

Immature psychological defense mechanisms and the misrepresentations of some sex researchers

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The authors reply to a quartet of recent articles in this journal. We detail certain misrepresentations and the dismissal of existing research in those articles (including attempts at denial of the repeatedly documented association of lack of vaginal orgasm with greater use of immature psychological defense mechanisms and other indices of poorer health). The authors also call for a less defensive and less doctrinaire approach to sex research, especially, but not exclusively, when the prevailing ideology in the fields of sexology might be undermining optimal health.

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The favorable health associations of penile-vaginal intercourse and vaginal orgasm

A recent extensive review of the physiological and psychological health differences between various sexual behaviors (Brody, 2010) concluded that the one sexual behavior consistently associated with indices of better physical and psychological health, and intimate relationship quality, was the one potentially reproductive behavior (penile-vaginal intercourse – PVI) and that other sexual activities were variously uncorrelated or negatively associated with such indices. The review also included examination of orgasm trigger and the results were similar: it is orgasm from specifically PVI (as opposed not only to non-PVI partnered or solitary activities, but also masturbation during PVI) that is associated with indices of better function. Subsequent publications have confirmed this pattern of findings (Brody & Weiss, 2011b; Costa & Brody, 2011, 2012a). In the case of women, orgasm from PVI *without* concurrent clitoral masturbation is termed vaginal orgasm.

Four articles in this journal purported to critique the methodology and implications of those findings (Laan & Rellini, 2012; Levin, 2012a, 2012b; Prause, 2012). However, these contributions contain a number of flaws and several unfortunate misunderstandings, which undermine the conclusions reached by those authors. The present article addresses the most egregious of the misconceptions and misunderstandings in their papers.

There are several possible levels of explanation for why PVI and vaginal orgasm have more favorable associations with health and relationship quality. At a distal

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level, it makes sense that natural selection rewards psychobiological processes connecting health with desire for, and capacity to obtain and enjoy, specifically PVI (Brody, 2010; Brody, Costa, Hess, & Weiss, 2011; Costa, 2012). If evolution had selected mechanisms motivating noncoital sex comparably to PVI, there would be no need to search for and perform well during PVI, and consequent costs in reproductive fitness would ensue (Brody, 2010; Costa, 2012). Levin (2012b) disagrees with such an evolutionary explanation of the positive health correlates specific to vaginal orgasm by asserting that “if the female’s orgasm was of any real consequence in creating reproductive fitness, why only at the most 40–50% of women have orgasms from PVI alone? Women who had such orgasms would be good breeders and those also able to select males with good genes would in evolutionary terms outbreed those without these advantages” (pp. 305–306). However, his (and Laan’s) assertions of the majority of women being incapable of reaching orgasm from PVI are at odds with the best available evidence: in two large nationally representative samples (as contrasted with the often very biased samples that have been offered as indications of a high rate of coital anorgasmia) of coitally experienced Czech women, only 22% and 17% never had vaginal orgasm (Brody & Weiss, 2010, 2011b). Similar results were found in an Internet (predominantly British) sample: only 25% never had vaginal orgasm (Brody & Costa, 2011). Moreover, an examination of the Kinsey data shows that for married women, PVI lasting between 1 and 15 minutes resulted in coital orgasm being reached in 90–100% of PVI occasions for over half of the women. For women with PVI normally lasting at least 16 minutes, two thirds attained coital orgasm on 90–100% of the PVI occasions (Gebhard, 1966). Even assuming that 30% of women never had vaginal orgasm (Brody & Costa, 2008), that is not an argument against the view that vaginal orgasm is an adaptation. Other dysfunctional conditions have high prevalence, such as being overweight or substance abuse, but high prevalence does not transform an unhealthy condition into a healthy one.

That better health increases specifically PVI frequency was demonstrated by a randomized controlled trial revealing that nutritional enhancement through high doses of ascorbic acid increased women’s PVI frequency, but not their frequency of masturbation or noncoital partnered sex in the absence of same day PVI (Brody, 2002). The ascorbic acid group also manifested improved mood and had a lower blood pressure response to stress, a faster cortisol (hormonal indicator of stress) recovery and less subjective stress in response to the Trier Social Stress Test (Brody, 2002; Brody, Preut, Schommer, & Schurmeyer, 2002).

