



# Elaborating and Testing Erotic Target Identity Inversion Theory in Three Paraphilic Samples

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## Abstract

Some men sexually attracted to types of persons (e.g., women) or things (e.g., animals) also have *internalized sexual attractions*: sexual arousal by the idea of being the type of person or thing to whom they are attracted. Consequently, some of these men develop *erotic target identity inversions*, in which they imitate, yearn to be, or identify as an instance of their erotic target. Erotic Target Identity Inversion Theory predicts that for every external erotic target to which men are attracted, a subset of men will develop an internalized sexual attraction, which may cause an erotic target identity inversion. We examined these predictions in Internet surveys of three samples of men with paraphilic sexual interests: 322 men attracted to amputees, 1501 men attracted to animals, and 402 men attracted to severely obese persons. All samples included substantial minorities of men reporting internalized sexual attractions and erotic target identity inversions specific to their external sexual attractions (e.g., men attracted to amputees who are also aroused by the fantasy of being amputees and wish to become amputees). The correlation between degree of each internalized sexual attraction and degree of its corresponding erotic target identity inversion was approximately 1.0 after correction for attenuation. In each sample, participants' specific internalized sexual attraction was positively correlated with autogynephilia, likely the most common internalized sexual attraction in men. Erotic Target Identity Inversion Theory can potentially explain a variety of otherwise puzzling phenomena, including transgender identity among female-attracted natal males and men seeking amputations of healthy limbs.

**Keywords** Paraphilias · Erotic target identity inversions · Erotic target location errors · Autogynephilia · Apotemnophilia · Autozoophilia · Autolipophilia · Sexual orientation

## Introduction

In a seminal article, Freund and Blanchard (1993) discussed how some male paraphilias can be conceptualized as *erotic target location errors*. Erotic target location errors consist of a mislocation of an external erotic target. For example, some heterosexual men mislocate their attraction to women, who comprise their external erotic target, from women's primary and secondary sexual characteristics onto women's clothing (e.g., panties) or non-sexual body parts (e.g., feet).

Other heterosexual men mislocate their erotic target within themselves, resulting in *autogynephilia*, sexual arousal by the idea of being a woman (Blanchard, 1989a, 1991). The novel contribution of Freund and Blanchard's (1993) article was the proposal that erotic target location errors also occur among men with atypical external erotic targets. For example, the article included several illustrative case vignettes of pedophilic men sexually aroused by the idea of being children and who imitated them or wished to become like them. It also described a young man who had the strong erotic desire to be a cartoon animal called "Puppy Smith." Freund and Blanchard named erotically motivated desires to assume alternative identities *erotic target identity inversions*.

Although their observations were novel and striking, Freund and Blanchard (1993) did not provide an elaborate theory. They merely offered: "This theory predicts that, for every class of sexual object, there will be small subgroups of men who develop fetishes for clothing associated with the desired object, who develop the erotic fantasy of being the

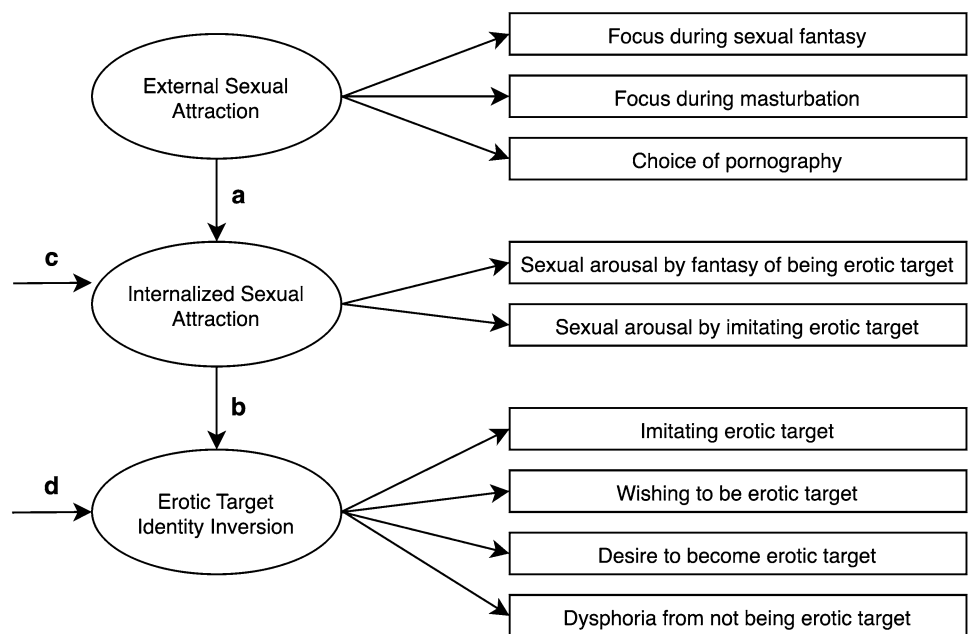
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**Fig. 1** Path model of erotic target identity inversion theory. *Note.* Latent variables are enclosed by ovals, and indicator/measured variables by rectangles. Residual paths indicating unspecified causes of downstream latent variables are indicated by lone arrows. Residual paths into observed variables and the most upstream latent variable have been omitted from the figure but are assumed by the model



desired object, and who develop the sustained wish to transform their own bodies into facsimiles of the desired object” (p. 562). That is, they predicted that analogous erotic target location errors and erotic target identity inversions exist for all external erotic targets.

The concept of erotic target identity inversions has influenced two strands of subsequent research. First, research supporting the validity of autogynephilia and its importance for understanding gender dysphoria has emphasized this perspective (although not always explicitly referring to “erotic target identity inversions”) (Blanchard, 1992, 1993c; Hsu et al., 2015, 2017; Lawrence, 2004, 2007, 2009b, 2010, 2013, 2017). Second, researchers have tried to identify other phenomena besides autogynephilia that might cause erotic target identity inversions. For example, Lawrence (2006) proposed that men seeking amputations of healthy limbs are sexually aroused by the idea of being amputees and motivated by erotic target identity inversions. Consistent with the concept of erotic target identity inversions, Lawrence observed that most men seeking amputations in a study by First (2005) were also preferentially attracted to amputees. Lawrence (2009a) also presented a case report of a man who was sexually aroused by the fantasy of being an attractive and muscular man, the same kind of person to whom he was sexually attracted.

Hsu and Bailey (2017) conducted a systematic study of erotic target identity inversions among pedophilic men. Consistent with Freund and Blanchard’s (1993) case vignettes, the study found a subgroup of men sexually aroused by the idea of being children, and who also engaged in activities imitating them. Hsu and Bailey (2019) also studied erotic target identity inversions in male furies, members of a

community broadly interested in cartoon animals. Most furies in their study were both sexually attracted to cartoon animals and sexually aroused by the fantasy of being such animals. Furthermore, many imitated cartoon animals by adopting online identities of themselves as cartoon animals (fursongas) or dressing as cartoon animals in real life (fursuiting). Brown et al. (2020) surveyed a large sample of men and women recruited indiscriminately from the Internet and found evidence consistent with several erotic target identity inversions.

In this article, we extend Freund and Blanchard’s (1993) concept of erotic target identity inversions into a more elaborate theory and test some aspects of the theory using three distinct paraphilic samples: men with *acrotomophilia* (attraction to amputees), *zoophilia* (attraction to nonhuman animals), or *lipophilia* (attraction to severely obese persons).

## A Theory of Erotic Target Identity Inversions

Figure 1 presents the key aspects of our current theory of erotic target identity inversions (henceforth, Erotic Target Identity Inversion Theory) that we investigate herein. Like Freund and Blanchard (1993), we restrict our theory to natal males, because the relevant phenomena have been observed primarily among them. Whether the theory also applies to natal females is an empirical question to be investigated in future research. The theory presented in Fig. 1 is necessarily incomplete, but we hope that its specification will inspire other researchers to test it and add to it.

The relevant prediction from Freund and Blanchard (1993)—that some men with specific sexual interests will develop erotic target identity inversions—also follows from

our current theory. But our theory is somewhat more detailed than that offered by Freund and Blanchard. The theory is presented as a structural equation model, with both latent variables (in ovals) and observed variables (in rectangles). The observed variables represent a subset of relevant measurable variables, rather than a complete set. We do not present this model as one to be thoroughly tested herein. Indeed, we doubt that a single study can test the full model. Rather, we offer it as our understanding of the current state of research, and to clarify some of our later analyses. Below, we discuss each aspect of the model.

### External Sexual Attraction

A man's external sexual attraction is the general type of person or thing to whom he is sexually attracted. "External" refers to the existence of the person or thing (or in some cases, as in cartoon animals, the idea of a person or thing) outside of the man. That is, an external sexual attraction does not include a man's sexual fantasies about being that kind of person or thing. Men's external sexual attractions can be assessed by asking about their sexual fantasies, in general and especially during masturbation, and often by their choice of pornography. The most common external sexual attraction for men is women. A less common attraction is men. Some other external attractions include children (varying by sex and maturity; Bailey et al., 2016, 2021), cartoon animals (Hsu & Bailey, 2019), and the three unusual interests studied in this research: amputees, animals, and severely obese persons.

