Social Motivation as The Extreme Female Brain:
Borderline, Dependent, and Histrionic Personality Disorders

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Baron-Cohen’s *Extreme Male Brain* theory of autism has generated a novel perspective of psychological disorders: the depiction of clinical behavioral patterns as extreme expressions of normal sex differences. Consistent with this view, this review suggests that histrionic, borderline, and dependent personality disorders are the best candidates to represent the extreme female brain, as they are all characterized by excessive social or empathizing needs, and are related to feminization.

*Keywords:* borderline personality disorder, histrionic personality disorder, dependent personality disorder, autism spectrum disorders, extreme male brain theory
The Extreme Female Brain

From the moment species have evolved as sexual, females and males have gone through differential selection processes, in response to different roles involved in the continuation of the species (Buss & Schmitt, 1993). In humans, as in most species, males provide a group with resources vital to group functioning, while females bear and nurture children. As such, their respective physiology and psychology are designed to fulfill this purpose (Trivers, 1972).

Women are highly dependent on others’ input and collaboration to get the necessary material to ensure the survival of both themselves and their children, since their evolutionary purpose is the upbringing of children. As evolutionary processes retain those who have a spontaneous drive to accomplish what is beneficial for them, this dependence on social ties must result in considerable gratification when fulfilled, and considerable distress when unfulfilled. As a result, socialization would entail greater gratification for women when successful, and greater distress when unsuccessful. The basic and ultimate need of women is to socialize, or empathize (Baron-Cohen, 2002), and they would then compete with each other on socialization processes. Different behavioral presentations represent different strategies to fulfill a social need, with differential outcomes and tactics. This review will suggest that some psychological disorders might be extreme forms of what defines a feminine psychology.

**Theoretical Background**

Baron-Cohen (2002) provided the first spectrum to account for psychological sex differences. The empathizing/systemizing theory suggests that males have a higher spontaneous drive to construct systems, and women have a higher drive to empathize. This model is the reasoning behind the *Extreme Male Brain* theory of autism (Baron-Cohen, 1997), based on a suggestion of Hans Asperger in 1944. People with autism spectrum disorders, theorized to be an
extreme form of the male brain, have an unusually high drive to construct systems, and have an extremely low ability to understand others and create and maintain interpersonal relationships. They are considered to be *mind-blind*. On the other hand, the female brain would be characterized by a lesser drive to construct systems, but would be highly motivated to create and maintain social bonds. In this way, the extreme female brain would be extremely empathetic, but unstimulated by system construction. This model postulates that an extreme female brain would be *system-blind*, but extremely skilled at creating social bonds.

There are important shortcomings to Baron-Cohen’s theory. First, there is an underlying assumption that an extreme brain necessarily results in functional impairment, and in only one behavioral pattern. Some people with an extreme male brain score quite low on autistic symptoms (Auyeung et al., 2009). This introduces the second point; many other behavioral presentations are seen within those with a hyper-masculinized brain, such as individuals with attention deficit and hyperactivity disorder and psychopathy (Hanoch, Gummerum, & Rolison, 2012). While they do not share the cognitive empathy impairments (Charman, Caroll, & Sturge, 2001; Meffert, Gazzola, den Boer, Bartels, & Keysers, 2013; Richell et al., 2003), they show the same low drive for socialization *in itself*, and often prefer status gains over well-functioning (Melnick & Hinshaw, 1996) and use instrumental interpersonal strategies respectively (APA, 2013). In this way, there is not a single extreme male brain presentation, and other presentations do not necessarily have cognitive empathy deficits, although there seems to be a generalized asocial tendency, or a low social motivation. Psychological theorists have previously suggested that autism is defined by a decreased social motivation (Chevallier, Kohls, Troiani, Brodkin, & Schultz, 2012). In a similar vein, individuals with an extreme female brain are believed to have poor empathetic skills. Lastly, Baron-Cohen’s suggestion assumes that there is only one type of
social drive. This no doubt led to the ambiguity that supposedly socially unmotivated autistic women are as social as non-autistic males (Head, McGillivray, & Stokes, 2014), and are even clingy inasmuch as they can be misdiagnosed with borderline personality disorder (Attwood, 2007). Even females who are thought to have a non-empathic brain have the clinginess that is here suggested to be a feminine trait. Consequently, it could be argued that systemizing and empathizing are needs rather than skills. In this way, the extreme female brain would be defined by an extreme social need, and may have multiple presentations, rooted in different strategies to fulfill a social dependency need.