In relation to Levin’s contention that if vaginal orgasm were an adaptation, women not able to attain it would have been outbred, it is important to note that a greater difficulty in attaining vaginal orgasm appears to be one core consequence of vaginal orgasm being an adaptation to increase reproductive fitness. It is not only that vaginal orgasm occurs more consistently when the woman is in better psychological or psychophysiological health (Brody, 2007b, 2010; Brody & Costa, 2008; Brody & Weiss, 2011b; Costa & Brody, 2011, 2012a), vaginal orgasm also happens more consistently when the male partner has better erections (Weiss & Brody, 2011) and longer intravaginal ejaculatory latency (Brody & Weiss, 2010), as well as when intimate relationships are more satisfactory (Brody, 2007b; Brody & Weiss, 2011b; Costa & Brody, 2007). Also, women’s coital orgasm is more likely when the male partner has characteristics that indicate enhanced fitness, such as greater physical attractiveness, body symmetry and masculinity (Puts, Welling,

Burriss, & Dawood, 2012; Shackelford et al., 2000; Thornhill, Gangestad, & Comer, 1995). In contrast, capacity for orgasm from noncoital sex is unrelated to these male attributes (Puts et al., 2012; Thornhill et al., 1995). Taken together, these findings suggest that vaginal orgasm is (among other things) an adaptation to favor enjoyment of, and desire for, PVI, contingent on conditions of enhanced fitness potential. In contrast, because noncoital sex has no potential for gene transmission, triggering noncoital orgasm does not need to be subject to so much discrimination and noncoital sex orgasm and the incentive for noncoital sex may happen under conditions of poorer health, partner's poorer health or disturbed relationships. Congruent with the view that vaginal orgasm has an adaptive role of reinforcing desire for PVI, vaginal orgasm and PVI frequency are consistently associated with sexual satisfaction, relationship satisfaction, greater sexual desire and less risk of sexual dysfunction (Brody, 2007b; Brody & Weiss, 2011b; Costa & Brody, 2007; Fugl-Meyer, Oberg, Lundberg, Lewin, & Fugl-Meyer, 2006; Nutter & Condrón, 1983; Philippsohn & Hartmann, 2009; Tao & Brody, 2011; Weiss & Brody, 2009a). In contrast, other sexual behaviors are frequently uncorrelated or correlated with more sexual difficulties (Brody & Costa, 2009b; Brody & Weiss, 2011a; Costa & Brody, 2007; Das, Parish, & Laumann, 2009; Gerressu, Mercer, Graham, Wellings, & Johnson, 2008; Lau, Cheng, Wang, & Yang, 2006; Nutter & Condrón, 1983; Philippsohn & Hartmann, 2009; Shaeer, Shaeer, & Shaeer, 2012; Tao & Brody, 2011; Weiss & Brody, 2009a). Although Prause ignores this literature in her review concluding that orgasm has no primary role in rewarding women's sexual behavior, her own data seemingly conform to the pattern: women who considered the vagina the most important site for orgasm (when compared to women for whom the clitoris was the most important site for orgasm) had more desire for sex with a partner, but not more desire for masturbation. Moreover, women who had their most recent orgasm by vaginal stimulation desired more partnered sex and desired less to masturbate than women whose more recent orgasm was clitoral.

Moreover, in a sample of women who had their first delivery, women who never had PVI orgasm (compared with women who did), underwent more complications during childbirth, which included longer second stage of labor, having their labor induced or helped by oxytocin, having been assisted by forceps, having had more blood loss during delivery and having been hospitalized because of pre-eclamptic toxemia (Baxter, 1974). These complications would likely have caused the death of mother and child in the environment of evolutionary adaptedness, further raising the possibility that vaginal orgasm evolved as a signal of fitness.

Sometimes noncoital sex appears to be associated with better functioning only because of incidental relations with PVI (e.g. because of being foreplay), but multivariate analyses have disentangled the various activities (Brody & Costa, 2008, 2009b; Costa & Brody, 2011, 2012b). Another study (by independent researchers) using multivariate analyses controlling for frequency of, and satisfaction from, different sexual behaviors revealed that women's sexual satisfaction was predicted by satisfaction from PVI and PVI frequency, but not by satisfaction from, or frequency of, partnered noncoital sex and solitary masturbation (Philippsohn & Hartmann, 2009), which further highlights the relevance of multivariate models for examining the specific associations of distinct sexual activities.