### Internalized Sexual Attraction

Unlike Freund and Blanchard (1993) and to our knowledge other researchers, we distinguish between *internalized sexual attractions* and *erotic target identity inversions*. By our model, external sexual attractions cause specific internalized sexual attractions, which cause erotic target identity inversions (see Fig. 1 and below). A specific internalized sexual attraction comprises sexual arousal by the fantasy of being, or act of imitating, a man's external sexual attraction. "Specific" indicates correspondence between a man's external sexual attraction and his internalized sexual attraction. The best documented example is autogynephilia, which is an internalized sexual attraction that occurs among men sexually attracted to women (Blanchard, 1991, 1993a; Freund & Blanchard, 1993; Lawrence, 2007). Most autogynephilic males are attracted to women (their external sexual attraction), and they are also sexually aroused by the idea of being women, or the act of imitating women.<sup>1</sup>

<sup>1</sup> One complication is that if an internalized sexual attraction is especially strong, this may prevent sexual attraction to any external erotic target. (Lack of sexual interest in others is analloeroticism.) This has been observed among autogynephilic males, some of whom identify

Our model postulates that external sexual attractions cause specific internalized sexual attractions. However, this does not imply that external sexual attractions develop prior to internalized ones. Autogynephilia, for example, is typically first evident in adolescence with the onset of strong sexual feelings (Lawrence, 2013). Furthermore, there is evidence that autogynephilia can sometimes be observed in early childhood (Stoller, 1985; Zucker & Blanchard, 1997). The causal assumption of the path reflects our interpretation of Freund and Blanchard's (1993) words: "for every class of sexual object, there will be small subgroups of men...who develop the erotic fantasy of being the desired object" (p. 562). Having a particular external sexual attraction is a necessary but not sufficient cause of having a specific internalized sexual attraction. We would speculate that development of a specific internalized sexual attraction requires the neural substrate of the corresponding external sexual attraction. The converse is not true.

Estimating the path coefficient, **a**, requires a representative sample of men unselected for any external sexual attraction. That is not the approach we have taken in the current study, however. Rather, we recruited three samples with specific external sexual attractions, guaranteeing that each will have a restricted range for that variable.

Although our sampling strategy of focusing on three different samples with specific external sexual attractions precludes accurate estimation of path coefficient, **a**, the importance of the path can be demonstrated indirectly. Each of the three samples should have more men with the internalized sexual attraction specific to their external sexual attraction than with the internalized sexual attraction corresponding to the other studied external sexual attractions. For example, men attracted to amputees should have a higher rate of *apotemnophilia* (sexual arousal by the idea of being an amputee) than of *autozoophilia* (sexual arousal by the idea of being an animal) or *autolipophilia* (sexual arousal by the idea of being obese).

The residual path with coefficient **c** represents the fact that an external sexual attraction is not, by itself, sufficient to cause an internalized sexual attraction. This is necessary because, for example, most female-attracted men are not autogynephilic. One candidate cause through the residual

Footnote 1 (continued)

as asexual (Blanchard, 1989a). Both Blanchard and we believe that analloerotic autogynephilic males are like males attracted to women, and that the former would express attraction to women if the internalization of their autogynephilia was less complete. Strictly speaking, this means that our first latent variable, "External Sexual Attraction" might be more accurately renamed "Propensity to Have a Specific External Sexual Attraction." However, in the current research, we recruited participants who had specific external sexual attractions, and so none were analloerotic.

pathway is paraphilic vulnerability, which we discuss later. For the same reason, we were not able to estimate path coefficient **a**, we were also unable to estimate path coefficient **c**, which is a direct function of **a**.

### Erotic Target Identity Inversion

An erotic target identity inversion is present to the extent that a man imitates, wishes to become, identifies as, or is unhappy by his inability to become, a member of the class comprising his external sexual attraction. For example, some autogynephilic males enjoy cross-dressing as women, even when cross-dressing is not conducted for sexual reasons (Blanchard, 1991; Blanchard et al., 1986; Hsu et al., 2015, 2017; Lawrence, 2013). Others assume a female identity when cross-dressing. Still others assume a more permanent female identity, legally changing their names and always dressing in women's clothing. Some autogynephilic males undergo sex reassignment surgery, acquiring breast implants and neovaginas (Blanchard, 1991; Lawrence, 2004, 2017). Some other autogynephilic males who do not undergo medical or social transition experience frustration and unhappiness in the form of gender dysphoria (Blanchard, 1993c; Hsu et al., 2015; Lawrence, 2007, 2013). The feelings and behaviors we have mentioned all indicate some degree of interest in acquiring the identity of their erotic target.

Erotic target identity inversions are distinct from specific internalized sexual attractions, which manifest as sexual desire, fantasy, or orgasmic impetus. For example, it is common for autogynephilic males whose adolescent cross-dressing was invariably combined with masturbation to experience less sexual arousal cross-dressing during adulthood (Lawrence, 2013). Both Blanchard (1991) and Lawrence (2007) have hypothesized that this change is akin to the process by which many heterosexual men become less erotically focused on, and more emotionally attached to, their romantic partners.

In our model, erotic target identity inversions are caused by specific internalized sexual attractions. Our justification includes the temporal process common among autogynephilic males, by which sexual arousal by the idea of being a woman is gradually replaced by (or supplemented with) emotional attachment to that idea:

[A]utogynephilic men typically develop strong, persistent cross-gender identities only after years or decades of experience with cross-dressing. Once this has occurred, however, these cross-gender identities feel like and operate as powerful forces in the lives of the autogynephilic transsexuals who experience them. In particular, these cross-gender identities become strong enough to withstand the temporary reduction in autogynephilic arousal that follows orgasm (Lawrence, 2013, p. 148).

A second justification for believing that internalized sexual attractions cause erotic target identity inversions rather than the reverse is the fact that adolescent boys have a variety of strong identities (as fans of sports teams or music groups, for example) and identity-related fantasies (to become actors, astronauts, athletes, doctors, and lawyers, among many others), but there is no evidence that most of these identities and fantasies are sexually arousing.

Our model allows for variation in the degree of both specific internalized sexual attractions and erotic target identity inversions among men who have them. For example, some men may experience rare and weak sexual arousal due to the fantasy of being an instance of their external sexual attraction (e.g., a female-attracted man fantasizing that he is a woman), while others may experience frequent or powerful sexual arousal due to this fantasy. Similarly, some men may have rare and inconsequential wishes or desires to become an instance of their external sexual attraction, while others may have frequent or overwhelming wishes or desires. The path coefficient **b** reflects the association in magnitude (from absent to strong) between specific internalized sexual attractions and their erotic target identity inversions.

The residual path with coefficient **d** represents causes of erotic target identity inversions aside from internalized sexual attractions. The importance of this path is inversely related to the path coefficient **b**. To the extent that **b** is large, **d** must be small. We did not have prior hypotheses regarding factors that might contribute to this path and did not formally examine any such factors.

### Are Acrotomophilia, Zoophilia, Lipophilia, and Internalized Sexual Attractions Paraphilias?

*Paraphilias* are widely understood to be unusual sexual interests. But is that all they are? On the one hand, some writers have argued that “paraphilia” is a scientifically empty concept that is applied to certain sexual interests to express disapproval (e.g., Moser & Kleinplatz, 2020). On the other hand, there is a more scientifically interesting understanding of “paraphilia”: Different paraphilias are not merely rare but share important characteristics, including causes (e.g., Bailey & Hsu, 2017). This stronger version of “paraphilia” is supported by two strands of evidence.

First, most paraphilias are much more common among men than among women (Bártová et al., 2021; Baur et al., 2016; Bhugra et al., 2010; Dawson et al., 2016; Joyal & Carpentier, 2017). This fact underlies our decision to focus most of our analyses on natal males. (Although natal females were excluded from this study, we will analyze their data in a future study.)

Second, some paraphilias tend to co-occur more often than would be expected by chance (Abel & Osborn, 1992; Bártová et al., 2021; Dawson et al., 2016; Långström & Seto, 2006;



Långström & Zucker, 2005). For example, one study found that approximately 40% of men who died accidentally during autoerotic asphyxia (an activity motivated by masochism) were cross-dressed, wearing make-up, or showing some other indication of autogynephilia (Blanchard & Hucker, 1991). Masochism and autogynephilia are not superficially similar; nor do their motivations clearly overlap. Rather, it appears that they share vulnerability factors. We distinguish the hypothesis that paraphilias are merely unusual from the hypothesis that paraphilias share interesting features as, respectively, the weak and strong senses of “paraphilia.”

The three external sexual attractions studied herein—acrotomophilia, zoophilia, and lipophilia—would be considered by many researchers to be paraphilias, because they are atypical. Thus, they satisfy the weak understanding of “paraphilia.” Evidence for the stronger version would include a preponderance of natal males and associations with other paraphilias.

What about internalized sexual attractions? Freund and Blanchard (1993) hypothesized that “proneness to developmental error in locating erotic targets is a basic dimension of paraphilia which is independent of the nature of the targets themselves” (p. 558). Freund and Blanchard were using the term “paraphilia” to refer to an atypical sexual interest, but they were also observing the structural similarity among different erotic target location errors, involving mislocation of erotic targets. Structural similarity is especially clear among internalized sexual attractions, all of which comprise the specific internalized version of an external sexual attraction.

The present study allowed several analyses relevant to the issue of whether the external and internalized sexual attractions examined in this study are paraphilias, in the strong sense. First, it is possible to examine the sex ratio among those who responded to recruitment efforts for the three external sexual attractions (acrotomophilia, zoophilia, and lipophilia), because participants were recruited regardless of natal sex. (Data from natal females will be included in future publications.) A highly skewed sex ratio in favor of males among these external sexual attractions would support the hypothesis they are paraphilias. A second set of analyses is motivated by the following reasoning: Because paraphilias tend to co-occur, the rate of a specific internalized sexual attraction should be higher if the corresponding external sexual attraction is paraphilic than if it is non-paraphilic. For example, if both acrotomophilia and apotemnophilia are paraphilias, then the rate of apotemnophilia should be higher among acrotomophilic men compared with the rate of autogynephilia among female-attracted men not selected for unusual external sexual attractions. Autogynephilia is the internalized sexual attraction associated with male heterosexuality, which is not a paraphilia. Typical heterosexual men have less paraphilic vulnerability compared with acrotomophilic men (assuming acrotomophilia is a paraphilia), and so they are less likely to develop other paraphilic sexual

interests, including internalized sexual attractions (assuming those are paraphilias). A final set of analyses focused on the extent to which the three internalized sexual attractions examined in this study are associated with autogynephilia, likely the most common internalized sexual attraction (Blanchard, 1993b). This is based on similar reasoning as the previous analysis: both specific internalized sexual attractions and autogynephilia are partly caused by paraphilic vulnerability.