Candidates of the Extreme Female Brain

Behavioral presentations that involve an excessive social need will be explored. Psychological disorders are useful in this regard, because clinical categorization classifies individuals into stable, pervasive, and delimited behavioral patterns, for which empirical data has been gathered extensively. In contrast, correlating femininity, life strategies, and pathology would be a colossal endeavor, based on statistical approximations. The prevalence of males in the described disorders does not mean that it is not a predominantly female behavior, as individuals act out on a need, but assuming that men and women live in roughly the same environment, more often this environment will be perceived as socially unstimulating.

Numerous personality disorders appear to be rooted in an excessive social motivation. Dependent personality disorder, borderline personality disorder, and histrionic personality disorder are all characterized by an excessive sensitivity to the social world. All have historically been linked to women. Among clinically-naïve participants reading the diagnostic criteria, histrionic and dependent personality disorders were seen as female disorders (Rienzi & Scrams,
Importantly, the epidemiology and definition of these disorders are biased towards women.

**Borderline Personality Disorder**

Borderline personality disorder is perhaps the most interesting candidate for the extreme female brain. It is defined in the DSM-5 as a “pervasive pattern of instability in interpersonal relationships, self-image, and affects, and marked impulsivity, beginning by early adulthood and present in a variety of contexts” (APA, 2013, p. 663). People with borderline personality disorder typically make frantic efforts to avoid real or imagined abandonment, their interpersonal relationships tend to be intense and characterized by an alternation between extremes of idealization and devaluation, they feel empty and have a self-image that depends on others, People with borderline personality disorder have high rates of compulsive buying (Maraz, Urbán, & Demetrovics, 2016), and use Facebook excessively (Delfour, Moreau, Laconi, Goutaudier, & Chabrol, 2015). Some theorists have suggested that people with borderline personality disorder are socially insatiable, in the sense that they expect extreme inclusion from others (De Panfilis, Riva, Preti, Cabrino, & Marchesi, 2015). Interestingly, borderline symptoms correlate positively with the number of piercings and tattoos (D’Ambrosio, Casillo, & Martini, 2014), and anecdotally, with hair dying frequency.

The hypothesis stating that females with borderline personality disorder represent an extreme form of female typical behavior has been informally suggested following Baron-Cohen’s Extreme Male Brain theory of autism. A recommendation for research was also expressed by Larson and colleagues, including Baron-Cohen (2015). Recently, the hypothesis was experimentally tested by Dinsdale, Mokkonen, and Crespi (2016). Using the results of the Reading the Mind in the Eyes Test (RMET), they concluded that the extreme female brain may
be what is known as borderline personality disorder and subclinical depression. Further evidence shows that borderline traits are linked to hormonal femininity, and are magnified by oral contraception use. DeSoto, Geary, Hoard, Sheldon, and Cooper (2003) found that borderline traits were linked to fluctuations in estrogen levels, by conducting three studies. First, borderline symptoms were most common in the period of the menstrual cycle in which estrogen is at its highest, and in women using oral contraceptives. Second, across a menstrual cycle, the presence of borderline traits was predicted by estrogen levels, even when a generalized increase in negative mood was statistically controlled for. In a sample of forty women, estrogen and progesterone influenced borderline traits (Eisenlohr-Moul, DeWall, Girdler, & Segerstrom, 2015). Lastly, for women with pre-existing borderline traits, use of oral contraceptive exacerbates the symptoms of the disorder. Additional indirect evidence for hormonal influence on borderline symptoms comes from premenstrual dysphoric disorder (PMDD). PMDD occurs when estrogen levels are increasing before ovulation. The symptoms of PMDD are nearly identical to the borderline behavioral profile. The DSM-5 provides the following symptoms to illustrate PMDD:

- markedly depressed mood, feelings of hopelessness, or self-deprecating thoughts; marked anxiety, tension, feelings of being “keyed up” or “on edge”; marked affective lability (e.g., feeling suddenly sad or tearful or experiencing increased sensitivity to rejection);
- persistent and marked anger or irritability or increased interpersonal conflicts (APA, 2013, p. 171).

Thus, fluctuating levels of estrogen play a role in borderline traits. Similarly, fluctuations in estrogen trigger depressive episodes in women (Payne, 2003), and women with PMDD tend to have high estradiol levels during the follicular phase (Redei & Freeman, 1995).
Borderline traits are also related to brain femininity. 2D:4D finger length ratios, the preferred biomarker for the evaluation of brain masculin/femininity, is positively correlated to emotional instability (Lindová, Hrušková, Pivoňková, Kuběna, & Flegr, 2008). This means that the most feminized a brain is, the most emotionally unstable a person is. 2D:4D ratios correlate positively with neuroticism scores (Austin, Manning, McInroy, & Mathews, 2002; Fink, Manning, & Neave, 2004). Neuroticism is the trait of the Big Five on which men and women differ the most globally (Schmitt, Voracek, Realo, & Allik, 2008), and unsurprisingly, girls with borderline are acutely neurotic. 2D:4D ratios correlate with borderline characteristics: estrogen, neuroticism, and correlates negatively with autistic symptoms (which is the diametrical opposite of borderline interpersonal tendencies; extreme unresponsiveness to social stimuli; Putz, Gaulin, Sporter, & McBurney, 2004). 2D:4D ratios significantly predicted overall borderline traits, and the affective component of the borderline presentation more specifically (Evardone, Alexander, & Morey, 2008). In short, converging methods have provided evidence that borderline personality disorder is related to a pronounced femininity.

