
Age, mean (SD)	36.82 (9.75)	34.20 (8.58)	t = 1.47, 104df	0.14
Gender, n (%)				
Male	35 (77.78)	40 (65.57)	$\chi^2 = 1.86, 1\delta\phi$	0.17
Female	10 (22.22)	21 (34.43)		
Marital status, n (%)				
Married / Common-law	20 (44.44)	20 (32.79)	$\chi^2 = 3.38, 2\delta\phi$	0.18
Single	21 (46.67)	28 (45.90)		
Divorced / Widowed	4 (8.89)	13 (21.31)		
Race, n (%)				
White	33 (71.43)	49 (80)	$\chi^2 = .89, 2\delta\phi$	0.68
Black	2 (4.76)	2 (3.33)		
Mixed Races	10 (23.81)	10 (16.67)		
Educational level, n (%)				
7 th grade or less	6 (13.33)	16 (26.23)	$\chi^2 = 2.62, 1\delta\phi$	0.11
More than 7 th grade	39 (86.67)	45 (73.77)		
Sexual orientation, n (%)				
Heterosexual	39 (86.67)	43 (70.49)	$\chi^2 = 4.06, 2\delta\phi$	0.14
Homosexual	2 (4.44)	4 (6.56)		
Bisexual	4 (8.89)	14 (22.95)		
Monthly Income (in Reais, the Brazilian currency), mean (SD)	4,328.07 (3,556.27)	4,186.89 (4,483.61)	t = .94, 104df	0.35
History of being sexually abused in childhood, n (%)	5 (11.11)	20 (32.79)	$\chi^2 = 6.75, 1\delta\phi$	< .01**
Onset age of sexual interest in animals, mean (SD)	22.40 (10.67)	18.08 (7.38)	t = 2.46, 104df	.02*
Age at the first access to a zoophilic website, mean (SD)	27.33 (10.51)	25.44 (8.58)	t = 1.02, 104df	0.31
Type of preferred animal, n (%)				
Dogs	33 (73.33)	42 (68.86)	$\chi^2 = 1.30, 2\delta\phi$	0.58
Equines	4 (8.89)	10 (16.39)		
Both	8 (17.78)	9 (14.75)		
Animal's gender, n (%)				
Male	14 (31.11)	41 (67.21)	$\chi^2 = 14.33, 2\delta\phi$	< .01**
Female	13 (28.89)	11 (18.04)		
Both	18 (40)	9 (18.04)		
Subject has already had sex with animals, n (%)	35 (77.78)	51 (83.61)	$\chi^2 = .57, 1\delta\phi$	0.45
Sexual activities exclusively with animals in the last 6 months, n (%)	0	12 (19.67)	$\chi^2 = 9.98, 1\delta\phi$	< .01**
Zoophilic websites influenced sexual practices with animals, n (%)	17 (37.78)	29 (47.54)	$\chi^2 = 1.01, 1\delta\phi$	0.32
Zoophilic sexual activities preceded website accesses, n (%)	26 (57.78)	39 (63.93)	$\chi^2 = .41, 1\delta\phi$	0.52
Currently taking prescribed medication, n (%)	5 (4.76)	4 (3.33)	$\chi^2 = .69, 1\delta\phi$	0.49
Type of medication currently used, n (%)				
Antipsychotic	1 (2.22)	1 (1.64)	$\chi^2 = 4.55, 2\delta\phi$.15 ^a
Antidepressant	1 (2.22)	3 (4.92)		
Others (anti-diabetic)	2 (4.44)	4 (6.56)		
DAST, mean (SD)	3.38 (3.60)	5.48 (6.06)	t = -1.64, 104df	0.1
SAST, mean (SD)	5.36 (5.12)	9.51 (5.82)	t = -3.82, 104df	< .01**
BDI, mean (SD)	4.58 (8.23)	7.16 (8.29)	t = -1.59, 104df	0.11