## Overview of the Present Research: Hypotheses and One Additional Analysis

We recruited three samples of men with atypical sexual interests we hypothesized are paraphilias: acrotomophilia (attraction to amputees), zoophilia (attraction to nonhuman animals), and lipophilia (attraction to obese persons). Each of these is defined by sexual attraction to an external target, and so is an “external sexual attraction” (see Fig. 1). They were chosen primarily because we had not yet investigated any of them, and because we were able to find Internet sites where persons with these interests could be recruited.

We investigated several predictions based on Erotic Target Identity Inversion Theory. Most follow directly from Freund and Blanchard’s (1993) original formulation or any reasonable elaboration.

### Hypotheses Regarding Erotic Target Identity Inversion Theory

1. For each external sexual attraction, a subset of men will report being sexually aroused by the idea of being a member of the class comprising their sexual target (i.e., they will endorse having a specific internalized sexual attraction; see Fig. 1). For acrotomophilia, the internalized sexual attraction is apotemnophilia. For zoophilia, it is autozoophilia. And for lipophilia, it is autolipophilia.
2. For each internalized sexual attraction, a subset of men will report feelings and behaviors consistent with having an erotic target identity inversion.
3. For each sample, the degree of specific internalized sexual attraction should be strongly related to the degree of corresponding erotic target identity inversion.
4. Increased rates in internalized sexual attractions and erotic target identity inversions should be specific to each sample’s external sexual attraction. For example, men with acrotomophilia should have higher rates of apotemnophilia and indications of a wish or desire to become amputees (e.g., pretending to be amputees and wishing they could become amputees) compared with their rates of autozoophilia and autolipophilia, and corresponding indications of a wish or desire to become animals or obese persons.

## Hypotheses Regarding Paraphilias

5. Participants attracted to amputees, animals, or obese persons will be disproportionately male.
6. The rates of specific internalized sexual attractions will be higher in these samples compared with the rate of autogynephilia in control samples of men who report attraction to women.
7. There will be a positive correlation between each specific internalized sexual attraction and autogynephilia.

Finally, we conducted one more set of descriptive analyses unrelated to our current proposed model. We collected data concerning the retrospectively reported ages of onset for the three paraphilias comprising the external sexual attractions as well as the three respective internalized sexual attractions. We expected mean ages of onset to be during early adolescence, with the onset of strong sexual arousal capacity. This prediction is consistent with the idea that these paraphilic sexual interests are sexual orientations (Imhoff et al., 2017; Seto, 2012, 2017).

Note that none of our hypotheses concerned differences among our samples. Rather, each hypothesis applied to all three samples. We had no prior hypotheses predicting differences among them and did not formally examine any differences.

Nor did any of our current hypotheses concern conventional sexual orientation (i.e., relative attraction to men versus women). This information is potentially useful to study internalized sexual attractions and erotic target identity inversions. For example, it is of interest to quantify the degree to which paraphilic individuals' external sexual attraction to males versus females corresponds to their internalized sexual attractions to the fantasy of being males versus females (see, e.g., Hsu & Bailey, 2017). We will explore this issue using data from these samples in future publications. In this paper, we ignore participants' conventional sexual orientation.

## Method

### Participants

#### Paraphilic Samples

Participants were recruited through websites and social media specializing in each of the three external sexual attractions: acrotomophilia (attraction to amputees), zoophilia (attraction to nonhuman animals) and lipophilia (attraction to obese persons). Advertisements for acrotomophilic participants specified that we were "conducting research on the sexuality, identity, gender, and personality of those attracted to amputees." Advertisements for zoophilic and lipophilic

participants replaced "amputees" with "nonhuman animals" and "fat persons," respectively. Interested participants were referred to links that directed them to a Qualtrics survey specific to their external sexual attraction. Recruitment started in July 2020 for the acrotomophilic and zoophilic participants, and in November 2021 for the lipophilic participants. Data collection ended in February 2022 for all three groups.

There were three inclusion criteria for data analyses. First, participants had to have completed at least 85% of the survey, according to the Qualtrics variable ("Progress") that tracks survey completion. Second, we restricted analyses to natal males. Third, because our primary hypotheses pertained to males with one of three external sexual attractions, we included only participants whose strength of sexual attraction to their specific atypical target was at least 2 on a 5-point scale, representing at least rare sexual fantasies about the target (see below for a full description of this variable).

Of participants recruited for acrotomophilia, 375 provided sufficient data for assessing inclusion criteria (i.e., 85% survey completion as well as values for natal sex and strength of sexual attraction to their specific atypical target). Of those, 43 (11.5%) were excluded because they were female, and an additional 8 (2.1%) were excluded because of insufficient sexual attraction to amputees, for a total of 322 acrotomophilic male participants who met inclusion criteria. A total of 1765 individuals recruited for zoophilia provided sufficient data for assessing inclusion criteria. Of these, 234 (13.3%) were excluded because they were female, and an additional 30 (1.7%) were excluded because of insufficient sexual attraction to nonhuman animals, for a total of 1501 zoophilic male participants who met inclusion criteria. A total of 449 individuals recruited for lipophilia provided sufficient data for assessing inclusion criteria. Of these, 47 (10.5%) were excluded because they were female, and all 402 male participants were sufficiently attracted to obese persons for inclusion. Note that all three samples were highly male-biased, consistent with Hypothesis 5 that paraphilias tend to be much more common among natal males. This is unlikely due to a sex bias in Internet usage (Kimbrough et al., 2013).

#### Non-Paraphilic Control Samples

To test the hypothesis that there should be a higher rate of specific internalized sexual attractions among male acrotomophiles, zoophiles, and lipophiles than among female-attracted males not selected for unusual external attractions (Hypothesis 6), we included data from three control samples of natal males recruited using platforms intended to provide representative research participants: Mechanical Turk, Qualtrics, and Prolific. These samples were described in a previous study (Bailey & Hsu, 2022), and a fourth sample included in that study was not analyzed here, because those participants were not plausibly representative. Participants from the

three control samples were selected for relevant analyses if they indicated at least rare attraction to women (i.e., scores of 5 or less) on the Kinsey scale (Kinsey et al., 1948). This criterion is analogous to the relevant inclusion criterion for the paraphilic samples. For the three control samples, this yielded 392, 418, and 282 participants, respectively, of whom 98%, 94%, and 85% had Kinsey scores of 0 or 1, indicating exclusive or near-exclusive attraction to women.

## Measures

### External Sexual Attractions

Acrotomophilic participants responded to the following three questions: (1) “When you have sexual fantasies, how often do you imagine interacting with an amputee?”; (2) “When you masturbate, how often do you imagine interacting with an amputee?”; and (3) “When you look at pornography, how often do you look at pornography featuring amputees?” Lipophilic participants responded to analogous items with “a fat person” or “fat persons” replacing “an amputee” or “amputees.” Zoophilic participants responded only to analogous items for the first two questions, with “a nonhuman animal” replacing “an amputee.” They were not asked about looking at pornography featuring animals, because such pornography is illegal in many locations. All items used the following response scale: 1 = never, 2 = rarely, 3 = sometimes, 4 = usually, and 5 = always. For each sample, the three questions assessing external sexual attraction were averaged, and thus, scores ranged from 1 to 5.

### Internalized Sexual Attractions

Two separate subscales were created to measure each of the three internalized sexual attractions: apotemnophilia, autozoophilia, and autolipophilia. One subscale focused on the presence or absence of the internalized sexual attraction, and the other on the importance of the internalized sexual attraction to sexual excitement.

**Existence of Internalized Sexual Attraction** Acrotomophilic participants provided “yes” or “no” responses to two questions: (1) “Have you ever become sexually aroused while picturing yourself as an amputee?”; and (2) “Have you ever masturbated while imagining yourself as an amputee?” Zoophilic participants responded to analogous items, with “a nonhuman animal” replacing “an amputee.” Lipophilic participants responded to analogous items with “a fat person” replacing “an amputee.” For each sample, the number of “yes” responses to the two questions assessing existence of internalized sexual attraction were summed, and thus, subscale scores ranged from 0 to 2.

**Sexual Importance of Internalized Sexual Attraction** Acrotomophilic participants responded to two items: (1) “How important to your sexual excitement is fantasizing about being or pretending to be an amputee during masturbation or fantasy?”; and (2) “How important to your sexual excitement is fantasizing about being or pretending to be an amputee during sex?” Items for zoophilic and lipophilic participants were altered as above. All items used the following response scale: 1 = not at all important, 2 = a little important, 3 = somewhat important, 4 = very important, and 5 = extremely important. For each sample, ratings for the two items were averaged for the subscale score, which ranged from 1 to 5.

**Core Autogynephilia Scale** To test Hypothesis 7 that there will be a positive correlation between each specific internalized sexual attraction and autogynephilia, the three paraphilic samples completed the Core Autogynephilia Scale (Blanchard, 1989b). This scale consists of eight items in which respondents indicate dichotomous agreement or disagreement with questions about whether they have ever experienced sexual arousal by the thought of being a woman or having a woman’s body (or specific parts of a woman’s body). For example, one item asks: “Have you ever become sexually aroused while picturing yourself having a nude female body or with certain features of the female form?” Scores range from 0 (no endorsement of any item) to 8 (endorsement of all 8 items).