A large body of psychoanalytic literature suggests that borderline traits are caused by sexual, physical, or psychological abuse during childhood. In the academic literature, questioning participants on their abuse is an ongoing ethical debate. The cost-benefit analysis of asking about child abuse is often ignored, and researchers are often left with important research decisions that are ultimately based on individual beliefs on prevalence and effects of child abuse. The costs of not asking about abuse may actually be more significant than not asking (Becker-Blease & Freyd, 2006). Some have insisted for borderline personality to be relabeled as PTSD, as they can be confused for each other (McLean & Gallop, 2003). There is, however, a meaningful absence of confirmed reports in regards to the post-traumatic model. The hypothesis
that borderline traits result from abuse is based on self-reports of people with the diagnosis, who
are known to lie compulsively (Snyder, 1986), and to be exactly the type of people who would
benefit from the nurturing and professional care that would ensue. Paris (1998) found that most
victims of childhood trauma are resilient, personality is heritable, and traumatic childhood
experiences do not consistently lead to psychopathology. Moreover, women are more resilient to
did not find childhood sexual abuse to be a predictor of borderline in adulthood. The only
significant predictor was emotional abuse, but was only significant in men. Girls with borderline
have been identified for being at risk for false rape accusations (O’Donohue & Bowers, 2006).
Bailey and Schriver (1999) questioned experienced psychiatrists and found that “patients with
borderline personality disorder were rated as especially likely to misinterpret or misremember
social interactions, to lie manipulatively and convincingly, and to have voluntarily entered
destructive sexual relationships, possibly even at young ages” (p. 45). The validity of the
childhood trauma is at best anecdotical, and one should remain cautious towards any claim of
victimization from people with borderline personality disorder. If anything, this literature could
be interpreted as a strategy to evoke nurturance.

Borderline personality disorder is diagnosed three times more often in women. Yet, it
was originally related to the concept of female hysteria, which was believed to originate in the
womb. However, psychiatry as a whole does not seem to condemn major tweaks to psychiatric
diagnostic criteria to equalize gender statistics, as is the case with ADHD and autism. It is then
debatable if this ratio can be interpreted rationally. Regardless of the sex ratio, the diagnosis of
men with borderline is based on the widespread faulty assumption that characteristics of one sex
can be equally applicable to the other (Cahill, 2006). Although the female-to-male ratio is 3:1,
there is a range of phenomena that apply mostly to women, for which borderline traits are the norm. The following section will explore that assertion.

**The Ramifications of Borderline Personality Disorder**

Regardless of the clinical ratio, borderline traits are often seen in other phenomena that are predominantly seen in women, which certainly undermines the true ratio. Furthermore, these phenomena often have little to no supporting objective evidence, and can be suspected that people with a borderline personality disorder diagnosis simply malinger nurturance. In terms of cost/benefit analysis, it is undeniable that many of these strategies represent opportunities to garner attention for little cost. That does not necessarily mean, however, that people with a borderline personality are aware of the motivations behind these actions.

Females with a borderline personality disorder diagnosis, like those with histrionic personality disorder, have been identified as being more prone to press false rape charges (O’Donohue & Bowers, 2006). False rape charges offer interesting opportunities to obtain nurturance from others, as they are often accepted at face value, at least in psychiatry. While people that were sexually abused are indistinguishable from controls on measures of depression, post-traumatic stress, fantasy proneness, and dissociation; patients with repressed memories recovered through psychoanalytic hypnosis scored higher (McNally, Clancy, Schacter, & Pitman, 2000). Hence, those with rape experiences recovered through flimflamming techniques often have borderline traits. Those with presumably legitimate memories of the abuse do not.

