Parallels between Gender Identity Disorder and Body Integrity Identity Disorder: A Review and Update

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Abstract

Body Integrity Identity Disorder (BIID) displays many similarities to the type of Gender Identity Disorder (GID) found in nonhomosexual men. Nonhomosexual men with GID, who are sexually attracted to and love women, experience the paraphilic desire to turn their bodies into facsimiles of the type of persons they love ***(autogynephilia).*** *Similarly, most individuals with BIID are sexually attracted to and love amputees; they, too, putatively experience the paraphilic desire to turn their bodies into replicas of the type of persons they love* ***(apotemnophilia).*** *GID is overrepresented among men with BIID, because the paraphilic wish to become a facsimile of the type of person one loves can involve their disability, gender, or both. Because paraphilic sexual orientations significantly influence personal identity in modern Western cultures, BIID and male nonhomosexual GID feel like identity-driven phenomena. Clinical experience and research concerning GID in nonhomosexual men suggest that GID probably will be overrepresented among men who identify as having non-amputation-related disabilities; that attempts to distinguish "true" BIID from "merely sexual" apotemnophilia will be unproductive; that a neuroanatomical marker for BIID, if it exists, probably will be found in the hypothalamus; and that BIID is likely to occur primarily in individualistic Western countries.*

Introduction

In a recent review article (Lawrence, 2006), I examined some points of comparison between Gender Identity Disorder (GID; American Psychiatric Association [APA], 2000) and the desire for amputation of a healthy limb, sometimes called Body Integrity Identity Disorder (BIID; First, 2005). Since that time, professional interest in BIID has increased significantly; professional understanding of GID and related conditions also has continued to evolve. In this article, I will first summarize the principal observations and conclusions of my 2006 review article. I will then expand on some of its themes in light of recent developments, with the goal of addressing this question: How can our understanding of GID help us to better understand BIID?

GID in Nonhomosexual Men

GID is characterized by a strong and persistent cross-gender identification and by persistent discomfort with one's anatomic sex, or with the gender role of one's sex, (APA, 2000). GID is roughly synonymous with *transsexualism* (APA, 1987; World Health Organization, 1992), and I will use the two terms interchangeably. Persons with GID (i.e., transsexuals) usually report profound feelings of "wrong embodiment" (Prosser, 1998) as members of their birth

sex, accompanied by an intense desire to make their bodies more congruent with their cross-gender identities. GID is a rare condition that occurs in both males and females, but with a strong male predominance: Approximately 70% of transsexuals are male-to-female (MtF; Zucker & Lawrence, 2009). The clinical presentations of GID in males and females are diverse, but sexual orientation explains much of this diversity in males and, to a lesser extent, in females. Specifically, there are two principle types of MtF transsexualism based on sexual orientation; one of these types – that found in nonhomosexual men – displays many similarities to BIID.

Clinicians and researchers have observed for decades that there are two distinctly different types of MtF transsexualism (Blanchard, 1985, 1988, 1989b; Buhrich & McConaghy, 1978; Freund, Steiner & Chan, 1982; Lawrence, 2005; Levine, Gruenewald & Shaiova, 1976; Money & Gaskin, 1970-1971; Smith, van Goozen, Kuiper & Cohen-Kettenis, 2005; Whitam, 1987, 1997). One MtF transsexual type includes persons who are exclusively sexually attracted to men and who are referred to as *homosexual* MtF transsexuals: These individuals usually were overtly feminine during childhood, are very feminine as adults, and do not experience sexual arousal with cross-dressing or cross-gender fantasy (Whitam, 1987, 1997). The other MtF transsexual type includes persons who are never exclusively sexually attracted to men, but who may be sexually attracted to women, to women and men, or to neither women nor men; these individuals are referred to as *nonhomosexual* MtF transsexuals. These individuals usually were not overtly feminine during childhood and are not especially feminine as adults (Whitam, 1987, 1997; Zucker, Owen-Anderson & Bradley, 2007). They almost always have a past or current history of sexual arousal with cross-dressing or cross-gender fantasy (Blanchard, 1985; Lawrence, 2005; Whitam, 1987, 1997). Nonhomosexual MtF transsexualism is closely related to transvestic fetishism (APA, 2000) and not uncommonly develops out of the latter condition (Docter, 1988).

Blanchard (1989a) coined the term *autogynephilia* (literally, "love of oneself as a woman") to describe the paraphilic sexual interest that he hypothesized to underlie both nonhomosexual MtF transsexualism and transvestic fetishism. He formally defined autogynephilia as "a male's propensity to be sexually aroused by the thought of himself as a female" (1989b, p. 616). Autogynephilia encompasses sexual arousal with cross-dressing, as well as arousal to fantasies or enactments that do not involve female clothing per se. Autogynephilia usually becomes evident before puberty, occasionally in early childhood. Stoller (1985) and Zucker and Blanchard (1997) reported cases of boys younger than age 3 who desired to wear cross-sex clothing and developed penile erections when they did so. In nonhomosexual MtF transsexuals and male transvestites, cross-dressing, often accompanied by autogynephilic sexual arousal, often begins before age 7 and usually before age 12 (Docter & Prince, 1997; Doorn, Poortinga & Verschoor, 1994; Lawrence, 2003; Schott, 1995).