### Erotic Target Identity Inversions

Two subscales were created for each sample to measure feelings and behaviors related to having an erotic target identity inversion. The first subscale contained items indicating whether participants had ever exhibited relevant phenomena. Items for this subscale differed between samples and are provided below. The second subscale contained items indicating the frequency with which participants imitated, or wished to be, instances of their atypical erotic targets. Importantly, none of the items in either subscale mentioned sexual motivation.

**Existence of Erotic Target Identity Inversion** Participants indicated whether they had ever behaved or felt in accordance with an erotic target identity inversion, such as pretending to be, wishing to be, trying to become, or feeling frustrated because of the inability to become, an instance of their atypical erotic target. Total scores on this subscale were computed as the number of “yes” responses divided by the number of subscale items, which varied slightly across groups. Thus, scores ranged from 0 (no items endorsed) to 1 (all items endorsed). Items are provided below, separately by group.

**Acrotomophiles** The following seven items were answered “yes” or “no”: (1) “Have you ever pretended to be an ampu-

tee?"; (2) "Have you ever felt that you were meant to be an amputee?"; (3) "Have you ever wished you could become an amputee?"; (4) "Have you ever considered trying to become an amputee?"; (5) "Would you feel more complete and satisfied if you were an amputee?"; (6) "Have you ever felt sad, frustrated, or unhappy because you are not an amputee?"; and (7) "Have you had one or more of your limbs amputated?"

**Zoophiles** The following seven items were answered "yes" or "no": (1) "Have you ever pretended to be a real nonhuman animal, in private?"; (2) "Have you ever considered the possibility that you might be a nonhuman animal?"; (3) "Have you ever felt a spiritual or other kind of connection to a nonhuman animal?"; (4) "Have you ever experienced sadness, frustration, or unhappiness because you wanted to be a nonhuman animal but could not be?"; (5) "Have you ever thought about ways in which you could alter your body that would make you more like a nonhuman animal?"; (6) "If you could try being a nonhuman animal for one week, would you do it?"; and (7) "If you could become a nonhuman animal forever, would you do it?"

**Lipophiles** The following six items were answered "yes" or "no": (1) "Have you ever pretended to be fat?"; (2) "Have you ever tried to gain weight in order to become a fat person?"; (3) "Have you ever felt that you were meant to be a fat person?"; (4) "Have you ever wished you could become a fat person?"; (5) "Would you feel more complete and satisfied if you were a fat person?"; and (6) "Have you ever felt sad, frustrated, or unhappy because you are not a fat person?"

**Frequency of Erotic Target Identity Inversion** Acrotomophilic participants were asked the following two questions: (1) "In the past 12 months, how often have you pretended to be an amputee for any reason, either in private or in public?"; and (2) "In the past 12 months, how often have you pictured yourself as an amputee for any reason?" For zoophilic participants, "a nonhuman animal" was substituted for "an amputee," and for lipophiles, "a fat person" was substituted. All items used the following response scale: 1 = never, 2 = less than once a month, 3 = once a month, 4 = 2–3 times a month, 5 = once a week, 6 = 2–3 times a week, and 7 = daily. For each sample, ratings for the two items were averaged for the subscale score, which ranged from 1 to 7.

### Specificity of Internalized Sexual Attractions and Erotic Target Identity Inversions

Erotic Target Identity Inversion Theory implies that men with a particular external sexual attraction are especially likely to develop a specific internalized sexual attraction and erotic target identity inversion that match their external sexual attraction. For example, men sexually attracted to amputees

should be more likely to develop apotemnophilia (sexual arousal by the idea of being an amputee) than to develop either autozoophilia or autolipophilia (sexual arousal by the idea of being an animal or a fat person, respectively). Similarly, amputee-attracted men should be especially likely to want to become, or fantasize about becoming, amputees rather than animals or fat persons. To study specificity, it is necessary to ask not only about similarity of external sexual attractions, internalized sexual attractions, and erotic target identity inversions that should be relevant within each sample, but also about different internalized sexual attractions and erotic target identity inversions in the different samples. The following items were used to examine the specificity of internalized sexual attractions and erotic target identity inversions across the three samples.

**Three Specific Internalized Sexual Attractions** Acrotomophilic and lipophilic participants were asked to rate their degree of sexual arousal by the thought, idea, or fantasy of being a female amputee, a male amputee, a female animal, a male animal, a fat/obese woman, and a fat/obese man. Ratings were made on a scale from 0 (no arousal) to 10 (maximum arousal). Within each category—apotemnophilia, autozoophilia, and autolipophilia—the higher rating of the male or female choices was taken. Zoophilic participants were asked only to rate the degree of sexual arousal by the thought, idea, or fantasy of being an animal. (Zoophilic community members helping us plan the survey did not want to include the other choices.)

**Three Specific Identities** Each participant across all three samples was asked whether they identify with or feel like they might be any of 24 identities from a list that was provided to them in the survey. In this study, we focused on three identities in particular: amputee wannabe (i.e., a person who wants to become an amputee), furry (i.e., a person who is likely to fantasize about being a cartoon animal; unfortunately, we did not ask about an identity related to being an actual animal across the three samples), and a fat/chub wannabe (i.e., a person who wants to become fat). For each of those three identities, a participant was coded as "yes" (having the identity) or "no" (not having the identity). Those three identities were used as indicators of erotic target identity inversions corresponding with the three internalized sexual attractions: apotemnophilia, autozoophilia, and autolipophilia.

### Internalized Sexual Attractions Among Paraphilic and Non-Paraphilic Samples

Each of the three paraphilic samples responded to one item unique to that sample that could be compared with one item answered by all three non-paraphilic control samples. The items for the paraphilic samples asked whether respondents



**Table 1** Descriptive statistics for measures of external sexual attraction in acrotomophilic, zoophilic, and lipophilic samples

Sample	N items	M (SD)	95% CI	Cronbach's alpha	N
Acrotomophilia	3	3.87 (0.74)	3.79–3.95	0.79	322
Zoophilia	2	3.62 (0.79)	3.58–3.66	0.87	1501
Lipophilia	3	4.38 (0.65)	4.31–4.40	0.82	402

For each measure, scores range from 1 (never) to 5 (always)

had ever experienced sexual arousal imagining they were an instance of their external sexual attraction. (These items were previously mentioned, under “Existence of Internalized Sexual Attraction.”) The specific items for the acrotomophilic, zoophilic, and lipophilic samples were, respectively: “Have you ever become sexually aroused while picturing yourself as an amputee?” “Have you ever become sexually aroused while picturing yourself as a nonhuman animal?” and “Have you ever become sexually aroused while picturing yourself as a fat person?” The item used to assess autogynephilia among the control samples was item 8 from the Core Autogynephilia Scale (Blanchard, 1989b): “Have you ever become sexually aroused by the thought of being a woman?” All items were answered “yes” or “no.”

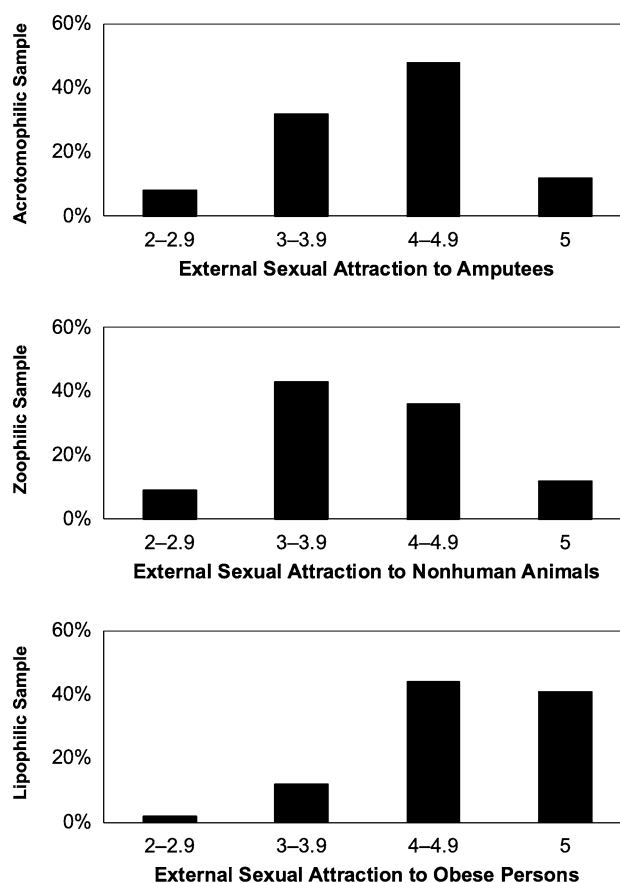
### Ages of Onset for External Sexual Attractions and Internalized Sexual Attractions

Participants for each of the three paraphilic samples were asked at what age they first realized their sexual attraction to their atypical erotic target (e.g., “How old were you when you first realized you were sexually interested in amputees?”). They were also asked at what age they first found sexually arousing the idea of being an instance of their atypical erotic target (e.g., “At what age did you first find the idea of being an amputee sexually arousing?”). Responses were truncated at 9 years at the lower end, because that is the lowest age some of the surveys permitted.

## Results

### External Sexual Attractions

Table 1 includes descriptive statistics for the brief scales used to measure the strength of external sexual attraction to the atypical erotic targets specific to each sample. Figure 2 shows the distributions of scores on these scales for the three samples. All three samples produced moderate-to-high average scores on these measures (at least 3.62 on a 5-point scale), indicating



**Fig. 2** Distributions of scores on measures of external sexual attraction in acrotomophilic, zoophilic, and lipophilic samples

that their specific erotic targets were present during sexual fantasies more than “sometimes” (i.e., 3.0). Indeed, mean scores for acrotomophilic and zoophilic participants were closer to 4.0 (indicating “usually”), and lipophilic participants’ mean scores exceeded 4.0. Thus, on average the three samples had substantial interest in their atypical erotic targets.