Factitious disorder is a condition that is typically seen in women. In a sample of 88 borderline patients, Links, Steiner, and Mitton (1989) found that 13% had factitious psychotic symptoms. Factitious disorders are usually thought to be motivated by regressive needs, fear of abandonment, need for caring, and nurturing. Feldman (cited by Adams, 2008) found borderline
traits in patient with factitious symptoms: self-destructiveness, itinerancy, problems developing and maintaining relationships, hostility, and pseudologia fantastica. Goldstein (1998) found that borderline traits are commonly found in patients with factitious disorders. Undiagnosed borderline traits, such as insecure attachment, are the norm behind factitious presentations. Noyes and colleagues (2003) found that hypochondriasis is associated with insecure attachment that in adults gives rise to abnormal care-seeking behavior. Hypochondriacal and somatic symptoms were positively correlated with all of the insecure attachment styles, especially the fearful style. These same symptoms were positively correlated with self-reported interpersonal problems and negatively correlated with patient ratings of satisfaction with, and reassurance from, medical care. Hypochondriacal and somatic symptoms were also positively correlated with neuroticism. When under stress as adults, somatizers use physical complaints to elicit care (Stuart & Noyes, 1999). Poor self-esteem and poorly defined self-concepts are other characteristics common to both factitious disorders and borderline personality disorder (Hamilton & Janata, 1997). Phillips, Ward, and Ries (1983) found that their sample with factitious bereavement presented with depression and suicidal ideation secondary to reported multiple dramatic deaths for which there was no available verification, and many had histories of factitious physical symptoms, manipulative suicide attempts, substance abuse, and sociopathy. Factitious symptoms can better be understood as one form of dysfunctional care-eliciting behavior.

Pseudologia fantastica is often seen in people with borderline (Snyder, 1986). This pathological need for lying is used to garner attention and caring.
People with borderline are at great risk of self-harming, insofar that it is part of the diagnostic criteria. One of the motivation for self-harm is expressing distress to obtain nurturance (Linehan, 1993; Paris, 2005).

Munchausen Syndrome by Proxy (MSBP) is a type of factitious disorder in which the mother secretly inflicts harm to her child to obtain medical care. This phenomenon is especially likely when the surroundings offer nurturance and praise in response to the brave mother of a sick child. Moreover, it is widely believed that perpetrator mothers use the child to pursue a relationship with charismatic and care providing physicians (Cramer, Gershberg, & Stern, 1971).

Borderline features are often seen in MSBP, to the extent that MSBP has been suggested to be a subtype of borderline pathology (Nadelson, 1979). Ehlers and Plassmann (1994) found that half of their sample of 18 MSBP patients had borderline personality disorder, and that one third had narcissistic personality disorder, which has comorbidity rates of 32.2% with borderline (Grant et al., 2008). Adshead and Bluglass (2005) found that 82% of their sample of 67 MSBP mothers had insecure childhood attachments, and 60% had unresolved trauma or loss reactions. Gray and Bentovim (1996), based on a sample of 37 families, found that all the perpetrator mothers had suffered at least one of the following: privation, child abuse, psychiatric illness, or significant loss or bereavement, and that 40% had serious marital problems.

Conversion disorders are by definition any unfounded neurological symptom. Reported childhood abuse, neglect, dissociative symptoms, abuse, self-harm, and suicide attempts—which are typical of people with borderline—are frequently seen in those with conversion disorders (Şar, Akyüz, Kundakçı, Kızıltan, & Doğan, 2004).

As for many phenomena associated with borderline, multiple personalities (now dissociative identity disorder; DID) is highly controversial, as it has very weak and inconsistent
support in terms of validity. Two thirds of DID cases also fit the borderline personality criteria (Horewitz & Braun, 1984). The association is so strong that Benner and Joscelyne (1984) have argued that it should be classified as a borderline personality disorder. The existence of “multiple personalities” is highly questionable (Giesbrecht, Lynn, Lilienfeld, & Merckelbach, 2008; Lynn, Lilienfeld, Merckelbach, Giesbrecht, & van der Kloet, 2012), as its core assumptions are violated (e.g., Huntjens, Verschuere, & McNally, 2012). There is no study to this date that used verified claims of trauma from a representative sample of the population. Hence, the legitimizing factor will be disregarded in favor of the effect, i.e., nurturing possibilities originating from a social need.

In short, borderline traits are found in a myriad of unexplained phenomena that appear to be strategies to obtain nurturance and contact with reassuring, father-like, providing figures. Moreover, some of these strategies are exclusively employed by women, which may undermine the 3:1 woman to man ratio. For instance, factitious disorder by proxy is conducted by the biological mother in 98% of cases. Factitious presentation is also a phenomenon that is predominantly seen in women.

