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Gender Differences in Risk-Taking and Anti-Social Personality Disorder: A Review

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Abstract

Background: While risk-taking can be adaptive, dysregulated risk-taking is often linked to antisocial behaviour, characterized by impulsivity, aggression, and disregard for rules and safety. Gender influences risk behaviours and antisocial tendencies, making its study vital for effective screening and intervention.

Aim: To explore gender differences in risk-taking and Anti-Social Personality Disorder (ASPD). **Method:** A review and synthesis of existing literature on gender differences in risk-taking and ASPD.

Result: Research indicates that men perceive behaviours as less risky, engaging in more risktaking, while women are more risk-averse—a perception shaped by culture but increasingly challenged. In ASPD, men exhibit more aggression and recklessness, while women are more impulsive, often with histories of trauma and worse mental health.

Conclusion: These differences highlight the complex interplay of biological, psychological, and sociocultural factors in shaping gendered expressions of risk-taking and antisocial behaviour, and the need for gender-specific approaches in diagnosis and treatment.

Keywords: Anti-Social Personality Disorder, Gender-differences, Risk-taking

Introduction

Risk-Taking

Risk-taking refers to conscious or nonconscious behaviour involving perceived uncertainty regarding its outcomes, costs, or benefits, which may be economic, physical, or psychosocial (Trimpop, 1994).

While positive risk-taking involves careful consideration to achieve beneficial outcomes (Duell & Steinberg, 2018), problematic risk-taking increases the likelihood of disease, injury, disability, or social issues (Tariq & Gupta, 2023). They precipitate dysfunctionality (Zimbardo et al., 2017) and affect well-being of the individual as well as their community (Walque & Damien, 2013).

Approaches to Risk-Taking

Risk-taking may be conceptualised as evolutionary (Greitemeyer et al., 2013), as a need or drive (Cube, 1990), as characterising a developmental stage (Steinberg, 2008) or as part of personality (Trimpop 1994). Different perspectives attribute it to different factors such physiological reward systems, social as influences, age, thrill-seeking, or substance use and mental disorders such as Attention-Deficit Hyperactivity Disorder and Bipolar Disorder (Chen et al., 2020; Dekkers et al., 2022; Krmpotich et al., 2015; Tiwari et al., 2021; Tull, 2023; Willoughby et al., 2021).

Evolutionary Conceptualisation

Organisms that have adapted best, are more likely to secure resources, increasing their chances of survival, successful reproduction, and further transmission of these genetic traits to their offspring (Fields & Johnston, 2010; National Geographic Society, 2023). Over time, this process reinforces adaptive characteristics, enhancing likelihood of long-term survival and shaping the evolutionary trajectory of a species (National Geographic Society, 2023).

A study of the evolutionary model in context of adolescence's adaptive functions highlighted five evolutionary insights: (a) adolescence marks shifts in social status and reproduction; (b) interventions must consider the adaptive role of risky behaviours; (c) risk-taking adjusts to environmental conditions; (d) sex differences shape risk behaviours; and (e) mismatches between modern and ancestral environments can disrupt adolescent behaviour (Ellis et al., 2011). Research indicates that the brain's reward systems significantly influence risk-taking behaviours. The medial orbitofrontal cortex, associated with evaluating reward value and pleasure, has been linked to impulsive risk-taking tendencies (Rolls et al., 2022). The neuropsychological paradigm emphasizes dynamic decision-making processes and neuropsychological functioning (Bechara et al., 2000; Rogers et al., 1999). Additionally, studies on adolescents reveal a strong relationship between risk-taking and the functional and structural properties of the reward system, suggesting that heightened sensitivity to rewards

during this developmental period may drive increased risk behaviours (Schneider et al., 2011). Norbert Wiener introduced the concept of selfregulating systems to understand how both mechanical and biological systems, including human behaviour, adjust through internal feedback mechanisms (Julie, 2023). Feedback loops are cyclical processes where behavioural changes lead to consequences which then shape future actions (Julie, 2023; Murphy, 2024). Organisms with an intrinsic system that rewards balanced risk-taking and discourages excessive risks have a better chance of survival (Trimpop, 1994).

Need or Drive Conceptualisation

Risk-taking has been understood as an innate drive or need that motivates individuals to test limits and explore uncertainties (Cube, 1990). Wilde's Theory of Risk Homeostasis (1982) proposes that individuals have varying target levels of risk for different activities, and they adjust their actions to match that level (Siovic & Fischhoff, 1982).