^a Calculated only for those that reported taking prescribed medications

** p < 0.01; * p < 0.05

DAST, Drug Abuse Screening Test; SAST, Sexual Addiction Screening Test; BDI, Beck Depression Inventory

confirming that this sexual preference spans a wide geographical area. In fact, people with zoophilic interests consist of an erotic minority with a need to construct an identity and share experiences and desires, independently of geography [18]. Our study also investigated some psychosocial and psychometric factors possibly related to people with higher zoophilic interest and showed that history of childhood sexual abuse, earlier onset of sexual interest in animals, preference for male animals, and higher

mean levels on the SAST were linearly and significantly associated with higher zoophilic interest. The last three variables retained significance in a multiple logistic regression. A correlational model was further proposed and showed that childhood sexual abuse was directly and significantly correlated with strength of sexual interest in animals, sexual impulsiveness, and earlier onset of sexual interest in animals. Preference for male animals was also significantly correlated with zoophilic interest.

Table 3. Effects of psychosocial and psychometric variables on the group of greater zoophilic interest

Variables	SE	Wald	df	p	OR	CI (95%)
Childhood sexual abuse	0.66	2.56	1	0.11	2.85	.79–10.31
Onset age of sexual interest in animals	0.27	4.32	1	.04*	0.57	.33–0.96
Animal's gender, n (%)						
Male	0.61	4.56	1	.03*	3.71	1.17–12.36
Both	0.69	0.03	1	0.85	0.88	.23–3.39
Female (reference)						
DAST	0.22	1.65	1	0.2	1.32	.86–2.04
SAST	0.05	6.81	1	< .01**	1.13	1.03–1.24

* p < 0.05;
 DAST, Drug Abuse Screening Test; SAST, Sexual Addiction Screening Test