**Corrections to Baron-Cohen’s Empathize/Systemize Dichotomy**

Although people with borderline constitute a promising venue for understanding the extreme female brain, they do not represent exactly what would be expected from Baron-Cohen’s theory. Putting aside their psychopathic traits (Sprague, Javdani, Sadeh, Newman, & Verona, 2012), they do not have a superior empathy, capability of deciphering social cues, or an unusually efficient theory of mind (see Lazarus, Cheavens, Festa, & Rosenthal, 2014, for a review). Although they are hyper-mentalizing (Sharp et al., 2011), people with borderline have been shown to be deficient in emotion recognition (Baez et al., 2015) and theory of mind (Baez...
et al., 2015; Preißler, Dziobek, Ritter, Heekeren, & Roepke, 2010), although some have found no
difference in cognitive empathy compared to controls (Dinsdale et al., 2016; Vaskinn et al.,
2015). A revealing study by Franzen and colleagues (2011), provided a more comprehensive
view of the psychology of people with borderline, that includes the motivational component of
socialization that lacks in cognitive empathy tests. In a fairness game, controls and borderline
patients were equally accurate at emotion recognition, but the latter was more dependent on
others’ emotions to judge their own fairness. These results parallel the findings of Levine,
Marziali, and Hood (1997). In short, people with borderline are more socially dependent than
socially skilled. Again, the empathizing/systemizing dichotomy needs to be regarded as a need
rather than a skill, and defined by their underlying motivation, as borderlines cannot be
considered socially skilled, or empathetic in the broader sense of the word.

**Genetics and Borderline Personality Disorder**

Disorders linked to excessive masculinity are usually highly heritable. Namely, ADHD
and autism spectrum disorders have repeatedly been linked to low 2D:4D ratios (e.g., Auyeung
et al., 2012; de Bruin, Verheij, Wiegman, & Ferdinand, 2006). Both are highly heritable and co-
heritable. Lichtenstein, Carlström, Råstam, Gillberg, and Anckarsäter (2010) found that genetic
effects accounted for 80% of the variation in ASD and 79% in ADHD. In regards to co-
heritability, among monozygotic twins of children with autism, the probability of having a
diagnosis of ADHD was 44%, compared to 15% among dizygotic twins (Lichtenstein et al.,
2010). Importantly, 2D:4D ratios in girls are 66% heritable (Paul, Kato, Cherkas, Andrew, &
Spector, 2006). If borderline is truly linked to hyper-femininity, this pattern should also be
observed. Evidence suggests that it is. Amad, Ramoz, Thomas, Jardri, and Gorwood (2014)
estimate the heritability of borderline to be 40%. Like other conditions related to a pronounced sexual expression, borderline personality disorder is highly heritable.

Although the present framework suggests that borderline personality disorder is a good candidate of the extreme female brain, it needs to be addressed that one third of the diagnoses are made in men. However, many findings suggest that the true ratio might be more biased towards women than previously assumed. First, there are a vast range of other pathologies that share the neurotic presentation seen in borderline, that are exclusively seen in women. People with Munchausen Syndrome by Proxy are all women, and most have borderline features. Ratios which demonstrate similar base rates of borderline in men and women are often based on community samples (e.g., Grant et al., 2008), with no regard to confounding variables or referrals. Substance abuse, impulsivity, social anxiety, and sexual promiscuity are strongly linked to ADHD, but ADHD is not borderline (APA, 2013; Davids & Gastpar, 2005; Lampe et al., 2007; Nigg, Silk, Stavro, & Miller, 2005; Xenaki, & Pehlivanidis, 2015). Similarly, behaviors that are similar between men and women are often erroneously considered having the same motivation (Cahill, 2006). For instance, sexual promiscuity is the optimal evolutionary success for males of almost all species. In contrast, sexuality is the female resource (Baumeister & Vohs, 2004), and indiscriminate promiscuity is what women are evolutionarily wired to avoid.

Promiscuous sexuality in females is linked to emotional distress (Ethier et al., 2006), physical unattractiveness (Walsh, 1993), borderline personality disorder (APA, 2013), susceptibility to sexual victimization (Perilloux, Duntley, & Buss, 2011), and attachment problems. As a thought-provoking example, depression is linked to females with many sexual partners, in contrast to men, in which it is unusually present in those with few partners (Weisfeld & Woodward, 2004).

Hence, borderline personality might differ in motivation and expression, notably in the case of
promiscuity. Most importantly, if both brain and hormonal femininity promote borderline traits, their occurrence in men requires clarification.

Histrionic Personality Disorder

The DSM-5 defines histrionic personality disorder as “a pervasive pattern of excessive emotionality and attention seeking, beginning by early adulthood and present in a variety of contexts” (APA, 2013, p. 667). Symptoms include: being uncomfortable in situations in which he or she is not the center of attention, inappropriate sexually seductive or provocative behavior, shallow expression of emotions, using physical appearance to draw attention to self, using an excessively impressionistic style of speech, self-dramatizing, theatricality, exaggerating expression of emotion, being suggestible, and considering relationships to be more intimate than they actually are.