Most nonhomosexual MtF transsexuals acknowledge some history of autogynephilic sexual arousal: Blanchard (1985) found that 73% of nonhomosexual MtF transsexuals reported such arousal, and Lawrence (2005) found a still higher figure, 89%. Moreover, autogynephilic sexual arousal can be detected using phallometry in transvestites and nonhomosexual gender dysphoric men who deny such arousal (Blanchard, Racansky & Steiner, 1986), suggesting that such arousal is probably almost universal in nonhomosexual MtF transsexuals, even when not acknowledged. Socially desirable responding might account for some cases of denial of autogynephilic arousal: Blanchard, Clemmensen, and Steiner (1985) found that, among nonhomosexual gender dysphoric men, denial of autogynephilic arousal with cross-dressing was correlated with the tendency to otherwise describe oneself in a socially desirable way.

Autogynephilia belongs to an unusual category of paraphilic sexual interests that Freund and Blanchard (1993) called *erotic target locations errors* (see also Lawrence, 2009). Individuals who experience paraphilias of this type locate their preferred erotic targets inaccurately or erroneously, either directing their erotic interest toward peripheral or inessential elements of their preferred erotic targets (e.g., the hair, feet, or clothing of the persons to whom they are attracted), which manifests as fetishism, or else mislocating their preferred erotic targets in their own bodies, which manifests as the desire to impersonate or turn their bodies into facsimiles of their preferred erotic targets. Erotic target location errors of the latter type are called *erotic target identity inversions* (Freund & Blanchard, 1993), because they profoundly influence the identities of the individuals who experience them. Autogynephilia is the prototypical erotic target identity inversion, in which men who are sexually attracted to women desire to impersonate or turn their bodies into facsimiles of women, and also come to identify partly or entirely as women.

It is important to remember that, in MtF transsexuals, autogynephilia is associated not only with the desire to become a facsimile of a woman, but also with a feeling of *identity* as a woman. One explanation for this phenomenon is that autogynephilia, like many other paraphilias, appears to constitute a genuine sexual orientation, involving feelings of love and affection for, and attachment to, one's preferred sexual object (in this case, one's feminized self), in addition to erotic arousal (see Fisher, 2000; Fisher, Aron, Mashek, Li & Brown, 2002). At least in contemporary Western societies, the constellation of feelings and values associated with one's sexual orientation appears to contribute significantly to personal identity in individuals with normophilic (e.g., heterosexual or homosexual) sexual orientations (Katz, 1995), and arguably similarly does so in individuals with paraphilic sexual orientations (Levine, Risen & Althof, 1990), including autogynephilia. Person (1980) suggested that an individual's unique sexual orientation *(sex print)* can be an especially important source of personal identity for individuals with unusual sexual orientations:

> *Because it is revealed rather than chosen, sexual preference is felt as deeply rooted and deriving from one's nature. To the degree that one utilizes sexuality (for pleasure, for adaptation, as the resolution of unconscious conflict) and to the degree that sexuality is valued, one's sexual "nature" will be experienced as more or less central to personality. To the extent that an individual's sex print "deviates" from the culture's prescription for sexuality, it may be experienced as even more central to identity (at least in this culture). So, for example, many transsexuals and transvestites report both relief and a sense of personality consolidation when "I found out what I am," when "I found out there were others like me."* (p. 51)

Moreover, it would seem obvious that erotic target identity inversions such as autogynephilia would make especially significant contributions to personal identity, because they define one's idealized self: who or what one wants to resemble or become.

A few other features of autogynephilia deserve emphasis. First, as is true of other sexual orientations, the affectionate and attachment-based elements of autogynephilia can persist after erotic arousal to one's preferred sexual object has declined or disappeared. Consequently, after a period of time, persons with autogynephilia can come to feel as though their cross-gender desires have little to do with erotic sexuality, but instead reflect feelings of affection, comfort, and identity. Second, autogynephilia typically coexists with and also competes with heterosexual attraction (Blanchard, 1992), and a few people apparently experience autogynephilia so intensely that it completely overshadows their interest in female sexual partners. These individuals, who appear to constitute about 10% of nonhomosexual

MtF transsexuals (Lawrence, 2005) report little, if any, sexual attraction to persons of either sex and are usually described as *analloerotic* ("not sexually attracted toward other people"; Blanchard, 1989a). Third, the paraphilias tend to cluster or co-occur: Having one paraphilia greatly increases the probability of having other paraphilias (Abel & Osborn, 1992; Wilson & Gosselin, 1980). Autogynephilia, like other paraphilias, is associated with an increased prevalence of other paraphilic sexual interests, especially sexual masochism and fetishism (Bolin, 1988; Hoenig & Kenna, 1974; Walworth, 1997). Finally, many nonhomosexual MtF transsexuals object to having their transsexualism described as an outgrowth of autogynephilia (e.g., Serano, 2008; Wyndzen, 2008; see also Dreger, 2008; Lawrence, 2004, 2007, 2008). Some insist that their transsexualism has nothing to do with paraphilic sexuality, but is simply a matter of their deeply held, perhaps inborn, identities as women. Others concede that sexual desire is, or once was, an element of their transsexual impulse, but claim that sexual desire never was, or has ceased to be, important to them, and that their identities as women constitute the most important reason for their wish to undergo sex reassignment and live as women.