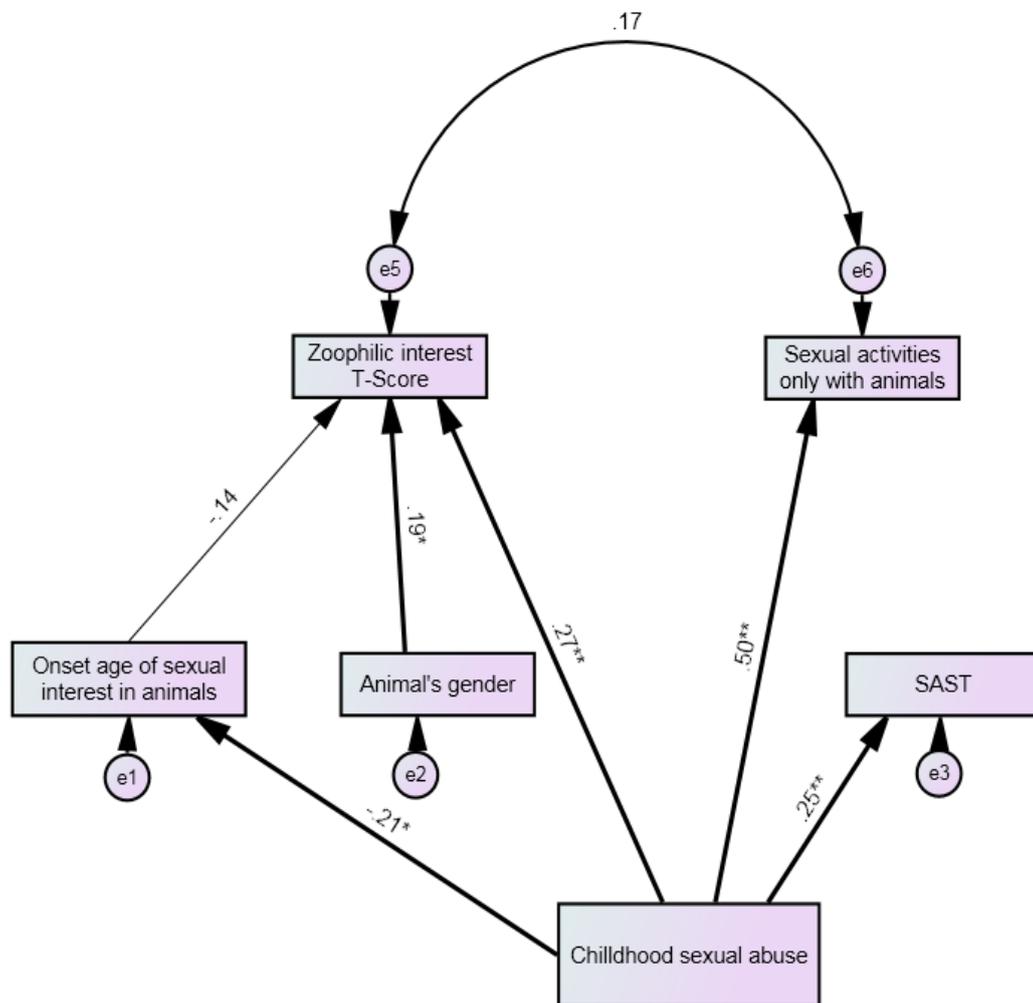


Figure 2. Factors Related to Sexual Interest in Animals: Final Model Based on Structural Equation Modeling (SEM) approach (clearer lines mean non-significant associations)
 SAST = Sexual Addiction Screening Test
 * p < .05; ** p < .01

To date, few studies exist on psychosocial aspects among persons who have a sexual interest in animals and share this on the Internet. The lack of scientific attention hampers the implementation of effective treatment programs for those thinking about changing aspects of their sexuality because of significant clinical distress or impairment in important areas of functioning. In fact, childhood sex abuse was already noted to be frequent among persons who have sex with animals [46]. Our study showed that this negative experience was significantly

associated with the greatest zoophilic interest. In fact, evidence of childhood sexual abuse is frequent among paraphilic persons and serial sex offenders [33, 47-49]. It has also been suggested that people who continuously engage in zoophilic acts may have had unpleasant initial sexual experiences, and consequently, may use sexual fantasies or activities with an animal to overcome this suffering [46, 50]. Studies have shown that deviant sexual fantasies often lead to deviant sexual behavior [51-53], and deviant interests frequently develop early and

sometimes continue into adulthood [52]. If these fantasies acquire erotic meaning and lead to arousal, the child or adolescent can decide the fantasy is good and favorable. If the sexual fantasy involves animals, and the individual recognizes this as rewarding, the adult may cognitively select this fantasy as preferential. Early onset of zoophilic interest can culminate in the individual continuously acting on the arousal fantasies and images.

Some zoophilic behavior studies show that male animals are preferred to female. Our study confirmed this finding and demonstrated that the choice of male animals is associated with greater sexual interest. In fact, male dogs that are masturbated to orgasm may become significantly involved with the persons who give the stimulation. Male animals respond to the point of orgasm, and, rarely, female animals show erotic arousal [2]. This may explain why those with the highest sexual interest in animals have as much contact with male animals as they do with female. Moreover, similarly to child molesters, a person offending a male child (rather than a girl) increases the chance of suffering from pedophilia and recidivism [54-56].

High levels of impulsiveness have also been reported in people with paraphilia mainly among pedophiles [42]. Some authors have hypothesized that pedophilia may be an impulsive disorder [48,57], suggesting that brain regions responsible for weighing the consequences of behavior, sensitivity to punishment, and behavioral inhibition are less active than in non-pedophilic people [58,59]. High sexual impulsiveness is also likely to be found in paraphilic persons [60,61].

One way to conceptualize zoophilia may be the strength of sexual desire for animals [18]. Although there are empirical attempts to classify different types of sexual activities with animals [62], there are no studies investigating groups of practitioners in accordance with the intensity of the zoophilic sexual interest.