There is not much to say about histrionics, as they are clearly incredibly successful social agents, as can be seen by their number of Facebook friends (Rosen, Whaling, Rab, Carrier, & Cheever, 2013), or their interpersonal style more broadly. They are always up to the latest fads, and familiar with everyone. As a symptom of autism is the unwillingness to share intentions and group movements (Tomasello, Carpenter, Call, Behne, & Moll, 2005), histrionic personality disorder is the opposite of this social behavior.

Histrionic personality disorder was argued to be the female phenotype of antisocial personality disorder by Cale and Lilienfeld (2002). Their empirical results were weak and inconsistent, but their methodology was questionable, as they tested histrionics on Newman’s (1987) response modulation hypothesis of psychopathy. This assumes that men and women have a common pathway to psychopathy, as psychopathy scales are tailored for men specifically. As our conspecifics are the key to evolutionary success or failure, elevated interpersonal power
suggest a success at negotiating interpersonal power and influence. Fitness is achieved
differently in men and women. As a striking example, men and women use different aggression
strategies. Women use more relational aggression, such as excluding someone from a social
network (see Wynn, Høiseth, & Pettersen, 2012 for an overview of psychopathy in women).
Indeed, histrionic women have been identified as being at risk of making false rape charges
(O’Donohue & Bowers, 2006). Kanin (1994) identified three main motivations behind false
accusations: obtaining sympathy and attention, getting revenge, and providing an alibi. Likewise,
McNamara, McDonald, and Lawrence (2012) found that 50% of their sample was motivated by
attention-seeking and sympathy. It could be argued to be a form of fraud, for which male
psychopaths are known for. Psychopathy in women might be achieved by interpersonal skill and
power, resulting in lowered social fear, as opposed to psychopathic men, who might express
psychopathic traits due to a lack of physical fear (Hosker-Field, Gauthier, & Book, 2016).
Differential fear mechanisms would be based on differential evolutionary competitive aggressive
patterns, namely indirect aggression, relational aggression, and social aggression for women
(Archer & Coyne, 2005), and physical aggression for men (e.g., Archer, 2004). Since intra-
sexual competitive encounters usually involve a form of competition that establishes the fittest
individual based on an evolutionarily adaptive trait, it is not surprising that men and women
differ in aggression patterns. While a woman attempts to rob another woman from her social
bonds, a man attempts to show himself as the most capable to generate and protect resources
with physical capability.

Substantial support for the hyper-femininity perspective of histrionic personality disorder
came from the measurement of finger length ratios of female psychopaths (Blanchard & Lyons,
2010). The results gave a statistically significant positive correlation of 0.45 between 2D:4D ratios and psychopathy in women.

Histrionic personality disorder is mostly diagnosed in women, although the exact sex ratio is unknown. Researchers and the DSM-5 are generally unwilling to divulgate the sex ratio, as it is repeatedly quoted that “the sex ratio is not significantly different than the sex ratio of females within the respective clinical setting” (APA, 2013, p. 668). There is a range of diagnostic features that do not really apply to men, such as “consistently use physical appearance to draw attention to themselves”, which is quite revealing as histrionic women are the only subgroup of “disordered” women linked to physical attractiveness (Bornstein, 1999). This higher physical attractiveness is not seen in men, so it remains to be clarified how unattractive men use their physical appearance to draw attention (excluding paraphilias, such as exhibitionism).

“[Histrionics] may “fish for compliments” regarding appearance and be easily and excessively upset by a critical comment about how they look or by a photograph that they regard as unflattering” (APA, 2013, p. 668). Most social media users might confirm that this behavior is seldom seen in men, and applies to more than the 2–3% prevalence that the DSM-5 suggests. The DSM-5 expresses that “[histrionics] often act out a role (e.g., “victim” or “princess”)” (APA, 2013, p. 668), which, once again, does not seem to apply to non-paraphilic male behavior. The existence of histrionic personality disorder stems from hysteria, which was linked to women, the female genitalia, and femininity since Ancient Egypt. In short, it seems like unwillingness to divulge sex ratios in clinical psychology stems from a general unwillingness to accept the reality of sex differences (Cahill, 2006). Clinically naïve participants associate histrionic personality to women five times more than to men (Rienzi & Scrams, 1991).
Histrionic personality disorder is highly linked to borderline personality disorder. Among histrionic females, 36% are also borderline. Among those with borderline, 10.3% are histrionic (Grant et al., 2008).

**Dependent Personality Disorder**

Dependent personality disorder also represents an interesting candidate for a behavioral expression of the extreme female brain. If the female brain is more responsive, gratified, and motivated to pursue and maintain social bonds, it might be expressed as excessive investment and dependence in social relationships on a small scale, without a severely neurotic or theatrical component. Dependent personality is defined by the DSM-5 as “a pervasive and excessive need to be taken care of that leads to submissive and clinging behavior and fears of separation, beginning by early adulthood and present in a variety of contexts”. Symptoms include needing others to assume responsibility for most major areas of his or her life, having difficulty expressing disagreement with others because of fear of loss of support or approval, having difficulty initiating projects or doing things on his or her own, going to excessive lengths to obtain nurturance and support from others, feeling uncomfortable or helpless when alone, and urgently seeking another relationship as a source of care and support when a close relationship ends (APA, 2013, p. 675).