BIID: Parallels to GID

The hallmark of BIID is an intense desire for the amputation of one or more limbs, in order to relieve the feeling of somatic dysphoria associated with being able-bodied. As the term *BIID* suggests, *identity* as an amputee is sometimes considered another defining feature of the condition, and perhaps more important than the desire for amputation per se. The emphasis on identity as a component of BIID appears to be a recent development: The earliest reports of individuals desiring elective amputation (e.g., Money, Jobaris & Furth, 1977) did not strongly emphasize identity. Furth and Smith (2000) discussed issues of identity among persons desiring amputation in a pioneering monograph that was, nevertheless, originally titled *Apotemnophilia: Information, Questions, Answers, and Recommendations About Self-Demand Amputation*. The term *apotemnophilia* (Money et al., 1977) refers to paraphilic sexual arousal to the thought or image of being an amputee. Significantly, Furth and Smith (2002) revised their book's title two years later, replacing the word *Apotemnophilia* with *Amputee Identity Disorder,* an early term for BIID. Furth and Smith (2002) proposed the following principal diagnostic criteria for what they called *Body Identity Disorder* (yet another early term for BIID):

> *A strong and persistent disability identification, which is the desire to be, or the insistence that one is, internally, disabled (Criterion A)... There must also be evidence of persistent discomfort about living as an able-bodied person, or a sense of inappropriateness in that same role (Criterion B).* (p. 87)

These criteria closely resemble the principal diagnostic criteria for GID. Note that identity as a disabled person is the first listed criterion; somatic dysphoria is listed second.

BIID is a rare condition, apparently much rarer than transsexualism. First (2005), who reported the largest case series, located and interviewed 52 persons with possible or probable BIID. Individual case reports (e.g., Adams, 2007; Bensler & Paauw, 2003; Berger, Lehrmann, Larson, Alverno & Tsao, 2005; Braam, Visser, Cath & Hoogendijk, 2006; Everaerd, 1983; Furth & Smith, 2002; Money, 1990; Money et al., 1977; Sorene, Heras-Palou & Burke, 2006; Storm & Weiss, 2003; Wakefield, Frank & Meyers, 1977) describe another dozen or so instances of definite or probable BIID. Like GID, BIID displays a strong male predominance:

Table 1. *Parallels Between Gender Identity Disorder in Nonhomosexual Men and Body Integrity Identity Disorder*

Characteristic	Gender Identity Disorder in Nonhomosexual Men	Body Integrity Identity Disorder
Onset of desire in early childhood	Usually	Usually
Preferential attraction to persons with desired embodiment	Yes (to females)	Almost always (to amputees)
Paraphilia is hypothesized to underlie the condition	Yes (autogynephilia)	Yes (apotemnophilia)
Elevated prevalence of other paraphilic disorders	Yes	Yes
Affected persons do not believe that their condition is paraphilic	Often	Often?
Attempts to distinguish "true" cases from nongenuine, sexually motivated ones	Yes (now rare)	Yes (ongoing)
Proposed neuroanatomical or neuropathological explanations	Yes (involving BSTc[a])	Yes (involving right parietal cortex)
More prevalent in individualistic Western countries than in collectivistic Eastern countries	Yes	Yes

[a] bed nucleus of the stria terminalis, central division

Furth and Smith (2002) estimated that about 75% of persons with Amputee Identity Disorder were male, and 90% of First's (2005) informants were male.

BIID has many characteristics in common with the type of GID that occurs in nonhomosexual men; some of the shared characteristics of the two conditions are listed in the first five rows of Table 1. The desire for sex reassignment in nonhomosexual men with GID usually begins in early childhood, and so does the desire for limb amputation in individuals with BIID (Furth & Smith, 2002). About two thirds of First's (2005) informants with BIID reported an onset of their desire before age 8. Just as nonhomosexual men with GID are preferentially sexually attracted to persons with the kind of embodiment they themselves desire (i.e., women), individuals with BIID are usually preferentially attracted to persons with the kind of embodiment they want for themselves (i.e., amputees), a paraphilic sexual interest called acrotomophilia (Money, 1986). Among First's informants, 87% acknowledged a specific sexual attraction to amputees. Many case reports of persons who desired limb amputation also have described sexual attraction to amputees as sexual or romantic partners (Everaerd, 1983; Money, 1990; Money et al., 1977; Wakefield et al., 1977). Just as most nonhomosexual MtF transsexuals experience sexual arousal to the thought or image of themselves as women (autogynephilia), most individuals with BIID experience sexual arousal to the thought or image themselves as amputees (apotemnophilia). First (2005) found that 72% of his male informants reported a history of sexual arousal to the idea of being an amputee, and 67% of his participants stated that an important reason for seeking limb amputation was "in order to feel sexually excited" (p. 923).

I have suggested (Lawrence, 2006), and I continue to believe, that most cases of BIID can be understood as a direct outgrowth of apotemnophilia, particularly among males. Specifically, I have proposed that BIID, and the apotemnophilic arousal from which it arises, reflect an erotic target location error (specifically, an erotic target identity inversion) occurring in individuals who are sexually attracted to amputees. In other words, BIID (or apotemnophilia) represents the intersection or simultaneous co-occurrence of two different paraphilic tendencies: a paraphilic erotic target preference for amputees (acrotomophilia), and an erotic target identity inversion in relation to that erotic target, resulting in a desire to turn one's body into a replica of one's preferred erotic target. As previously noted, the presence of one paraphilia increases the likelihood that affected persons will experience still other paraphilias, and BIID, like GID in nonhomosexual men, is associated with an elevated prevalence of other paraphilic sexual interests. Among First's (2005) participants, for example, 29% reported another paraphilic sexual interest, including 15% with transvestic fetishism. The elevated prevalence of other paraphilic interests in persons with BIID is consistent with the hypothesis that BIID itself represents a paraphilic phenomenon.