A numeric input scale may not be a gold standard test to set apart zoophilia from zoophilic behavior, bestiality, or any other term. Our intention was not to make a clinical diagnosis; we did not have personal contact with the participants and applied no diagnostic instrument. Our aim was to identify persons with the highest sexual interest in animals in an Internet sample and draw some light from these findings. In fact, persons with a greater zoophilic interest showed some psychosocial and psychometric differences from those defined herein as having a lower zoophilic interest. The strength of sexual interest and the current zoophilic sexual exclusivity may be associated with negative events in childhood, early onset of sexual interest in animals, and higher sexual impulsiveness, characteristics commonly seen among paraphilic persons. We must not consider this latter group more or less problematic; we should offer treatment possibilities to those who wish to change some aspects of their sexuality or help them understand how this type of sexual interest developed. We must also consider that zoophilia is commonly associated with other atypical sexual interests [63,64], although this aspect was not investigated in this study.

We are aware that the two analytical methods applied in this study multiple logistic regression analysis and structured equation modeling did not show identical associations between the outcome measure and the independent variables. Although both analyses demonstrated the importance of the association of childhood sexual abuse and preference for male animals with the intensity of zoophilic interest, other variables showed somewhat different associations. In fact, with traditional regression methods, a model takes into account the relation between the outcome measure on the one hand and the exposure and

covariates on the other, but it does not make assumptions about the relations among the covariates themselves. And, if a model makes such assumptions, as SEM does, some variables can gain power [65].

Someone could raise safety issues with the methodology used in this study. However, all data entered through the Google Docs system are maintained in the Google cloud, which is known to be one of the most secure in the industry. In the initial login, security is given by SSH (secure shell) login protocol with bank-like encryption and porting techniques [31].

There are several limitations with this study that need to be pointed out:

Although research performed using an online questionnaire may be disadvantageous in terms of low feedback rates and response accuracy, outcome measurement through online questionnaires can offer methodological and practical advantages over face-to-face interviews. First, the potential bias introduced by the interviewer is avoided; second, participants may answer sensitive questions more honestly in a self-completed inventory; and third, costs are considerably reduced [66].

The Internet population is unrepresentative of the general population, restricting the validity of quantitative analyses. In addition, the self-selection of participants, also called the "volunteer effect," must be taken into account [67].

It was not possible to check identities (e.g., a man may pose as a woman);

Self-report data were used to measure outcomes. No self-report measure covers the complete range of symptoms described in diagnostic manuals. Issues of compliance, the avoidance or denial of information, and anxiety about revealing secrets or making mistakes impair this assessment modality to varying degrees for different subjects. Another difficulty, especially with brief self-report measures, is that, while easier to use and less likely to cause fatigue or inconsistent responses, forced-choice categories may simplify answers or distort information obtained along particular choice sets;

The study's cross-sectional design precludes causal inferences and only provides information about population frequency and characteristics by furnishing a "snapshot" at a specific time. In addition, a SEM is not a test of causality.

It is important to point out that, since 1990, the Internet has been a key source for discussion among people with a sexual interest in animals, providing information about health issues, "how to" guides, book references, and even zoos' community events [1]. In Brazil, only Canisa's blog website, which is devoted to zoophilia, is currently working. Although zoophilia is not a crime in Brazil, cruelty or maltreatment against animals is considered a penal contravention punishable by imprisonment or fine. However, any sexual activity in a public area is considered a crime. There are legal discussions regarding whether sexual activities against animals should be considered maltreatment or cruelty, and a bill (Bill N° 3141/2011) criminalizing zoophilia is under evaluation in the Brazilian House of Representatives. Legal attitudes toward zoophilic activities appear to be based on a sense of immorality rather than on a consideration of the exact harm resulting from the behavior itself [68]. Some authors have defended the idea of a relationship between human beings and animals as an extension of the erotic plasticity of the human sexual response that may or may not be acted upon in a way that impairs animal welfare [69].

Contrarily, there are recorded cases in which extensive damage has been done to animals [70-72], and there is no possibility of an animal giving consent [73]. In addition, as our study shows, people with high sexual interest in animals can have some psychological problems or difficulties that deserve greater attention. Given these conflicting but true points of view, the law and society as a whole should be more interested in the practical, objective, and unbiased aspects of problem than in moral issues and develop and improve therapeutic services focused on paraphilic and other sexual disorders.

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