Furthermore, Levin (2012a) misrepresents the proposed explanations of the links between PVI and health by stating that "[M]any questions arise about these studies and their conclusions as the evidence presented is practically all correlational, yet

causality is inferred” (p. 299), a misrepresentation also made by Laan and Rellini (2012). In fact, the likely complexity of causality between PVI and health was always explicitly acknowledged. Because most findings are correlational, in addition to higher fitness phenotypes being a likely cause of vaginal orgasm and frequent PVI, it is also possible that PVI and vaginal orgasm contribute to well-being. These possibilities are not mutually exclusive.

In addition to the correlational studies, one of the experimental studies revealed that the post-orgasmic prolactin peak (an objective neurohormonal index of sexual satiety) after PVI orgasm was 400% greater than after masturbation orgasm (Brody & Kruger, 2006). Phasic prolactin surges reset dopaminergic activity in some central regions, and perhaps this is one mechanism for the association of PVI orgasm with indices of health (Brody & Kruger, 2006). This study’s results are congruent with multiple investigations revealing that PVI orgasm is more satisfying than other orgasm triggers. For example, orgasm attained during PVI was reported as the most satisfying by the large majority of women who had the experience of orgasms from both PVI and noncoital sex (Davidson & Darling, 1989). In a large Swedish nationally-representative sample, when women were asked if orgasm was better with a penis inside the vagina, the large majority responded affirmatively (Brody, 2007b).

Prause seems to imply that orgasms do not reward partner intimacy, because women’s sexual satisfaction is predicted by relationship factors rather than orgasm frequency. Here she misses that research appearing to support this view typically fails to differentiate sexual activities. When they are differentiated, relationship satisfaction is consistently associated with more frequent vaginal orgasm or orgasm during PVI, and PVI frequency (Brody, 2007b; Brody & Costa, 2009b; Brody & Weiss, 2011b; Costa & Brody, 2007, 2012b; Gebhard, 1966; Hurlbert & Apt, 1994; Raboch & Raboch, 1992; Santtila et al., 2008; Swieczkowski & Walker, 1978; Tao & Brody, 2011).

Perhaps an analogy to men can be made: erectile difficulties may be caused by health problems and are associated with dissatisfaction with relationships and mental health (Weiss & Brody, 2011). Given that without good erections, satisfying PVI is not likely, men in poorer health are less likely to have adequate PVI. However, erectile problems are not an obstacle to masturbation or fellatio. The higher arousal linked to PVI would explain why it is specifically PVI and vaginal orgasm that appears associated with less risk of female sexual arousal and desire problems (Brody, 2007b; Nutter & Condon, 1983; Weiss & Brody, 2009a). Of course, if there are inhibitions of PVI appreciation, other sexual behaviors could be more reinforced in a strictly behaviorist sense of increasing repetition, but with no consequences of favoring gene transmission or, so the extant research shows, protection against sexual or psychological and psychophysiological problems.

Even unmeasured third variable explanations, such as a sensitive personality with greater desire for deep intimacy obtained in specifically PVI, better emotional regulation, more resilience against pathologies and perhaps more able to experience maturely powerful emotions, would concord with the herein presented evolutionary explanation of the connections between PVI and health. Such connections have remained after examination of several possible confounds, including demographic variables, relationship status, cohabitation, social desirability responding or negative attitudes towards variation in sexual behaviors (Brody, 2003, 2004, 2006a, 2007b, 2010; Brody & Costa, 2009b; Brody & Preut, 2003; Costa & Brody, 2010b, 2012a).

Prause suggests that orgasm intensity, regardless of source, could explain the differences between vaginal and clitoral orgasms. That is not clear, because noncoital

orgasms were described as more intense by a majority of women, whereas PVI orgasms were described as more satisfying by most women who had experience both orgasm sources (Davidson & Darling, 1989). These findings appear to be concordant with anecdotal reports of clitoral orgasms as being “electric” or “sharp” and vaginal orgasms as being “comfortable” and “soothing” (Levin, 2006, p. 229). Hence, it is problematic to equate simple intensity and satisfaction.

Self-report studies consistently show predictable differences between orgasms on the basis of stimulation site, which is consistent with the objective physiological differences between vaginal, cervical and clitoral stimulation (Komisaruk, Beyers-Flores, & Whipple, 2006; Komisaruk & Whipple, 1995; Komisaruk et al., 2004, 2011). It is surprising that Prause argues against self-report studies, given that her proposals are almost exclusively based on self-reports. Prause claims that the view that there are advantages linked to PVI can be contradicted by evidence showing superiority of functioning in any domain by those who reach orgasm by using primarily clitoral stimulation. However, what she presents as evidence of superiority of clitoral orgasms is higher self-reported arousal in response to erotica (rather than an interpersonal situation) in a small study (Prause, 2012) of doubtful ecological validity.