If BIID reflects an erotic target identity inversion in individuals who are attracted to amputees, one would also expect to find an elevated prevalence of gender identity disorders in men with BIID who are heterosexually oriented (i.e., who are attracted to *female* amputees). The explanation is straightforward: If a man is attracted to female amputees and wants to turn his body into a facsimile or replica of the kind of person to whom he is attracted, he might want to become an amputee, might want to become a woman, or might want both of these things. An elevated prevalence of gender identity disorders was indeed found among First's (2005) participants: 29% reported a history of cross-dressing (roughly half of which was in connection with transvestic fetishism), 19% reported feelings of wanting to be the opposite sex, 12% had considered undergoing sex reassignment, and one participant had actually done so. These percentages greatly exceed the prevalence rates for cross-dressing and gender dysphoria in the general population (Långström & Zucker, 2005; Lawrence, 2009; Zucker & Lawrence, 2009) and undoubtedly would have been even higher if homosexual men had not been overrepresented among First's participants. There are also individual case reports and descriptions of MtF transsexuals who have undergone limb amputation (Berger et al., 2005) or who wished to do so (Elliott, 2003).

Just as some nonhomosexual men with GID reject the idea that their transsexualism is an outgrowth of their sexual attraction to the idea of being a woman (autogynephilia), some individuals with BIID apparently reject the idea that their desire for limb amputation is attributable to or reducible to sexual attraction to the idea of being an amputee (apotemnophilia). Some clinicians express similar opinions. Furth and Smith (2002) argued that clinicians who considered the desire for limb amputation to be a paraphilic phenomenon "misjudged those who felt in their soul, in their psyche, that they are uncomfortable in a body that has all its limbs. This desire is unrelated to sex". (p. 14). Müller (2009) likewise claimed that "sexual urges do not fully explain the disorder" (p. 37).

Two common objections to the theory that BIID is reducible to apotemnophilia are particularly worth considering. One objection states that, if BIID reflects an erotic target identity inversion in individuals whose preferred erotic target category is amputees, one would expect that sexual attraction to amputees would be nearly universal among persons who desire amputation. In the study by First (2005), attraction to amputees was very common (87%), but far from universal. This objection is easily addressed if one recalls that an analogous situation has been observed in nonhomosexual MtF transsexuals. Roughly 10% of such transsexuals are not sexually attracted to other people, presumably because their self-directed

autogynephilic sexual interest effectively overshadows sexual attraction to others. Something similar may have been going on among First's participants who reported no sexual interest in amputees: Some of them may have been so sexually attracted to the fantasy or reality of themselves as amputees that they were relatively disinterested sexually in other amputees.

The second common objection to considering BIID reducible to apotemnophilia is that some individuals who experience the desire for limb amputation do not report any associated sexual arousal. In the study by First (2005), 33% of informants denied such arousal. This objection, too, is easily addressed, given that an analogous situation exists among nonhomosexual MtF transsexuals, some of whom deny autogynephilic sexual arousal in association with their cross-gender wishes (Bentler, 1976; Buhrich, 1978; Buhrich & McConaghy, 1978; Freund et al., 1982). Denial of autogynephilic arousal by MtF transsexual patients does not necessarily mean, however, that no physiological arousal is occurring (Docter, 1988). As previously noted, Blanchard et al. (1986) documented autogynephilic sexual arousal using phallometry in transvestites and nonhomosexual gender dysphoric men who denied experiencing such arousal. Similarly, men with BIID who deny apotemnophilic arousal might plausibly display physiological arousal if tested. Moreover, Blanchard et al. (1985) found that denial of autogynephilic arousal by nonhomosexual gender dysphoric men was correlated with the tendency to respond in a socially desirable way; this may also be true in the case of denial of apotemnophilic arousal by individuals with BIID. Paulhus (1984) observed that socially desirable responding may take the form of either *impression management* (deliberate misrepresentation) or *self-deceptive enhancement* (positively biased but inaccurate self-presentation that a person honestly believes). Both of these forms of socially desirable responding apparently occur in nonhomosexual MtF transsexuals who deny autogynephilic arousal (Docter, 1988; Walworth, 1997), and both may plausibly contribute to denial of apotemnophilic arousal by persons with BIID.

Recent Developments Concerning BIID and GID

Over the last several years, interest in BIID has increased among clinicians and researchers, as evidenced by additional case reports, proposals of alternative definitions and diagnostic criteria, and discussion of the ethical issues surrounding limb amputation. Understanding of GID has also continued to evolve. In the remainder of this article, I will discuss the following recent developments, some of which are presented in the final rows of Table 1:

- A few persons whose identities involve having a disability other than limb amputation have been described. There have also been implicit suggestions that the definition of BIID should be broadened to include such individuals. Nonhomosexual men who fit these broadened definitions of BIID are likely to have a higher than expected prevalence of gender identity disorders, as has been observed in nonhomosexual men who fit the original, more limited definition of BIID.