### Is Lipophilia Atypical?

Lipophilic participants were recruited for being attracted to “fat persons.” One might question whether this should be considered a paraphilic or otherwise atypical sexual interest. The term “fat person” is vague, and depending on one’s understanding of the term, could encompass a substantial minority of persons in some locations, including the USA. This issue may not be crucial for the current study, because Erotic Target Identity Inversion Theory is not meant to apply only to paraphilic sexual interests. For example, autogynephilia is the internalized sexual attraction corresponding with typical male heterosexuality. Nevertheless, we provide additional information here about the sexual preferences of our lipophilic sample.

**Table 2** Descriptive statistics for measures of internalized sexual attraction in acrotomophilic, zoophilic, and lipophilic samples

Sample	Existence subscale				Sexual importance subscale				Composite	
	<i>M</i> (SD)	95% CI	Alpha	<i>N</i>	<i>M</i> (SD)	95% CI	Alpha	<i>N</i>	Alpha	<i>N</i>
Apotemnophilia	1.34 (0.90)	1.24–1.44	0.91	318	2.24 (1.36)	2.08–2.40	0.90	286	0.77	286
Autozoophilia	0.98 (0.95)	0.93–1.02	0.87	1498	1.70 (1.06)	1.64–1.75	0.90	1492	0.69	1492
Autolipophilia	0.87 (0.93)	0.78–0.96	0.88	401	1.47 (0.93)	1.37–1.57	0.88	331	0.76	330

For the existence subscale, scores range from 0 (both absent) to 2 (both present). For the sexual importance subscale, scores range from 1 (not at all important) to 5 (extremely important)

Lipophilic participants rated their own body shape and their sexual preference for others' body shape using the Stunkard scale (Stunkard et al., 1983). The scale presents nine figures ranging from “extremely thin” (1) to “extremely obese” (9). Participants' average rating of their own body shape was 4.68 (SD = 1.68), corresponding to an estimated body mass index (BMI) of 25.3 (Parzer et al., 2021), which is near the border between “normal weight” and “overweight” (Weir & Jan, 2019). Their average preferred body shape was much higher,  $M = 7.68$  (SD = 1.27), paired  $t(363) = 39.3$ ,  $p < .001$ , corresponding to an estimated BMI of 36.8, which is currently considered “obesity class II.” Furthermore, their modal response for preferred shape in others was the heaviest figure (9), which corresponds to a BMI of 43.6, or “massive obesity.”

The sexual preferences of the lipophilic sample contrast sharply with those of a large cross-cultural sample representative of the general population (Swami et al., 2010). In that study, men and women from different world regions rated the attractiveness of the Stunkard female figures on a scale from 1 (not at all attractive) to 9 (extremely attractive). Male participants from North America, East Asia, Eastern Europe, South Asia, Southeast Asia, and Western Europe most preferred the Stunkard female figures classified as “slender” (3 or 4), assigning mean ratings to those figures ranging from 6.5 to 7.0. In contrast, mean ratings of much heavier female figures (7, 8, and 9) ranged from 2.2 to 2.6, 1.4 to 1.8, and 1.1 to 1.5, respectively.

### Internalized Sexual Attractions

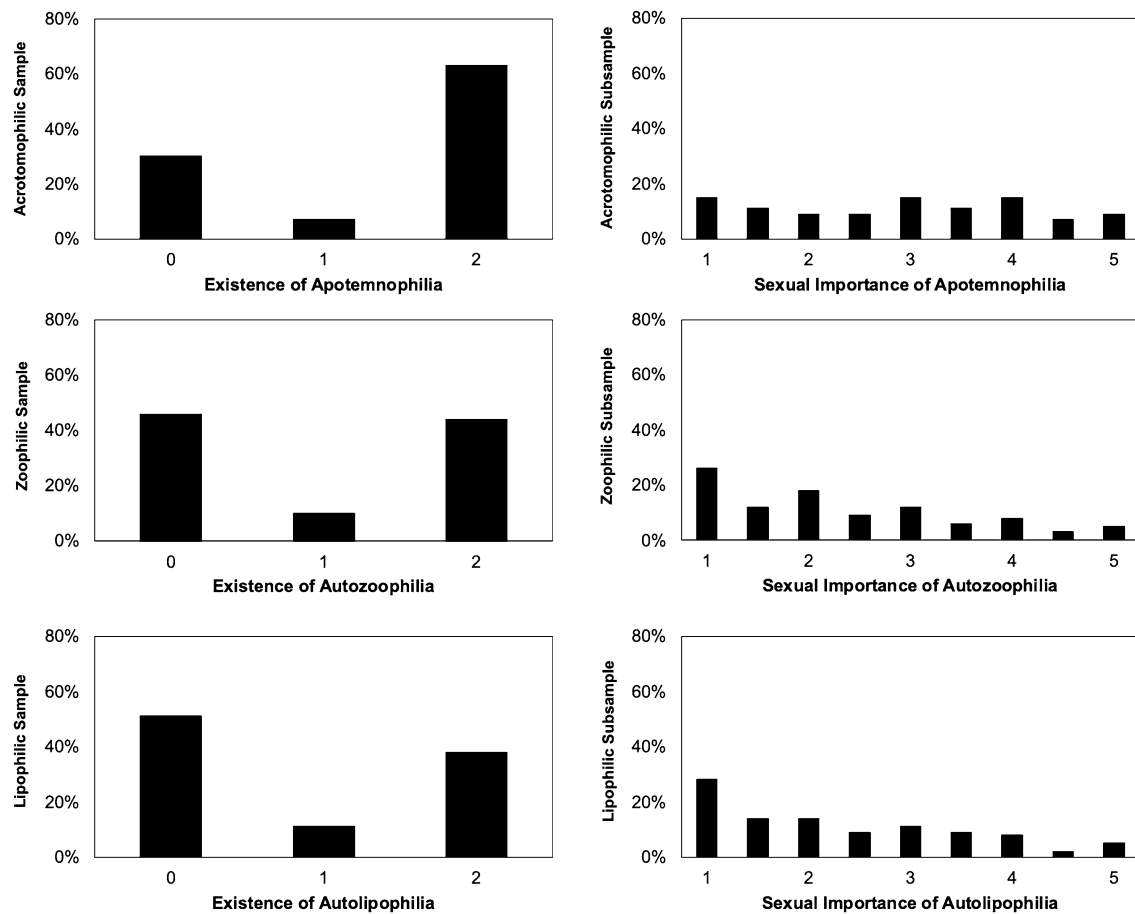
Erotic Target Identity Inversion Theory specifies that a subset of males with every external sexual attraction develops an internalized sexual attraction, experiencing sexual arousal by the fantasy of being an instance of their external erotic target (Hypothesis 1). Table 2 includes descriptive statistics for the two brief subscales used to measure the existence (i.e., presence or absence) and sexual importance of the three respective internalized sexual attractions: apotemnophilia (sexual arousal by the fantasy of being an amputee), autozoophilia (sexual arousal by the fantasy of being an animal),

and autolipophilia (sexual arousal by the fantasy of being an obese person). The correlations between the two subscales were 0.63, 0.53, and 0.61, respectively, for the three samples ( $ps < .001$ ). Both subscales were standardized and averaged for each sample to produce a composite measure of internalized sexual attraction for subsequent analysis. Table 2 also includes Cronbach's alpha for each sample's composite measure.

The left side of Fig. 3 shows the distributions of scores on the two-item subscale measuring the existence of the internalized sexual attractions. Distributions of this subscale were bimodal for all three samples, indicating that participants tended to answer both items similarly (i.e., either both present or both absent). For some subsequent results, we distinguished between subsamples with scores of 2 (“Internalized Sexual Attraction Present”) and those with scores of 0 (“Internalized Sexual Attraction Absent”). Rates of internalized sexual attractions (i.e., scores of 2) were 62% among acrotomophiles, 44% among zoophiles, and 38% among lipophiles. The right side of Fig. 3 shows the distributions of scores on the two-item subscale measuring the importance of the internalized sexual attraction for sexual arousal among the “Internalized Sexual Attraction Present” subgroups. Most of the latter reported that their internalized sexual attraction had some importance for sexual arousal (i.e., their scores exceeded 1), and appreciable minorities reported moderate-to-high importance (i.e., scores from 3 to 5).