Psychological defense mechanisms are “automatic psychological processes that protect the individual against anxiety and from the awareness of internal or external dangers or stressors” (American Psychiatric Association, 1995, p. 773). Defenses can be conceptualized on a developmental scale ranging from immature through neurotic to mature (Bond, 2004). The immature defense mechanisms are most clearly related to various forms of psychopathology in adults and are found in normal young children. That is the technical basis for the term “immature”: it is a clinical indicator rather than a “value judgment”. Immature defenses include: denial (refusal to acknowledge painful aspects of reality), autistic fantasy (substitution of human relationships or effective problem solving by daydreaming), devaluation (excessive attribution of negative qualities to self or others) and isolation of affect (maintaining cognitive aspects associated with a specific experience but disconnecting the emotions).

The associations of vaginal orgasm and PVI frequency with less use of immature defenses, as well as with greater satisfaction with sex life, relationships, mental health and life in general have used measures including the Defense Style Questionnaire (DSQ-40) and Life Satisfaction scales (LiSat) (Brody, 2007b; Brody & Costa, 2008, 2009b; Brody, Houde, & Hess, 2010; Brody & Weiss, 2011b; Costa & Brody, 2010b, 2011). Prause’s contention that DSQ-40 and LiSat scales are questionable measures of respectively immature defenses and satisfaction with several aspects of life is countered by research showing that the immature defenses subscale is robustly associated with a wide range of indices of poorer functioning, including depression (Bond, 2004), anxiety disorders (Andrews, Singh, & Bond, 1993; Bond, 2004), personality disorders (Bond, 2004; Sinha & Watson, 1999), marital maladjustment (Bouchard & Theriault, 2003), alexithymia (Helves, McNeill, Holden, & Jackson, 2008), distancing/avoidance coping style (Bouchard & Theriault, 2003), deliberate self-harm (Brody & Carson, 2012), and low self-directedness (Yu, Chamorro-Premuzic, & Tani, 2008). Prause argues that the results relative to the other two subscales, mature defenses and neurotic defenses, are sometimes not reported, which could be seen as capitalizing on Type I error. In fact, DSQ-40 mature defenses and neurotic defenses are sometimes related, respectively, with better and worse functioning, but less consistently so than the immature scale. For that reason, it was expected that they also have less consistent relationships with sexual behaviors.

Hence, they tend to be correlated with sexual behaviors in the expected manner, albeit less consistently (Brody & Costa, 2008; Costa & Brody, 2008, 2010b). The LiSat scales have been used in several investigations, which show them to be associated in the expected ways with various aspects of sexual function and dysfunction (Fugl-Meyer et al., 2006; Oberg & Sjogren Fugl-Meyer, 2005) (see Brody and Costa [2009b] for more references).

Prause questions some statistical approaches used in the critiqued studies. However, this critique misrepresents the approaches and issues. For example, with regard to the finding that “orgasm consistency during intercourse was uncorrelated with orgasm consistency during masturbation (Brody, Laan, & van Lunsen, 2003)” (p. 323), she asks “How likely are women to masturbate regularly if they do not orgasm?”, ignoring that women who did not engage in a specific sexual activity during the reporting month were not included in orgasm consistency comparisons (and that exclusion logically enhances the likelihood of finding correlations between orgasm consistency during various sexual activities).

Prause also claims that statistical power issues are not handled properly and gives the example of an experimental study (Brody & Kruger, 2006), which found that for both sexes, there was a dramatically greater prolactin increase following PVI orgasm than following masturbation orgasm. Statistical power issues are key when a relatively small sample leads to non-significant results. In the study in question, the small sample led to significant results. Prause also miscalculates power, ignoring that a repeated measures design was used, and begins grasping at straws, by hoping that there is some outlier that might help her to deny the experimental findings. Prause also rejects women’s reports of orgasm, asserting that many women are not sure if they had an orgasm. Such rejection occurs in the context of findings that she appears to dislike and seeks to deny.

Prause overtly misrepresents some other measures (and proceeds to attack those imagined problems). Notably, she states that women were asked (Costa & Brody, 2010b) to report whether their orgasm was attributable to PVI or clitoral stimulation. In reality, they were not asked for such attributions; rather, the women were asked to report “frequency and orgasm frequency (in a recent representative 30-day period) of: PVI without additional simultaneous clitoral stimulation, PVI with additional simultaneous clitoral stimulation” (p. 777) and other sexual activities.