- Some commentators have proposed typological systems that distinguish "true" or "genuine" cases of BIID from ostensibly nongenuine, sexually motivated cases (apotemnophilia). Experience with GID suggests that these typological distinctions are likely to be of little value, because persons seeking treatment for BIID will tailor their histories to conform to professional expectations; consequently, the proposed typologies will lack predictive and heuristic value.

- Other commentators have proposed neuroanatomical or neuropathological explanations for BIID. These explanations are likely to prove as inadequate as the neuroanatomical or neuropathological explanations that have been proposed for GID, unless they attempt to explain the paraphilic sexuality that appears to underlie most cases of BIID.

- BIID, like GID in nonhomosexual men, is currently primarily a Western phenomenon. It is likely to remain so, because only persons in highly individualistic Western countries are likely to attempt to actualize their paraphilic identities by seeking amputations.

New Disability-Related Identities and Proposed Broadening of the Definition of BIID

BIID is not the only disability-related identity. First (2005) briefly mentioned "the existence of individuals who – instead of wanting an amputation – want to be a paraplegic (two individuals with this desire offered to be in the study and were interviewed...)" (p. 927). There have also been at least two contemporary case reports of individuals who desired a disability other than limb amputation in order to conform their bodies to their identities. Veale (2006) described a woman who desired to become deaf; he compared her desire to that of a person with amputee identity disorder or GID. Kolla and Zucker (in press) described a patient who desired to have multiple sclerosis (MS) and who used forearm crutches and a wheelchair to simulate MS-induced weakness or paralysis; Kolla and Zucker reported that they had been unable to locate any previous reports of persons desiring "nonmutilative" forms of disability, suggesting that such cases are uncommon.

Recently, a few individuals and groups have begun to employ broader definitions of BIID that include conditions in which identity is associated with the desire for an alteration in body integrity other than limb amputation. For example, Müller (2009) stated that BIID referred to the "phenomenon of persons who desire the amputation of one or more healthy limbs or who desire a paralysis" (p. 36). The BIID Info website (BIID Info, 2007) describes BIID as

> *a condition characterised by an overwhelming need to align one's physical body with one's body image. This body image includes an impairment (some say disability), most often an amputation of one or more limbs, or paralysis, deafness, blindness, or other conditions*. (para. 1)

If a broadened definition of BIID were to become generally accepted, it is likely that more such cases would be reported. As Elliott (2003) observed, "publicly identifying and describing a condition creates the means by which that condition spreads" (p. 231), because people become aware of a new conceptual category that allows them to interpret or explain their experiences. I hypothesize that most cases of BIID involving the desire for a disability other than amputation are paraphilic phenomena and reflect erotic target identity inversions. Consequently, nonhomosexual men to whom a broadened definition of BIID would apply probably would display preferential attraction to women with the kind of disability they themselves desire, along with a higher than expected prevalence of gender identity disorders. Significantly, Kolla and Zucker's patient who desired to have MS was a nonhomosexual MtF transsexual who had undergone sex reassignment surgery, although she denied being sexually attracted to disabled persons or sexually aroused by the idea of being disabled herself.

I hypothesize, however, that formal testing in a sexual psychophysiology laboratory would have demonstrated that she was not reporting accurately concerning these latter issues.

Attempts to Define "True" or "Genuine" Cases of BIID

There has been a continuing and perhaps increasing tendency in the professional literature to try to distinguish "true" or "genuine" cases of BIID from ostensibly nongenuine cases, especially those involving primarily sexual motivation. For example, Furth and Smith (2002), still using the now-deprecated term *apotemnophile* as a synonym for "person with BIID," distinguished between "apotemnophile wannabes" (i.e., genuine cases of BIID) and "acrotomophile wannabes" (i.e., individuals with sexual motivations for wanting an amputation):

> *The acrotomophile wannabe. These individuals have a desire to be an amputee as a form of sexual arousal. They have variable ideas of which type of amputation they wish and the level and number of amputations varies from time to time... Most, also, tend to be attracted to amputee partners...*
> *The apotemnophile wannabe. These individuals have an irresistible and uncontrollable need to be an amputee. They have very definite, constant ideas of what type of amputation they wish. Few are "devotees" [admirers of amputees] or wish their partners to be amputees... Apotemnophiles are not about sexual gratification* (p. 71).

According to Furth and Smith, genuine cases of BIID can be distinguished from nongenuine cases by consistency in the type of amputation desired, absence of sexual motivation, and lack of sexual interest in amputees as sexual partners.

First (2005) made a similar distinction between BIID (genuine cases) and apotemnophilia (sexually motivated cases):

> *For the small group of study subjects for whom sexual arousal is the primary motivation (15%), the diagnosis of apotemnophilia is appropriate (DSM-IV-TR paraphilia not otherwise specified). However, for the majority (73%), for whom the primary goal of amputation is to match their body to their identity, no DSM-IV-TR diagnosis even remotely fits... The author suggests that this condition might best be conceptualized as an extremely unusual dysfunction in the development of one's fundamental sense of who (physically) one is, and that it tentatively be called "Body Integrity Identity Disorder".* (p. 926)

According to First, genuine cases of BIID can be distinguished from cases of apotemnophilia based simply on the individual's self-report of having a primary motivation of matching body to identity, as opposed to a primary motivation of sexual arousal.