### Erotic Target Identity Inversions

Erotic Target Identity Inversion Theory specifies that men with internalized sexual attractions will sometimes develop erotic target identity inversions, reflecting a wish or desire to become their external sexual attractions (Hypothesis 2). Table 3 includes descriptive statistics for the two subscales intended to measure erotic target identity inversions in the three samples, which would correspond with apotemnophilia, autozoophilia, and autolipophilia. The first subscale assessed whether participants had ever experienced feelings or behaviors indicating erotic target identity inversions, and the second subscale assessed participants' frequency



**Fig. 3** Distributions of scores on measures of internalized sexual attraction in acrotomophilic, zoophilic, and lipophilic samples (left: existence subscale scores for all participants; right: sexual importance subscale scores for the “Internalized Sexual Attraction Present” subgroups)

**Table 3** Descriptive statistics for measures of erotic target identity inversion in acrotomophilic, zoophilic, and lipophilic samples

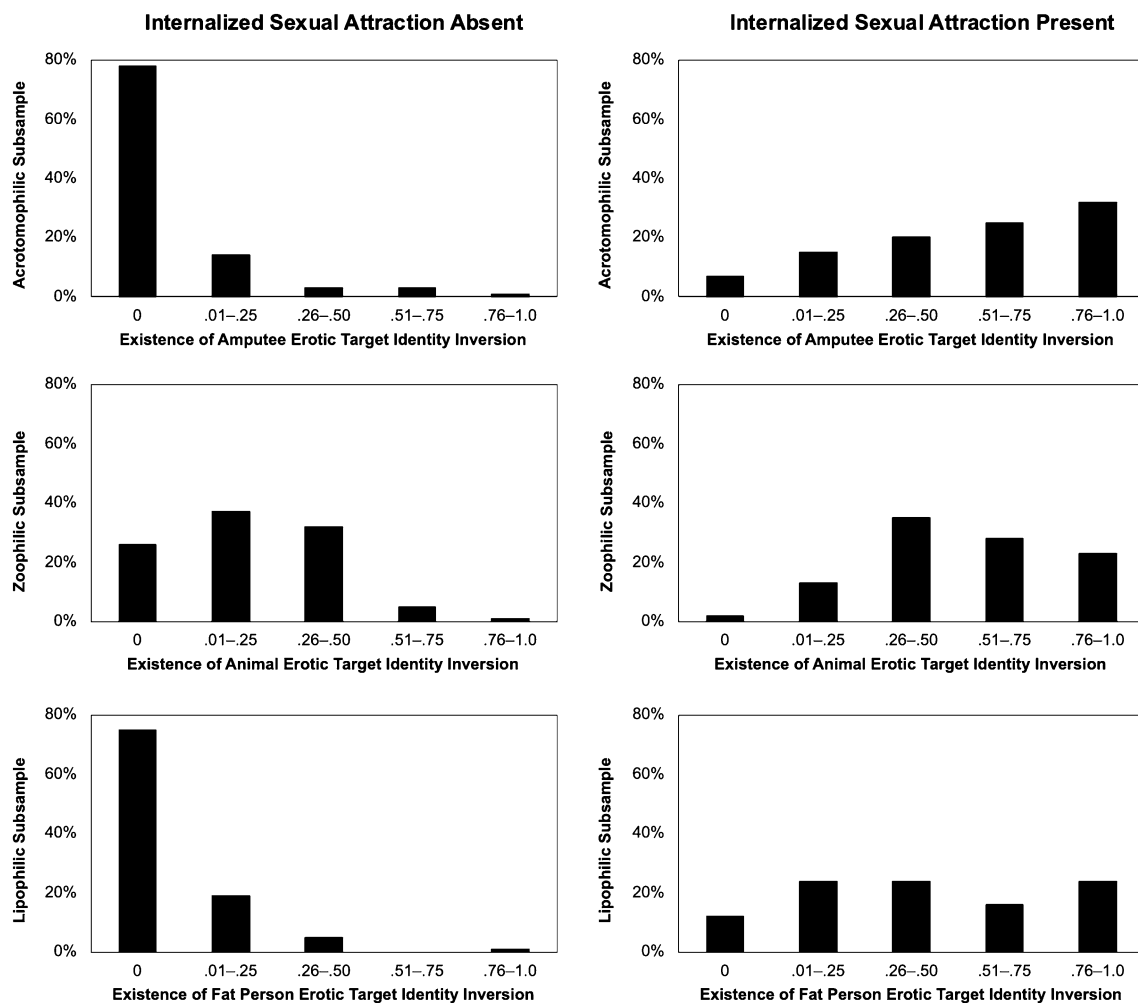
Sample	Existence subscale				N	Frequency subscale				Composite	
	N items	M (SD)	95% CI	Alpha		M (SD)	95% CI	Alpha	N	Alpha	N
Acrotomophilia	7	0.37 (0.34)	0.33–0.41	0.87	291	2.70 (1.80)	2.49–2.91	0.73	291	0.87	291
Zoophilia	7	0.35 (0.28)	0.33–0.37	0.76	1488	2.07 (1.57)	1.99–2.14	0.79	1495	0.82	1487
Lipophilia	6	0.20 (0.28)	0.17–0.23	0.82	332	1.79 (1.28)	1.65–1.93	0.62	331	0.87	331

For the existence subscale, scores range from 0 (no relevant items endorsed) to 1 (all relevant items endorsed). For the frequency subscale, scores range from 1 (never) to 7 (daily)

of self-imagining or imitating their specific atypical erotic target. The correlations between the two subscales were 0.78, 0.69, and 0.77 for the acrotomophilic, zoophilic, and lipophilic samples, respectively ( $ps < .001$ ). Both subscales were standardized and averaged for each sample to produce a composite measure of erotic target identity inversion for subsequent analysis. Table 3 also includes Cronbach’s alpha for each sample’s composite measure.

### Associations Between Internalized Sexual Attractions and Erotic Target Identity Inversions

Figure 4 shows the distributions of the first subscale intended to measure erotic target identity inversions. The left side of the figure includes the distributions from the “Internalized Sexual Attraction Absent” subgroups, and the right side includes distributions from the “Internalized Sexual



**Fig. 4** Distributions of scores on the first subscale (existence subscale) measuring erotic target identity inversions in acrotomophilic, zoophilic, and lipophilic samples (left: scores for “Internalized Sexual

Attraction Absent” subsamples; right: scores for “Internalized Sexual Attraction Present” subsamples)

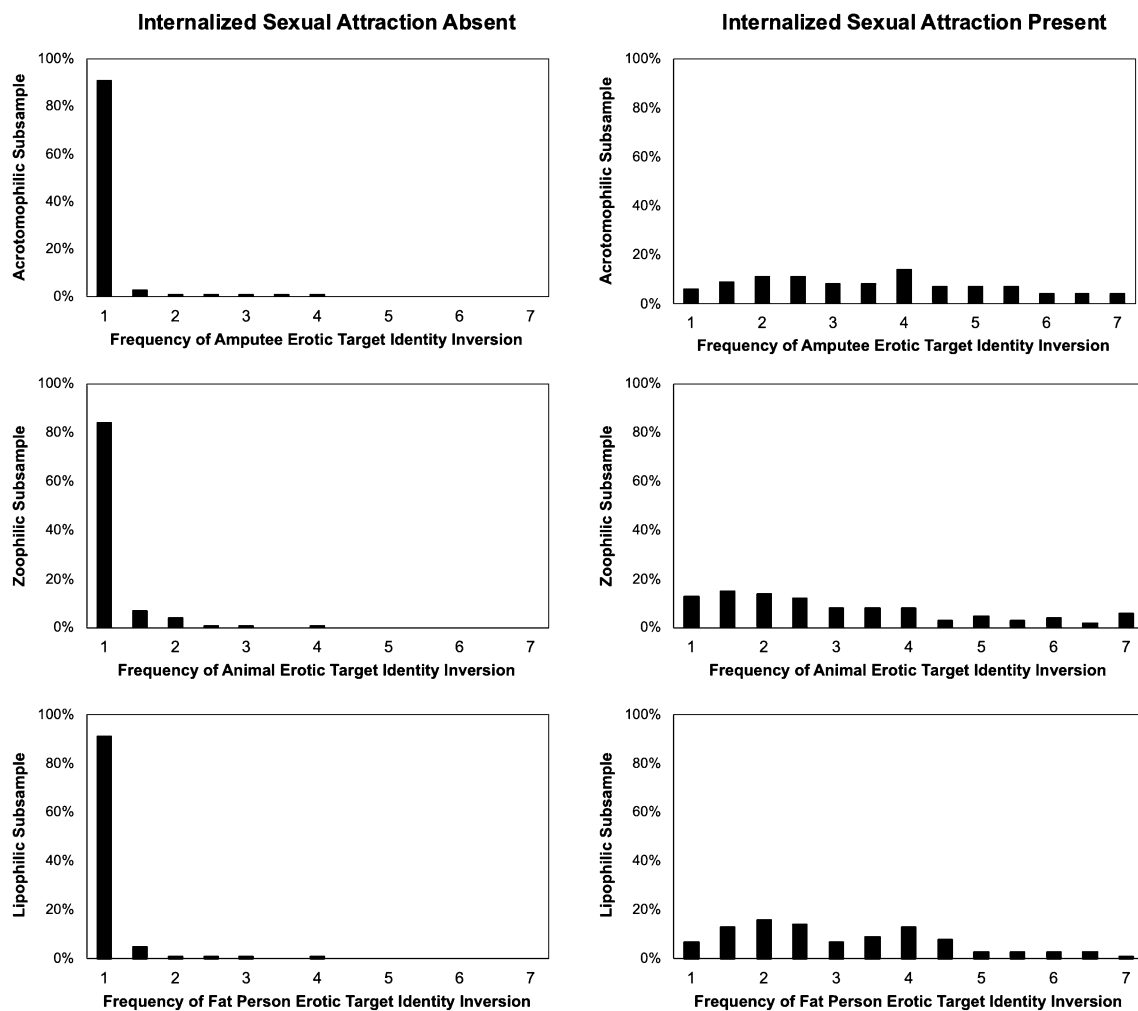
Attraction Present” subgroups. Figure 5 analogously shows the distributions of the second subscale intended to measure erotic target identity inversions. In both figures, erotic target identity inversions appeared to be markedly increased when internalized sexual attractions were present, consistent with Hypothesis 3. Table 4 quantifies this conclusion in the form of effect sizes and *t*-tests, which were all large and highly statistically significant ( $ps < .001$ ).

Table 5 includes the correlations between scores on the composite measures of internalized sexual attraction and the composite measures of erotic target identity inversion for the three samples, providing direct tests of Hypothesis 3. These correlations estimate the path coefficient **b** in Fig. 1. Estimates are provided both for raw correlations, and for correlations corrected for reliability attenuation (Borneman, 2010; Trafimow, 2016). The corrected correlations were all approximately 1.0.