Prause misleads the readership by falsely claiming “Relatedly, excluding women who report intercourse of one minute or less (Weiss & Brody, 2009[b]) is not presented with any empirical basis” (p.322). In contrast to her misrepresentation, the reality is that in that study (which found in a large nationally representative sample that women’s orgasm was associated with greater duration of PVI but not of foreplay, when both were considered in a multivariate analysis) there was both an empirical basis for the exclusion of intercourse of one minute or less, as well as analyses including those cases: “to examine any possible influence of premature ejaculation, the multiple regression was also conducted after exclusion of women reporting that the average penile-vaginal intercourse duration was 1 minute or less” (Weiss & Brody, 2009b, p. 137).

Anatomical and physiological differences between vagina, cervix and clitoris

In discussing genito-pelvic sites involved in female sexual arousal, Levin (2012b) cites Gravina et al. (2008), who found that compared with women who never had vaginal

orgasm, those who did, have a thicker urethrovaginal space. Levin (2012b) then states that these findings were not replicated by Battaglia et al. (2010), when in fact the latter authors found that women with history of vaginal orgasm had a longer and more voluminous urethrovaginal space. Thus, it appears that vaginal orgasm is associated with more tissue area, which might be particularly responsive to penile stimulation.

Some authors proposed that vaginal and clitoral orgasms should not be differentiated because of their assertions that all female orgasms through PVI are obtained by indirect clitoral stimulation (Masters & Johnson, 1966) or that vagina and clitoris form a common anatomical unit (Buisson, Foldes, Jannini, & Mimoun, 2010; Foldes & Buisson, 2009). Hence, Levin criticizes self-report studies by denying that women can differentiate vaginal and clitoral orgasms, because of an “ambiguity problem” (p. 308). However, the vaginal wall and cervix are richly innervated and quite able to elicit sexual response (Alzate, 1985; Hilliges, Falconer, Ekman-Ordeberg, & Johansson, 1995; Jannini et al., 2012; Pauls et al., 2006; Song, Hwang, Kim, & Han, 2009). Vaginal stimulation also produces a much greater analgesic (but not anesthetic) response than clitoral stimulation, which further increases when the vaginal stimulation elicits orgasm – this effect is not explained by distraction (Komisaruk & Whipple, 1995; Komisaruk et al., 2004; Whipple & Komisaruk, 1985, 1998).

Furthermore, the assertion that vaginal orgasm is ultimately clitoral is contradicted by neuroanatomical evidence. Studies reveal that vagina and clitoris activate distinct afferent pathways (Komisaruk, Beyers-Flores, & Whipple, 2006; Komisaruk et al., 2004) and that stimulation of clitoris, vagina and cervix activate different regions of the brain’s sensory cortex (Komisaruk et al., 2011). Such cortical differences are likely due to distinct afferents: sensory information from the clitoris to the brain is transmitted mainly by the pudendal nerve, whereas vaginal and cervical sensation is additionally conducted by the pelvic, hypogastric and vagus nerves (Komisaruk et al., 2004, 2006). The vagus nerve is the main constituent of the parasympathetic branch of the autonomic nervous system and bypasses the spinal cord. Consequently, women with spinal cord injuries below T-10 (thus, without sensory connection between clitoris and brain, as well as without hypogastric, pelvic and pudendal nerve connection between vagina and brain) can attain orgasms (verified by fMRI plus self-report) by vaginocervical stimulation (Komisaruk et al., 2004). The women with spinal cord injuries below T-10 do not present much movement artifact in fMRI measurements of orgasm (bypassing the problem that Prause claims).

Greater parasympathetically-driven heart rate variability (associated with a broad range of indices of better health) is associated with greater frequency of PVI, but not of other sexual activities (Brody & Preut, 2003; Brody, Veit, & Rau, 2000; Costa & Brody, 2012a). This is consistent with a prepotent vagal output to vagal genital sensory input reflexive connection.