Ryan (2009) also regarded the issue of motivation as essential to distinguishing genuine BIID from apotemnophilia. He proposed two principal diagnostic criteria for BIID:

> A. *A strong persistent desire for the amputation of a limb.*
> B. *The primary motivation for the desire is the feeling that being an amputee is one's true and proper identity.* (p. 22)

He explained that

> *Criterion B would differentiate apotemnophilia from BIID... Of those people [in First's study] who self identified as wanting an amputation, only 15% reported "feeling sexually excited or aroused" as their primary motivation. Under the criteria above, that 15% would not suffer BIID.* (p. 22)

According to Ryan, an individual for whom identity was the primary motivation for wanting an amputation and for whom sexual arousal was a secondary motivation would be diagnosed with BIID, but an individual for whom sexual arousal was the primary motivation and for whom identity was a secondary motivation would not. Ryan did not suggest how to classify persons who gave equal weight to both motivations.

Based on clinicians' experiences with GID patients, Elliott (2003), again using the now-deprecated term *apotemnophilia* instead of *BIID,* explained the problems inherent in differential diagnostic strategies like those suggested above:

> *Even if a core group of people with true apotemnophilia [i.e., BIID] could be identified, their diagnosis could only come from what they report to their psychiatrists. There is no objective test for apotemnophilia. People seeking amputation for other reasons – sexual gratification, for example, or a desire for extreme body modification – could easily learn what they need to say to doctors in order to get the surgery they want. Specialists working in gender-identity clinics were complaining of something similar with their patients as early as the mid-1970s.* (p. 234)

Elliott was referring specifically to comments by Fisk (1974), concerning the tendency of candidates for sex reassignment to deliberately or inadvertently misrepresent their histories to make them consistent with accepted ideas about "genuine" transsexualism. Fisk observed:

> *Soon it became conspicuously and disturbingly apparent that far too many patients presented a pat, almost rehearsed history, and seemingly were well-versed in precisely what they should or should not say or reveal. Only later did we learn that there did and does exist a very effective grapevine... Individuals were carefully preparing and rehearsing for what they felt was going to be an intense scrutiny and probing in order to ascertain this supposedly critical differential diagnosis... Slowly, there appeared instances in which the seemingly very pat histories revealed inconsistencies, downright fabrications and blatant distortions* (p. 8).

Fisk was not the first clinician to notice that transsexuals' histories were frequently unreliable. Lukianowicz (1959) concluded that male gender patients' self-reports concerning the early onset of their cross-gender feelings were often inaccurate:

> *A wishful falsification of memory takes place, the patients begin to recall and misinterpret various insignificant incidents in their childhood, till they finally firmly believe that "ever since I can remember, I always wanted to be a woman".* (p. 51)

The *Standards of Care for Gender Identity Disorders* of the Harry Benjamin International Gender Dysphoria Association (Meyer et al., 2001) explained that many supposed cases of "true" MtF transsexualism were attributable to patients who had falsified their histories:

> *During the 1960s and 1970s, clinicians used the term* ***true transsexual...*** *True transsexuals were thought to have:*
> *1) cross-gender identifications that were consistently expressed behaviorally in childhood, adolescence, and adulthood;*
> *2) minimal or no sexual arousal to cross-dressing; and*
> *3) no heterosexual interest, relative to their anatomic sex...*
> *Belief in the true transsexual concept for males dissipated when it was realized that such patients were rarely encountered, and that some of the original true transsexuals had falsified their histories to make their stories match the earliest theories about the disorder.* (p. 9)

Note that two of the supposed characteristics of "true" transsexualism – consistency of desire and absence of associated sexual arousal – closely resemble what Furth and Smith (2002) considered two of the defining characteristics of "true" BIID.

Clinicians and researchers who have proposed typological distinctions between "true" *(primary, genuine, or core)* and "nongenuine" or "less genuine" *(secondary, non-core)* transsexualism include Burns, Farrell, and Brown (1990), Dolan (1987), Levine and Lothstein (1981), Lundström, Pauly, and Wålinder (1984), Person and Ovesey (1974a, 1974b), and Stoller (1980). In recent years, however, such typological systems have been largely abandoned, in favor of typologies distinguishing homosexual and nonhomosexual transsexualism. One reason for the abandonment of the former typologies has been their limited prognostic and heuristic value (for a review, see Lawrence, in press-a), which is at least partly attributable to the unreliability of the self-report data used to assign patients to typological categories.

Typologies that attempt to distinguish between "genuine" BIID and nongenuine, "merely sexual" apotemnophilia are likely to have problems with validity similar to the comparable typologies that were once proposed for GID patients. Many of the differences between the supposedly genuine and nongenuine groups will be attributable to differences in the accuracy of participants' self-reports, and the resulting typologies will probably lack prognostic and heuristic value.

Neuroanatomical or Neuropathological Explanations of BIID

Ramachandran and McGeoch (2007; see also Brang, McGeoch & Ramachandran, 2008) proposed a neuroanatomical or neuropathological explanation of BIID:

> *We postulate that a functional disturbance of the right parietal cortex lies at the root of BIID. We propose that BIID is caused by an uncoupling of the genetically based scaffolding of ones [sic] body image, in the right parietal region, from the actual physical body parts that this area normally represents.* (p. 251)

Ramachandran and McGeoch's (2007) hypothesis that BIID reflects a disturbance involving the right parietal region was suggested by analogies between BIID and *somatoparaphrenia,* an unusual neurological disorder (Vallar & Ronchi, 2009, found 56 case reports in the world literature). In somatoparaphrenia, a lesion in the right (or, rarely, left) parietal area, often caused by a stroke, is associated with a "delusion of disownership" (Vallar & Ronchi, p. 533) of a contralateral body part – typically the left hand or arm, less frequently the left leg or entire left side of the body – usually accompanied by a sensory or motor deficit.