While it seems intuitive to nominate disorders with an extremely neurotic presentation as the extreme female brain, girls with borderline who ameliorate their outcome most likely still attach importance to interpersonal bonds. The presentation of borderline without its acute neurotic features would resemble dependent personality disorder—frantic efforts to avoid real or imagined abandonment and a pattern of intense relationships. Perhaps dependent women share the brain femininity with those who have borderline personality disorder, without the behavioral
tendencies originating from elevated estrogen levels. Unfortunately, very little research is done on dependent personality disorder.

Like borderline, dependent personality is highly heritable. Heritability rates are estimated to be from 55% to 72% (Gjerde et al., 2012). People with dependent personality disorder have a non-dominant, submissive interpersonal style, like those with borderline (Russell, Moskowitz, Zuroff, Sookman, & Paris, 2007). Kaplan (1983) argued that dependent personality disorder is nothing more than a woman conforming to society’s idea of a woman, and that behaving in a feminine stereotyped manner alone is sufficient to get a DSM-III diagnosis. Oddly the author remains silent over the fact that this is also true for males, but combined with a neurological justification and a psychoactive solution. Klonsky, Jane, Turkheimer, and Oltmanns (2002) found that in a sample of 665 college students, dependent personality traits were related to higher femininity and lower masculinity in men and women. As indicated by their absent initiative and risk-taking, people with dependent personality disorder have an external locus of control, which is negatively correlated to masculinity (Richards, Stewart-Williams, & Reed, 2015). Their appeasing interpersonal style is sacrificing autonomy to maintain social bonds. For instance, avoiding negotiating, arguing, or discussing. It is an extreme form of the principle of least interest, that explains that people hold more power in relationships in which they have the least interest (Sprecher, Schmeeckle, & Felmlee, 2006). In essence, dependent personality disorder is a life strategy motivated by strong social dependence needs.

**Bridging Candidates of the Extreme Female Brain as Evolutionary Strategies**

Individuals with the covered personality disorders represent a critical and revealing insight into evolutionary-based motivation. Mating strategies differ greatly between men and women (Schmitt, 2015), and are rarely placed in a context-dependent framework. Different
mating strategies co-vary with behavioral (or clinical) profiles, which might reveal underlying motivations. It is known that women have a social need. It is also known that women have a need to regulate their sexual value (Baumeister & Vohs, 2004). Both can be seen as intertwined variables to manage for an optimal evolutionary success.

Dependent, borderline, and histrionic personality disorders are three disorders primarily defined by an interpersonal component. Dependent and histrionic personality disorders have been argued to be strongly linked to dependent personality disorder, as both are inflexible, exaggerated dependency needs (Bornstein & Malka, 2009), and the borderline personality certainly fits under this description as well. Dependent and histrionic personality disorders are believed to have emerged from hysterical personality in the DSM-II (Disney, 2013).

A major distinguishing factor between them is their relative success at fulfilling their social need. While all three involve a certain social dependency, it differs on the scale and type of dependence. This is consistent with the hypothesis that the female brain is highly motivated to be active in the social world. Reproductive success in women does not solely depend on their social success. Having the greatest investment in offspring, women need to carefully choose their sexual partners (Schmitt, 2015). As a matter of fact, sexual promiscuity in females is linked to high-scores on measures of depression (Grello, Welsh, & Harper, 2006; Weisfeld & Woodward, 2004), emotional distress (Ethier et al., 2006), and psychological distress (Fielder & Carey, 2010; Glenn & Marquardt, 2001), which is the opposite pattern than that of men’s. The sexual tendencies of the three personality disorders covered reveals different mating selection and retention strategies.

Borderline personality disorder is a neurotic form of dependent personality disorder. They crave their partner’s commitment and sometimes engage in frantic and irrational acts to
avoid abandonment, such as accusing others of rape and violence, or having children for mate-
retention purposes. They are extremely dependent on a single relationship, until this relationship
suddenly loses all interest and another one is more inviting. People with borderline are always
dependent on someone, but the target of this dependency is rapidly changing. Thus, they
sacrifice sexual value to retain social relationships, as they are usually quite sexually
promiscuous (Hurlbert, Apt, & White, 1992; Mangassarian, Sumner, & O’Callaghan, 2015). In
essence, they obtain masculine investment at an extremely high cost, which also depletes
extremely fast. They are usually overweight (Sansone, Wiederman, & Monteith, 2001).
Borderline scores correlate 0.44 with body mass index. Similar to histrionics, they use sexuality
to obtain men’s attention, but “engage” in the sex that histrionics tease with. Women with
borderline have more sexual assertiveness and erotophilic attitudes, meaning that they are more
willing to give the sex to obtain what they want (Hurlbert et al., 1992). As such, they spend the
sexual currency (Baumeister & Vohs, 2004) that they possess to obtain male investment, which
histrionics are known to withhold.