Levin’s (2012b) claim that cervical-uterine stimulation might be unlikely during PVI because it would require “[J]ostling by deep penile thrusting causing rubbing on peritoneum” (p. 307) accompanied by citations of Brody (2010) suggests his misunderstanding as that unlikely process was never proposed by Brody. Furthermore, Levin (2012b) states that the cervical stimulation by penile buffeting is unlikely to create sexual arousal because “the cervico-uterine elevation that occurs during arousal (Masters & Johnson, 1966) would make this contact very unlikely during ventral-ventral coitus in most women” (p. 307). Of note, Levin seems

unaware that some men have a penis of sufficient length for stimulating the cervix of some women throughout coitus (in a variety of positions, including ventral-ventral). In addition to the issues of variation in coital positions and general doubtfulness regarding Masters' and Johnson's observations (Virginia Johnson eventually revealed what wise sexologists have long suspected – that Masters and Johnson fabricated at least some of their data (Maier, 2009), empirical evidence shows that penis size is important for the majority of women (Lever, Frederick, & Peplau, 2006; Shaer et al., 2012; Stulhofer, 2006) and the women who prefer longer penises tend to have vaginal orgasms more consistently (Brody & Weiss, 2010). A likely explanation is that a longer penis would more easily stimulate the cervix and the proximal vagina. In fact, a larger penis could be a fitness-related attribute, as a moderately larger penis has been cross-culturally associated with higher physical attractiveness of males as judged by women (Dixson, Dixson, Bishop, & Parish, 2010; Dixson, Dixson, Li, & Anderson, 2007; Dixson, Dixson, Morgan, & Anderson, 2007).

Greater vaginal distention (that would be caused by penile pressure) increases vaginal electrical activity and muscle contractility leading to greater arousal (Shafik, El Sibai, Shafik, Ahmed, & Mostafa, 2004). Interestingly, the greater the distention (as it would be provoked by a penis of greater girth), the greater the electrical activity (Shafik et al., 2004), further arguing for the reported importance of penis size. Also, the vaginal pacemaker evoking the electric waves seems to be located in the upper vagina (Shafik et al., 2004). Moreover, it is plausible that a virtuous circle of reciprocal pulsation increases arousal in the couple to a point that only penile-vaginal stimulation can be completely fulfilling (Brody, 2007b), which would exclude a substitute role for nonliving and emotionally unresponsive dildos or vibrators, the use of which has been found unrelated or related to indices of emotion dysregulation and relationship difficulties (Brody, Fischer, & Hess, 2008; Costa & Brody, 2010b, 2011, 2012a; Swieczkowski & Walker, 1978).

Levin (2012b) further states that for Brody and Costa (Brody, 2010; Brody & Costa, 2008) “[C]litoral stimulation during PVI is said to negate any of the benefits that PVI-orgasm confers without this stimulation” (p. 308). What has been found in the relevant empirical studies that compared vaginal orgasm with the orgasm obtained by clitoral masturbation during PVI, is that vaginal orgasm is associated with more secure attachment (Costa & Brody, 2011), less risk of inhibited sexual desire (Nutter & Condron, 1983), less use of immature psychological defense mechanisms (Brody & Costa, 2008; Costa & Brody, 2008, 2010b, 2011) and greater resting heart rate variability (Costa & Brody, 2012a), whereas the same studies found that orgasm by clitoral masturbation is unrelated to attachment style, sexual desire and resting heart rate variability and is actually related to more use of immature defense mechanisms. Although it is possible that PVI still has benefits, even when associated with simultaneous clitoral masturbation, the evidence shows that it is specifically the orgasm provoked by penile-vaginal stimulation *without* simultaneous clitoral masturbation that has the most clearly favorable correlates. Levin's (2012b) contention that these two kinds of orgasm could not be differentiated due to all PVI orgasms involving the clitoris are contradicted by the anatomical and physiological studies noted above.

Levin (2012b), by citing Hoch (1986), states that “clitoral and vaginal stimulation, when undertaken simultaneously, are claimed to activate an erotic pleasurable state greater and more sexually fulfilling than when either are undertaken separately” (p. 310). Then, he concludes that because vagina and clitoris have

distinct brain representations, their simultaneous stimulation should elicit a synergistic erotic activation (Levin, 2012b). However, Levin misrepresents Hoch's paper by failing to say that the sample in Hoch's study was a clinical sample of women complaining of coital anorgasmia, but able to attain orgasm by external genital stimulation, who when trained to feel the anterior vaginal wall and orgasm by its stimulation, felt that the simultaneous clitoral and anterior vaginal wall stimulation provided more fulfilling orgasm (such reported vaginal stimulation was in some cases digital). Hoch (1986) in fact acknowledges as a limitation of his study the lack of a control group. It is possible that some women with reduced vaginal erotic sensitivity might feel that the simultaneous clitoral and vaginal stimulation is more rewarding, but that would more a problem of reduced vaginal sensitivity than synergisms.