Ramachandran, Brang, McGeoch, and Rosar (2009) recently extended their parietal cortex-based neuroanatomical model, in an attempt to explain why so many individuals with BIID are attracted to amputees as sexual or romantic partners:

> *We suggest that there is a genetically specified mechanism that creates a cortical template of one's own body that acts on limbic connections to determine aesthetic visual preference for one's own body "type"... If a person with apotemnophilia has a leg missing in his internal (genetically hardwired) body image, then that would affect his limbic circuits in a manner that would explain his sexual affinity for amputees. As the desire for amputation typically arises for one or both legs, this argument is even more compelling, as the majority of sufferers are specifically attracted to lower-limb amputees.* (pp. 776-777)

Interestingly, Ramachandran and McGeoch (2008) proposed that transsexualism, too, probably reflects an "uncoupling" (p. 6) of the development of one's "internal body image [from] . . . one's external physical gender" (p. 6). Ramachandran and McGeoch (2008) did not state specifically that the putative "internal body image" in transsexualism was localizable to "the somatosensory map in the parietal lobes," (p. 6), but they opined that "the two concepts are doubtless intimately linked" (p. 6), suggesting that their models of transsexualism and BIID are closely related.

Although my intention is to consider Ramachandran and McGeoch's (2007) model of BIID from the perspective of experience with similar neuroanatomical or neuropathological models of GID, I will first briefly address their model on its own terms. In my opinion, Ramachandran and McGeoch's model is both speculative and improbable, for the following reasons:

- Most cases of somatoparaphrenia are associated with a major brain injury involving the right parietal lobe, usually caused by a stroke and leading to a recognizable sensory or motor deficit in the involved body part or parts (Vallar & Ronchi, 2009). There is no direct evidence, however, that persons with BIID have *any* abnormalities affecting the parietal lobes, and most persons with BIID report *no* associated sensory or motor deficits (First, 2005).

- Ramachandran and McGeoch (2007) emphasized a few similarities between BIID and somatoparaphrenia, but ignored many significant differences. For example, over 90% of cases of somatoparaphrenia reviewed by Vallar and Ronchi (2009) involved only the left side of the body, and *none* involved both sides; whereas only 55% of First's (2005) BIID cases involved the desire for a left-sided amputation only, and fully 18% involved a desire for bilateral amputation. Also, most cases of somatoparaphrenia reviewed by Vallar and Ronchi involved the hand or arm, whereas 73% of First's BIID cases involved the desire for amputation of a leg.

- In 23% of First's (2005) BIID cases, the desired site of amputation had *not* remained stable or fixed, which Ramachandran and McGeoch's "genetically hardwired" model cannot easily explain. There is also at least one case report of a patient with putative BIID who developed the desire for an arm amputation after undergoing a desired leg amputation (Sorene et al., 2006).

- Although Ramachandran and McGeoch (2007) proposed that vestibular caloric stimulation might temporarily relieve BIID, just as it temporarily relieves somatoparaphrenia in some cases, they apparently did not perform (or at least did not *report)* such a confirmatory test when they had two cooperative individuals with BIID in their laboratory under-

going other testing (Brang et al., 2008). This suggests a certain lack of confidence in their own model.

- If Ramachandran et al. (2009) model explaining the attraction of individuals with BIID to other amputees were valid, homosexuality should be almost universal in humans, because men and women should be preferentially attracted to persons with body shapes similar to their internal representations of their *own* body shapes.

I will now consider Ramachandran and McGeoch's (2007) model from the perspective of experience with neuroanatomical or neuropathological models of GID. The most popular such neuroanatomical model of GID was first proposed by Zhou, Hofman, Gooren, and Swaab (1995), who reported that in six MtF transsexuals whose brains were examined postmortem, the size of a certain hypothalamic (or limbic) nucleus, the central division of the bed nucleus of the stria terminalis (BSTc) showed a sex-reversed pattern: Normally larger in men than in women, the BSTc was small and female-typical in size in the six MtF transsexuals studied. Supposedly the six MtF transsexuals varied in sexual orientation (variously homosexual, bisexual, and heterosexual, relative to anatomic sex). Kruijver et al. (2000) subsequently reported that, in the same six MtF transsexuals, the number of neurons in the BSTc also showed a sex-reversed pattern, with fewer neurons than usually found in nontranssexual men. Although all of the MtF transsexuals had received feminizing hormone therapy, the neuron number in the BSTc of a deceased gender-dysphoric man who had never received hormone therapy was also female-typical, suggesting that hormone therapy might not have been responsible for the observed changes. Kruijver et al. interpreted their data as "supporting the view that transsexualism may reflect a form of brain hermaphroditism" (p. 2041). Many observers believed that a biological marker for MtF transsexualism had at last been demonstrated. Others, however, believed that the findings could be attributed to the effects of hormone therapy. Still others suspected that the sexual orientation of the six MtF transsexuals was not as variable as had been suggested, and that perhaps all six were really nonhomosexual.