### Specificity of Internalized Sexual Attractions and Erotic Target Identity Inversions

Erotic Target Identity Inversion Theory implies that internalized sexual attractions and erotic target identity inversions should be specific to men’s external sexual attractions (Hypothesis 4). That is, for example, men sexually attracted to amputees should have an elevated rate of becoming sexually aroused by the fantasy of being amputees. Furthermore, they should report comparatively less sexual arousal by the fantasies of being other kinds of persons or things unrelated to amputation (e.g., animals and fat persons). Similar predictions follow for identities, which reflect erotic target identity inversions.

Figure 6 shows the mean ratings of sexual arousal by the fantasies of being an amputee, an animal, or a fat person for the acrotomophilic and lipophilic samples. Only mean sexual arousal ratings for the fantasy of being an



**Fig. 5** Distributions of scores on the second subscale (frequency subscale) measuring erotic target identity inversions in acrotomophilic, zoophilic, and lipophilic samples (left: scores for “Internalized Sexual

Attraction Absent” subsamples; right: scores for “Internalized Sexual Attraction Present” subsamples)

**Table 4** Effect sizes (Cohen’s *d*) and independent *t*-tests comparing “Internalized Sexual Attraction Absent” and “Internalized Sexual Attraction Present” subsamples from the acrotomophilic, zoophilic, and lipophilic samples on measures of erotic target identity inversion

Sample	Existence subscale			Frequency subscale			Composite		
	<i>d</i>	<i>t</i>	<i>df</i>	<i>d</i>	<i>t</i>	<i>df</i>	<i>d</i>	<i>t</i>	<i>df</i>
Acrotophilia	1.95	13.9	271	2.01	14.0	271	1.99	14.0	271
Zoophilia	1.47	27.2	1342	1.36	25.4	1349	1.62	29.9	1341
Lipophilia	1.61	15.1	288	1.87	17.5	288	1.95	18.3	288

Positive values indicate higher scores among the “Internalized Sexual Attraction Present” subsample than the “Internalized Sexual Attraction Absent” subsample. All effect sizes (Cohen’s *d*) and independent *t*-tests were statistically significant at  $p < .001$

animal were available for the zoophilic sample. The figure reveals that the two samples for whom full data were available provided much higher arousal ratings for fantasies specific to being their external erotic target than for the other fantasies. We created a contrast variable for

both the acrotomophilic and lipophilic samples representing the difference between mean sexual arousal by their target-specific fantasy and mean sexual arousal by the other two fantasies. For both groups, the mean of the contrast variable differed significantly from zero. For the



**Table 5** Correlations between scores on the composite measures of internalized sexual attraction and the composite measures of erotic target identity inversion in acrotomophilic, zoophilic, and lipophilic samples

Sample	N	Correlation	95% CI	Corrected correlation
Acrotomophilia	286	0.78	0.71–0.85	0.95
Zoophilia	1482	0.75	0.70–0.77	1.00
Lipophilia	329	0.82	0.76–0.88	1.01

“Corrected correlation” refers to correction for reliability attenuation (Borneman, 2010; Trafimow, 2016)

acrotomophilic sample,  $t(266) = 27.7$ ,  $p < .001$ . For the lipophilic sample,  $t(381) = 20.3$ ,  $p < .001$ .

Table 6 contains the percentages and frequencies of men in the three samples who indicated that they identify with or feel like they might be amputee wannabes, furies, or fat/chub wannabes. There was a strong tendency for each sample to endorse the identity specific to their external sexual attraction and matching internalized sexual attraction. (Because this tendency is obvious from the table, and because the fact that a participant from a sample can contribute more than one observation complicates significance tests, we have not provided one.)

### Are Internalized Sexual Attractions Especially Common When Men’s External Sexual Attractions Are Paraphilic?

We have hypothesized that all internalized sexual attractions are paraphilic. In that case, if paraphilias tend to co-occur, and if the external sexual attractions studied herein are paraphilias, then internalized sexual attractions may be especially

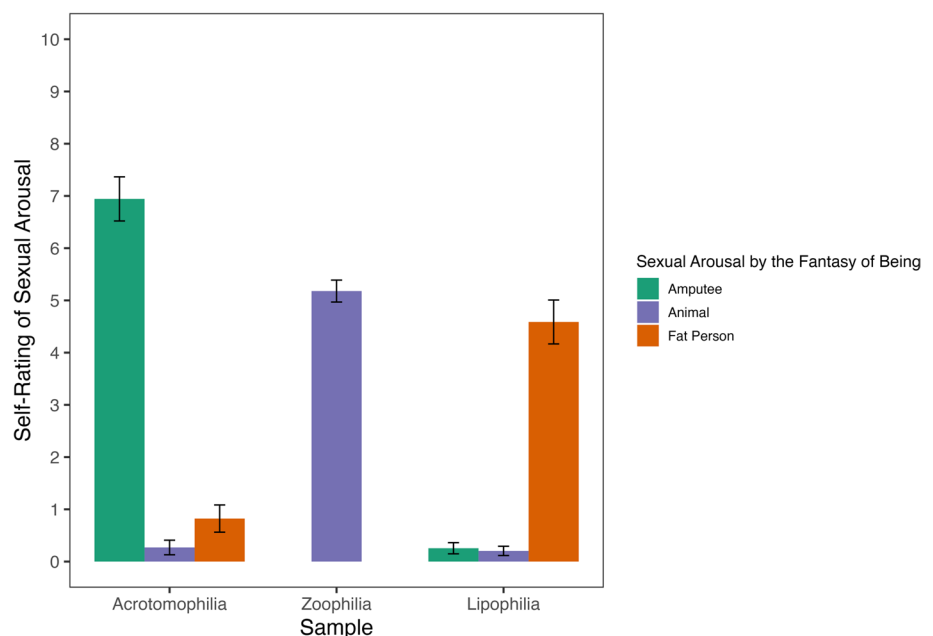
common among our participants, compared with men whose external sexual attraction is not paraphilic (Hypothesis 6). To test this hypothesis, we compared the rate of internalized sexual attractions among our three paraphilic samples to the rate of autogynephilia among three control samples selected only for sexual attraction to women. One item assessing internalized sexual attractions was comparable across groups, although its specific content varied. For the paraphilic groups, the item asked whether respondents had ever become sexually aroused by “picturing themselves” as an instance of their external erotic target (i.e., an amputee, a nonhuman animal, or a fat person). For the female-attracted control groups, the item asked whether respondents had ever become sexually aroused by the “thought of being a woman” and was taken from the Core Autogynephilia Scale (Blanchard, 1989b).

Table 7 contains the proportions of “yes” responses for the three paraphilic and three control samples, as well as the 95% confidence intervals for the proportions. The lowest proportion endorsing the item among the paraphilic samples, .47 for the lipophilic sample, exceeded the highest proportion among the control samples, .18 for the Mechanical Turk sample, by a factor of 2.6. A multiple logistic regression analysis, with “Sample” considered a random variable, estimated the mean proportion of “yes” responses as 0.55 for the paraphilic samples and 0.22 for the control samples. This difference was associated with a probability of  $1.1 \times 10^{-15}$ .

### Associations Between Internalized Sexual Attractions and Autogynephilia

For each sample, we examined the association between scores on the composite measure of the specific internalized sexual

**Fig. 6** Mean self-ratings of sexual arousal by the fantasy of being an amputee (left), an animal (center), or a fat person (right), for acrotomophilic, zoophilic, and lipophilic samples. *Note.* For the zoophilic sample, only the mean rating of sexual arousal by the fantasy of being an animal was available



**Table 6** Percentage (and number) of participants in each sample who reported that they identify with or feel like they might be amputee wannabes, furies, or fat/chub wannabes

Sample	Identity		
	Amputee wannabe	Furry	Fat/chub wannabe
Acrotomophilia	40 (130)	2 (6)	1 (2)
Zoophilia	0 (6)	44 (659)	2 (28)
Lipophilia	0 (0)	10 (40)	22 (87)

Numbers without parentheses are percentages. Numbers inside parentheses are raw frequencies. A few participants contributed more than one observation in a row

**Table 7** Proportions of participants who indicated an internalized sexual attraction specific to their external erotic target, comparing acrotomophilic, lipophilic, and zoophilic samples with three control samples of men sexually attracted to women

	Sample	<i>N</i>	Proportion “yes”	95% CI
Control samples	Mechanical Turk	392	.18	.14–.22
	Qualtrics	418	.12	.09–.15
	Prolific	282	.13	.10–.18
Paraphilic samples	Acrotomophilia	318	.68	.63–.73
	Zoophilia	1498	.51	.49–.54
	Lipophilia	401	.47	.42–.52

attraction (i.e., apotemnophilia, autozoophilia, and autolipophilia) and scores on the Core Autogynephilia Scale (Blanchard, 1989b), thereby providing tests of Hypothesis 7. For apotemnophilia,  $r(279) = .22$ ,  $p < .001$ . For autozoophilia,  $r(1455) = .19$ ,  $p < .001$ . For autolipophilia,  $r(326) = .47$ ,  $p < .001$ .

### Ages of Onset for External and Internalized Sexual Attractions

Table 8 includes mean ages of participants in each sample at the time that they completed the survey, mean ages when

they realized they were attracted to their specific atypical erotic targets, and mean ages when they realized they were sexually aroused by the idea of being an instance of their atypical erotic targets, separately by sample. (The latter was computed only for the “Internalized Sexual Attraction Present” subsamples).