Independent confirmations

Both Levin (2012b) and Laan & Rellini (2012) complain of lack of confirmation of the positive health correlates of PVI and vaginal orgasm by independent researchers. The literature shows otherwise. Several independent researchers have confirmed the favorable correlates of PVI and PVI orgasm, although not all discuss the obvious implications and some make unwarranted extrapolations of the positive correlates of PVI to other sexual activities (Brody & Costa, 2012). Space precludes a complete listing of independent confirmations, but a few examples are provided here. Poorer consistency of coital orgasm is associated with greater neuroticism and less openness to experience (Harris, Cherkas, Kato, Heiman, & Spector, 2008). Compared with controls, women suffering from various psychiatric and personality disorders were less able to reach vaginal orgasm, but not less able to reach clitoral orgasm (Kratochvil, 1993; Nedoma & Sipova, 1972; Raboch, 1986), see Brody (2010) for a discussion. Women's depression was associated with greater masturbation frequency and greater desire for masturbation, but unrelated to summary measures of partnered sex frequency (Cyranowski et al., 2004; Frohlich & Meston, 2002). These findings are consistent with those in an American representative sample showing that masturbation was associated with less happiness (Das, 2007). The results were not confounded by educational level, age and number of lifetime spouses or cohabiting partners (Das, 2007). In another representative American study that explored the relationships of self-perceived health status and sexual behaviors, women were stratified in eight age groups: engaging in PVI in the last 90 days was associated with better self-rated health in most age groups, whereas engaging in cunnilingus in the same period was only related to better health in two age groups, and having anal sex, solitary masturbation and masturbation by partner was unrelated to self-perceived health in all age groups (the results were unconfounded by relationship status) (Herbenick et al., 2010).

In a multivariate analysis, satisfaction from PVI and PVI frequency were independently associated with women's satisfaction with their sex life, but satisfaction and frequency from other sexual activities, partnered or solitary, were unrelated (Philippsohn & Hartmann, 2009). Both sexes' PVI frequency and women's PVI orgasm frequency were related to greater sexual satisfaction (Higgins, Mullinax, Trussell, Davidson, & Moore, 2011) and, in a female subsample, PVI frequency was related to greater relationship satisfaction; in contrast, masturbation was related to greater relationship dissatisfaction and oral sex and anal sex frequency were

unrelated (Santtila et al., 2008). A study of married women found that PVI was related to both marital and sexual satisfaction, cunnilingus was unrelated and masturbating the male partner until orgasm was associated with both poorer marital and sexual satisfaction (Hurlbert & Apt, 1994). In a national probability British subsample (Gerressu et al., 2008) and in a Chinese subsample (Das et al., 2009), female masturbation was associated with a series of sexual difficulties, which was confirmed in a Chinese random sample (Lau et al., 2006) and among Arabic women (Shaer et al., 2012). Also, as discussed above, women who never had PVI orgasm have more difficulties during childbirth (Baxter, 1974) and, as will be discussed below, PVI frequency was found to be protective against breast cancer, but condom use or *coitus interruptus* were associated with increased risk (Gjorgov, 1978, 1998; Le, Bachelot, & Hill, 1989; Vessey, Baron, Doll, McPherson, & Yeates, 1983).

Laan compares asking women to differentiate between vaginal and clitoral stimulation to asking men to differentiate between penile tip and shaft stimulation during intercourse. Many sensitive men should have little difficulty doing so (although research is needed on that issue). However, Laan makes the mistake of claiming that studies by Brody and colleagues asked women to localize sensation, when in fact they were clearly asked about behavior instead. Laan is also mistaken when she claims that Brody and colleagues presented only correlational data, when as noted, there have been several experimental studies. However, we do agree with Laan that more research on sexual inhibition is needed, but what is being inhibited should be specified.

Laan claims that “[I]n general, women seem relatively unaware of their own genital changes, with which they lack adequate proprioceptive feedback that may further increase their arousal” (p. 334). This is an interesting statement, given that Laan and Brody co-authored a paper (along with van Lunsen) that found that it is specifically women who have good PVI orgasm consistency (but not women who have poor PVI orgasm consistency, regardless of orgasm consistency from other sources) that have excellent concordance of genital and subjective sexual arousal (Brody et al., 2003). That finding with menopausal women was replicated with young women (Brody, 2007a).