The status of the BSTc as a putative neuroanatomical marker for MtF transsexualism was called into question when Chung, De Vries, and Swaab (2002) reported that the BSTc did not become sexually dimorphic in size and neuron number until adulthood, long after most MtF transsexuals had begun to experience gender dysphoria. The situation became more ambiguous still when Hulshoff Pol et al. (2006) demonstrated, using sequential MRI studies, that estrogen therapy in MtF transsexuals was associated with dramatic reductions in the volume of the brain generally and the hypothalamus (which the BSTc is located in or adjacent to) particularly. Hulshoff Pol et al. conjectured that cross-sex hormone therapy might have been responsible for the BSTc findings reported by Zhou et al. (1995) and Kruijver et al. (2000):

> *The bed nucleus of the stria terminalis of the hypothalamus, larger in males than in females, was found to be of female size in six M[t]Fs... All these transsexuals had received cross-sex hormone treatment before their brains were studied. Therefore, the altered size of the bed nucleus of the stria terminalis could have been due to the exposure of cross-sex hormones in adult life.* (p. S108)

Schiltz et al. (2007) subsequently reported that, based on MRI studies, male pedophiles also had a lower than expected volume of the BST. They observed that "because abnormal volumes of the [bed nucleus of the stria terminalis] have been reported in transsexuals, these alterations may not be specific to pedophilia but may rather be a feature of sexual abnormalities in general" (p. 744). Finally, Garcia-Falgueras and Swaab (2008), in a report

examining the size of still other hypothalamic nuclei in transsexuals, presented revised data concerning the sexual orientation of the six MtF transsexuals studied by Zhou et al. (1995) and Kruijver et al. (2000): As some critics had long suspected, the new data were consistent with the hypothesis that all six of the Zhou/Kruijver MtF transsexuals were nonhomosexual. Taken together, these data suggest that a sex-reversed BSTc size and neuron number is not a neuroanatomical marker for MtF transsexualism generally, but may instead be a marker for nonhomosexual MtF transsexualism specifically, or perhaps a marker for male paraphilic sexuality generally. Alternatively, the BSTc findings in MtF transsexuals may be entirely attributable to the effects of transgender hormone therapy: The situation remains ambiguous.

There are at least two important implications of these results for proposed neuroanatomical or neuropathological explanations of BIID. First, even when there is a demonstrated neuroanatomical marker for a condition – as there is not, so far, for BIID – interpretation of that marker may not be straightforward, and should be undertaken cautiously. Second, there is at least suggestive evidence that a female-typical size of the BSTc, a hypothalamic (or limbic) nucleus that is putatively associated with sexual behaviors, might be a marker for nonhomosexual MtF transsexualism, or for male paraphilic sexuality generally. Given that BIID has been suggested to be a paraphilic phenomenon similar to nonhomosexual MtF transsexualism (i.e., both have been hypothesized to reflect erotic target identity inversions), it might be more productive to look for neuroanatomical or neuropathological markers for BIID in the hypothalamus or limbic region than in the right parietal cortex.

BIID Is Almost Exclusively a Western Phenomenon

Essentially all reported cases of BIID to date have been from Western countries, especially the United States and Western Europe. Among First's (2005) informants, about three quarters were from the United States; the remainder were from Australia, Belgium, Canada, Germany, the Netherlands, Sweden, and the United Kingdom. Most other case reports involving putative BIID have been from the United States (Adams, 2007; Bensler & Paauw, 2003; Berger et al., 2005; Money, 1990; Money et al., 1977; Storm & Weiss, 2003; Wakefield et al., 1977), but a few have come from the Netherlands (Braam et al., 2006; Everaerd, 1983) and the United Kingdom (Sorene et al., 2006). Although this distribution of reported cases could be attributable to ascertainment bias, experience with MtF transsexualism suggests that probably it is not.

Lawrence (in press-b) demonstrated that, in 22 studies conducted in 16 countries, the prevalence of nonhomosexual MtF transsexualism, relative to homosexual MtF transsexualism, was strongly correlated with a measure of societal individualism. In individualistic Western countries, such as the United States, Canada, the United Kingdom, and the Netherlands, nonhomosexual MtF transsexuals greatly outnumber their homosexual MtF counterparts. In collectivistic Eastern countries, such as Korea, Thailand, and Singapore, the reverse relationship holds. Lawrence proposed that autogynephilia, the paraphilia that underlies most cases of nonhomosexual MtF transsexualism, probably occurs in both Western and Eastern countries, but that only in individualistic Western countries is it considered acceptable for noneffeminate, nonhomosexual men to actualize their cross-gender identities by undergoing MtF gender transition. In collectivistic Eastern countries, gender transition by nonhomosexual, noneffeminate men is likely to be strongly discouraged.

I hypothesize that something similar will be observed in persons with BIID: Most reported cases will continue to come from individualistic Western countries. Presumably apotemnophilia, the paraphilia that putatively underlies most cases of BIID, occurs in both Western and Eastern countries. Only in individualistic Western countries, however, would it be considered even marginally acceptable for men to actualize their paraphilic identities as amputees by undergoing or attempting to undergo limb amputation. In collectivistic Eastern countries, this would probably be considered unthinkable, and would rarely or never happen.

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