## Discussion

Results of our study confirmed several predictions from Erotic Target Identity Inversion Theory. First, in all three paraphilic samples, each comprising a distinct external sexual attraction, a substantial minority of men reported specific internalized sexual attractions: sexual arousal by the fantasy of being the type of person or thing to whom they are sexually attracted. Second, a substantial minority of men reported feelings and behaviors consistent with erotic target identity inversions, indicating the desire to be the type of person or thing to whom they are sexually attracted. Both internalized sexual attractions and erotic target identity inversions were strongly consistent with the external sexual attraction (e.g., men sexually attracted to amputees tended to be sexually aroused by the fantasy of being amputees and to wish to be amputees, and not to be sexually aroused by the fantasy of being animals or obese persons and to wish to be animals or obese persons). Third, there was a strong correlation in each sample between men’s degree of internalized sexual attraction and their degree of erotic target identity inversion. Indeed, after correction for reliability attenuation (Borneman, 2010; Trafimow, 2016), correlations were approximately 1.00 in all three paraphilic samples.

Although results were consistent with both Freund and Blanchard’s (1993) original articulation of erotic target identity inversions and our more elaborate theory (Fig. 1), they do not clarify causality. We justified the causal features of our model on other grounds. Although specifying causal hypotheses is useful for advancing theory, representing causal hypotheses via path diagrams does not show that the causal hypotheses are correct.

**Table 8** Mean ages of participants at the time of the survey, and recalled ages of onset for external and internalized sexual attractions, in years

Sample	<i>N</i>	<i>M</i> age at the time of survey (SD)	<i>M</i> age of onset for external sexual attraction (SD)	95% CI	<i>M</i> age of onset for internalized sexual attraction (SD)	95% CI
Acrotomophilia	319	39.46 (15.23)	13.41 (5.10)	12.85–13.87	13.08 (4.06)	12.50–13.65
Zoophilia	1485	29.83 (10.94)	13.98 (4.33)	13.76–14.21	14.93 (5.35)	14.51–15.35
Lipophilia	398	24.13 (5.65)	12.49 (2.68)	12.22–12.75	13.80 (4.41)	13.08–14.51

Before averaging, participants’ ages were truncated at 9 years on the lower end

## Are Acrotomophilia, Zoophilia, Lipophilia, and Internalized Sexual Attractions Paraphilias?

We found evidence that acrotomophilia, zoophilia, lipophilia, and their specific internalized sexual attractions fit the understanding of “paraphilia” in its strong sense. Thus, we provided some support for the hypothesis that the concept “paraphilia” is more scientifically interesting than the mere judgment that a sexual interest is unusual.

Two non-obvious findings regarding paraphilias—a strong male bias, and a tendency to co-occur with other paraphilias—were true for all three samples recruited for their sexual attraction to atypical erotic targets: amputees, nonhuman animals, and obese persons. Initially recruited samples were at least 85% male, even though we did not mention natal sex in our recruitment materials. There were also associations among sexual interests we hypothesized to be paraphilias. Specifically, the proportion of males with each of three external sexual attractions (acrotomophilia, zoophilia, and lipophilia) who also had the specific internalized sexual attraction (apotemnophilia, autozoophilia, and autolipophilia) was substantially higher than the proportion of men with sexual attraction to women who also had autogynephilia in three representative samples. Furthermore, all three paraphilic samples showed modest-to-moderate, statistically significant, associations between their respective internalized sexual attraction and autogynephilia.

Recalled ages of onset for both external and internalized sexual attractions were during early-to-mid adolescence for all three paraphilic samples, consistent with the idea that paraphilias are like sexual orientations. Mean recalled ages of first awareness in our study were similar to those from a recent quantitative review focusing on external sexual attractions generally considered to be sexual orientations, such as homosexuality and bisexuality (Hall et al., 2021).

## Erotic Target Identity Inversion Theory as a Parsimonious and Unified Explanation

Findings from our study were generally consistent across the three paraphilic samples, and they are also generally consistent with prior research findings regarding autogynephilia (an internalized sexual attraction) and nonhomosexual male gender dysphoria (the extreme form of its associated erotic target identity inversion) (Lawrence, 2009b, 2013, 2017). To the extent that Erotic Target Identity Inversion Theory can provide a unified explanation of these phenomena, positing different explanations for each of them is less parsimonious. For example, attempting to explain autogynephilia, Serano (2020) implicated cultural emphasis on female beauty and “the male gaze”: “a mindset wherein men are viewed as sexual subjects who act upon their own desires, whereas women are viewed as passive sexual objects of other people’s

desires” (p. 770). But “the male gaze” is irrelevant to any conceivable explanation of apotemnophilia, autozoophilia, or autolipophilia, which all follow from Erotic Target Identity Inversion Theory. Nor can we imagine a plausible analogue to “the male gaze” for apotemnophilia, autozoophilia, or autolipophilia.

Similarly, attempting to explain the phenomenon of adults seeking amputation of healthy limbs, Ramachandran and McGeoch (2007) theorized that it resulted from “dysfunction of the right parietal lobe” leading to “uncoupling of the construct of one’s body image in the right parietal lobe from how one’s body physically is” (p. 250). Their hypothesis was motivated by observations of patients who have suffered somatoparaphrenia, a rare condition following a right parietal stroke, leading to rejection of the left arm. However, neither this nor any similar model can plausibly explain phenomena highly analogous to the desire for limb amputation that some men with apotemnophilia experience, such as the desire for sex reassignment surgery in some autogynephilic males, or the desire to become fat that sometimes accompanies autolipophilia.

## Limitations

Our participants were all recruited via Internet and social media solicitations. There is no way to know whether they are representative of men with their sexual interests. We do not have hypotheses about how unrepresentativeness of our samples may have influenced our results.

Our measures were entirely based on self-report. Self-report can be inaccurate, and there is at least one reason to worry about this with respect to internalized sexual attractions. Sexual motivation for embracing certain identities has been stigmatized, especially for autogynephilia (Bailey, 2003; Lawrence, 2017), but also for furies (Hsu & Bailey, 2019; Roberts et al., 2016), and for men seeking amputation (Foley, 2017). In our experience, people are less respectful and tolerant of others’ unusual identities if they believe the identities are sexually motivated than if they believe the identities are caused by other factors (e.g., a feminized brain/mind for natal males adopting a female identity, a desire for social companionship for furies, or unusual neural connections between sensory cortex and limbs for voluntary amputees). It is doubtful that the self-report concern we have discussed would have affected our results, however. To be included in our study, participants had to endorse an unusual, likely stigmatized, external sexual attraction: attraction to amputees, animals, or obese persons. Given a willingness to admit to these sexual interests, it is not obvious to us why participants would be less open about internalized sexual attractions or erotic target identity inversions. Unwillingness to disclose sexual motivation would be more likely in studies that recruited natal males based on their showing evidence of putative erotic

target identity inversions (e.g., nonhomosexual transgender women, male furies, and men seeking amputation of healthy limbs) and then, asked about internalized sexual attractions. However, participants in such studies have not been hesitant to reveal sexual motivation (Blanchard, 1989b; First, 2005; Hsu & Bailey, 2019; Lawrence, 2013).

## Future Directions

Some phenomena that we believe are best explained with Erotic Target Identity Inversion Theory have been hypothesized to have other explanations (see, e.g., Serano, 2020 regarding autogynephilia and Ramachandran & McGeoch, 2007 regarding amputation of healthy limbs). Studies simultaneously examining competing hypotheses would be especially desirable.

Different erotic target identity inversions appear to have strikingly similar structures: an external sexual attraction causes (or is associated with) a specific internalized sexual attraction, which causes (or is associated with) an erotic target identity inversion. It is likely that different erotic target identity inversions, and different internalized sexual attractions, share some underlying causes (see Hsu & Bailey, 2022 for further discussion). This would be supported by showing that they run in the same families, or that they share similar genes, brain structures, or patterns of brain activation.

Finally, internalized sexual attractions could illuminate the mechanisms and development of male sexual orientation. Internalized sexual attractions are certainly deviations from typical sexual development, but similarity in the organization and expression of different internalized sexual attractions may reflect similarity with respect to their development. To the extent that internalized sexual attractions are in fact a mislocation of external erotic targets onto the self, might this provide a clue regarding how male sexual orientation typically develops? The fact that developmental deviations can lead to an internalization of an erotic target suggests that there may be a mechanism that prevents this from happening in most men (Blanchard, 1991; Freund & Blanchard, 1993).

## Conclusions

Drawing from Freund and Blanchard's (1993) original formulation of erotic target identity inversions, we proposed a more elaborate model in Erotic Target Identity Inversion Theory: For every external sexual attraction, a subgroup of men will have an internalized sexual attraction (sexual arousal by the idea or fantasy of being an instance of their external sexual attraction). Furthermore, some men with internalized sexual attractions will develop erotic target identity inversions and imitate, wish to become, or try to become an instance of their external sexual attraction. We studied

men with external sexual attraction to amputees, nonhuman animals, or extremely obese persons, and our findings were consistent with Erotic Target Identity Inversion Theory. Our findings comprised associations, however, and thus could not clarify direction of causation. Erotic Target Identity Inversion Theory can parsimoniously explain a variety of otherwise puzzling phenomena.

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**Availability of Data and Materials** These data are available upon reasonable request. A copy of the survey instrument is available to those who contact the corresponding author.

## Declarations

**Conflict of interest** None to declare.

**Ethical Approval** The authors certify that the research complies with ethical standards and was approved by the Institutional Review Board of Northwestern University.

**Informed Consent** Electronic consent was obtained from all participants included in the study. On the first page of the online survey, participants were informed of the research purpose and potential risks and benefits of participating, that their participation was voluntary, and were presented with contact information for the researcher and for Northwestern University's IRB. The research survey questions were displayed only if the participant clicked "agree" which indicated that the participant read and understood the information, were at least 18 years of age, and agreed to volunteer as a research participant for the study.

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