The downside of condom use during PVI

When noting the findings of adverse correlates of condom use for PVI (Brody, 2010; Costa & Brody, 2008), Levin (2012b) raises his critical tone by contending that “[T]heir use to prevent pregnancies and venereal infections is given no sanction or priority” (p. 310), but that “[F]ortunately, other studies have concluded that the evidence for the health benefits of not using condoms is at least inconclusive” (p. 310). In fact, there is evidence that condom use is more common among persons involved in relationships with decreased intimacy and feeling less love for their partners (Aalsma, Fortenberry, Sayegh, & Orr, 2006; Civic, 1999). Moreover, condom use or reduced frequency of PVI without condoms have been associated with more use of immature defense mechanisms (Costa & Brody, 2008), depression (Gallup, Burch, & Platek, 2002; Morrill, Ickovics, Golubchikov, Beren, & Rodin, 1996; Smit et al., 2006), poorer immune function (Peters et al., 2004) and higher body mass index (Akers et al., 2009). A series of studies have shown a relationship of history of condom use or *coitus interruptus* with greater risk of breast cancer (Gjorgov, 1978, 1998; Le et al., 1989; Vessey et al., 1983). Among the explanatory

mechanisms are not only beneficial effects of vaginal absorption of semen (Gallup et al., 2002; Gjorgov, 1978, 1998; Peters et al., 2004), but also the reduced satisfaction of PVI by condoms impacting negatively on well-being, especially if chronic (Costa & Brody, 2008, 2010a). In addition, there are personality issues: condom users might have psychological inhibitions regarding intimacy, reflecting difficulties in emotional regulation (Brody & Costa, 2009a; Costa & Brody, 2008, 2010a). This would be consistent with condom use being associated with more immature defense mechanisms and poorer intimate relationship quality, and with condom users having more heterosocial anxiety than oral contraceptive users (Leary & Dobbins, 1983). Levin (2012b) also misrepresents a quote from one of Brody's papers: Levin claims that the paper indicated that coitus with a condom is "simply" mutual masturbation with the same latex device, when the paper actually made only an analogy. As Levin notes, other studies have sometimes found that better mental health is more likely among people who use condoms for sexual intercourse (Mota, Cox, Katz, & Sareen, 2010). However, possible confounding mechanisms of such findings have been noted (Costa & Brody, 2008, 2010a) and that is no reason to attempt to dismiss the evidence that condoms have multiple unfavorable aspects. People should be rightly informed of those risks, especially in the context that HIV transmission is extremely unlikely during PVI in most persons (the more dangerous risk factors being receptive anal sex and skin punctures, largely in the form of infected health care material in non-industrialized countries) (see Brody and Costa [2009a] and Brody [2010] for references).

Moreover, many people are at low risk for even curable STDs (Potterat et al., 1985; Shlay, McClung, Patnaik, & Douglas, 2004) and pregnancies can be avoided by means more effective and less intrusive than condoms. Even accepting a degree of risk of condomless PVI is no reason for dismissing the risks of condoms.

Final remarks

Noting that condom use for PVI has risks and that noncoital sex orgasms might be associated with poorer health is not demonizing, as Levin appears to want the readers to believe. Rather, it is informing, and thereby enhancing power of decision, as much as noting the risks of alcohol, driving and overeating is not demonizing spirits, cars and taste.

Arguing that Brody and colleagues "rob the huge percentage of women of their sense of normalcy" (Levin, 2012a), as if normalcy could be arbitrarily awarded, is not promoting sexual health. Denying problems is not an effective way of coping with problems. Given that there are myriad demonstrated benefits associated with vaginal orgasm, and that a major predictor of vaginal orgasm is having been educated in one's youth that the vagina (rather than only the clitoris) is a source of female orgasm (Brody & Weiss, 2010), it is incumbent upon sexologists and educators to stop undermining women's health. Hence, sex therapists, researchers and educators should be aware of the more favorable correlates and effects of PVI and vaginal orgasm (relative to other sexual activities and orgasm triggers) and adjust their practice accordingly (Brody, 2006b, 2010; Brody & Weiss, 2010). However popular and politically correct the gospel of mainstream sexology has been, it is important to prioritize good science and good health over the distortions of ideology (including the denial of vaginal orgasm and the denial of the links between sexual responses and both personality and health).

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