Histrionics are extremely dependent on the social world, but unlike the other two
personality profiles mentioned, they are dependent on a large number of people. In essence,
histrionics correspond more or less of what a typical feminine woman would dream to embody,
if the feminine psychology was indeed defined by a drive for socialization. Physical
attractiveness, committed and obsessive providing partner, and an extremely large social circle.
In regards to sexual attitudes, histrionic women have lower sexual assertiveness and have
erotophobic attitudes, demonstrating a lower willingness to have sex per se, but show more
sexual preoccupation, lower sexual desire, more marital dissatisfaction, more sexual boredom,
more orgasmic dysfunction, higher sexual self-esteem, and greater likelihood to have an
extramarital affair (Apt & Hurlbert, 1994). This suggests that they have more sexual potential, and apply it discriminately. They are more likely to cheat, which suggests that monogamous relationships limit their perceived potential gains. People with histrionic personality disorder are more physically attractive than other personality disorders or no personality disorders (Bornstein, 1999). If achievable and maintainable, a histrionic presentation is the most evolutionarily attractive, as it entails ultra-socialization, and also selective—but high in value—sexuality. Histrionics are also known to tease men by appearing sexually interested, but are also known to refuse actual contact (APA, 2013). As such, they successfully bargain interactions with men without using their sexual currency. Teasing can be conceptualized as an unwillingness to reciprocate a man’s investment. Their life strategy seems effective from an evolutionary standpoint, as the bored histrionic vs. obsessive husband was once the most encountered case in marital therapists (Martin & Waldo Bird, 1959). Although it seems like an adaptive strategy, it also entails great social risks. Being loud and sexually provocative provides many opportunities for “bitching”. As in psychopathy in men, it could be argued that histrionics play the evolutionary game with the highest stakes.

Dependent personality disorder is a small scale dependence pattern, usually on a central romantic figure that defines their lifestyle, tastes, activities, and values. In short, they are defined by a single relationship in which they are deeply invested. As dependent girls usually have few to no friendships, they can use their sexual value to satisfy this social urge in a romantic relationship. Their social life is usually limited to one idealized partner. People with a dependent personality seek relationships rapidly after one has ended, and become “indiscriminately attached to another individual” (APA, 2013, p. 676). This involves collateral damage, however, as they exert little discrimination in their mate choice. In this way, superordinate goals (quality of the
genetic material) are sacrificed for basic socializing needs. In sum, both social success and sexual success are low in people with dependent personality disorder, as they have few social bonds, and an indiscriminate mating pattern. However, it offers stability.

**Conclusion**

It seems accurate that the extreme female brain is defined by social hyper-sensitivity, as the three mentioned disorders, characterized by an excessive social motivation, are all more prevalent in women. All of the presented disorders are linked to excessive fear of abandonment and reassurance (APA, 2013). This parallels the finding that 2D:4D ratios are positively correlated to an external locus of control, i.e., the perception of effectively affecting outcomes (Richards et al., 2015). It suggests that the female brain is expressed by an accentuated social dependency, relative to the male brain.

This essay investigated the concept of an extreme female brain, originally based on Baron-Cohen’s Extreme Male Brain (1997, 2002, 2009) and Theory of Mind (Baron-Cohen, Leslie, & Frith, 1985) theories of autism. The empathizing/systemizing theory proposes that the extreme female brain would be characterized by superior mentalizing, but deficient systemizing. Hence, the current review has argued that borderline, dependent, and histrionic personality disorders are the best candidates to portray the extreme female brain, as they are all defined by a strong social, empathizing need, and their epidemiology is strongly biased towards women. Their success at being a social agent varies greatly. Whereas histrionics are clearly highly functioning socially, the same cannot be said about borderlines, who have average (Dinsdale et al., 2016) to poor social skills (Baez et al., 2015; Bouchard, Lussier, Sabourin, & Villeneuve, 2009; Franzen et al., 2011; Levine et al., 1997), although they are indeed hyper-mentalizing (Sharp et al., 2011). This reiterates the relevance of the position that the empathizing/systemizing drives are needs
that do not necessarily translate into superior skills. In aggregate, the hypothesis that the extreme
female brain is characterized by a strong empathizing drive is more than plausible, and gaining
materiality.


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