Developmental Perspective

Risk-taking peaks in mid-adolescence due to heightened vulnerability from structural and functional brain changes, remodelling of the dopaminergic system and increased rewardseeking, especially with peers (Collado-Rodriguez et al., 2015; Steinberg, 2008). As adolescents engage with peers, they adopt certain values and reject others, shaping their identity in the process (Ragelienė, 2016). In these social interactions, they are also more likely to take risks despite knowing the potential negative consequences—a pattern not seen in adults (Smith et al., 2014). Despite recognizing risks similarly to adults, adolescents' impulsivity and sensitivity to social and reward-related influences may make them more prone to risk-taking (Reniers et al., 2016). As adolescence transitions into adulthood, cognitive control improves, enhancing self-regulation and reducing risktaking (Steinberg, 2008).

Psychological Perspective

Risk-taking behaviours have also been explained using the psychometric paradigm (Nicholson et al., 2005; Zuckerman, 1994), that focuses on individual differences and personality traits, and the neuropsychological paradigm (Bechara et al., 2000; Rogers et al., 1999) which stresses decision-making and neuropsychological functioning. Sensation seeking characterised by seeking of varied and intense experiences, and the willingness to take risks for such experiences (Zuckerman, 1994) is strongly linked with impulsivity and risk-taking behaviours like drug use, risky sexual behaviours, gambling, and dangerous driving (Donohew et al., 2000; Franques et al., 2003; Harris et al., 2023; Nicholson et al., 2005). Furthermore, research shows gender to have a moderating role in impulsivity (Black et al., 2015). However, the contemporary decision-making perspective

suggests that risks may also be taken after a costbenefit analysis (Bechara, 2004).

Emotions influence decision making and therefore risk-taking, such as with anger promoting risk-taking, and fear discouraging it (Lerner & Keltner, 2001). Fuzzy-Trace Theory states that decision-making is not limited to impulsive or analytical thinking; instead, gistbased intuition helps predict risk-taking across different age groups and informs interventions to reduce harmful behaviours (Rivers et al., 2008).

Social Perspective

Social forces shape risk-taking practices as they are based in social processes, like genderbased social frameworks, institutional processes, or market competition (Zinn, 2017). For instance, people are more likely to take risks in competitive or cooperative settings compared to individual ones (Liu et al., 2020).

Antisocial Behaviour

Moderate risk-taking can be adaptive, but dysregulated risk-taking is often linked to antisocial behaviour, which involves violating societal norms and causing harm or distress (Fatima & Malik, 2015; Kimberly & Jacob, 2002). Risk taking has been shown to have links with clinical conditions like substance dependence and abuse as well as Borderline Personality Disorder (BPD) and Antisocial (ASPD) Personality Disorder (American Psychiatric Association, 2000).

ASPD is characterized by impulsivity, irresponsibility, aggression, reckless disregard for safety, and violation of social norms and laws (American Psychiatric Association, 2013). It is linked with more criminality, sexual risk-taking behaviours, poly-substance use, poor treatment outcome, higher rates of HIV and suicide (Beautrais et al., 1996; Brooner et al., 1990; Darke et al., 1994; Darke et al., 1998; Gill et al., 1992; Hatzitaskos et al., 1999; Rutherford et al., 1994). Therefore, those with ASPD exhibit heightened risk-taking tendencies and harmful behaviours, often driven by emotional deficits and impaired decision-making processes (Darke et al., 2003; Evolutionary Forensic Psychology, 2008).

Gender

Although gender is a significant variable in the study of mental health mainly due to actual as well as perceived differences among women and men, there is limited research on the differences in gender manifestations of ASPD (Sher et al., 2015). Differences between males and females may be (a) actual differences, (b) roles (c) stereotypes, where gender roles and stereotypes may or may not always reflect the actual differences (Brown & Jewell, 2019). Given the influence of gender in one's life, many theories have been developed for explaining gender development.

Biological theorists focus upon biological differences and use historical explanations like evolutionary processes, genetics and sex hormones to explain psychological and behavioural gender differences (Miller, 2016). The functionalist perspective emphasised that biological sex differences are the basis of division of labour (Baligar & A W University, Vijayapura, 2018).

Socialization theories propose that gender differences are a by-product of differential treatment and gender stereotypes that boys and girls are exposed to (Miller, 2016). According to the Social Cognitive theory formally applied to gender development in 1999, gender-typed behaviour is shaped through a dynamic interaction between personal factors (such as thoughts, emotions, and biological influences), behavioural patterns (such as engagement in gender-related activities), and environmental influences (such as social expectations and norms) (Bussey et al., 1999; Miller, 2016). The social role theory postulates that since women and men occupy different roles in society, they are perceived as having complementary attributes corresponding to their roles, which makes these stereotypes not only descriptive but also prescriptive (Eagly, 1987; Eagly & Wood, 2012). Women are over-represented as caretakers, and are thus perceived as communal i.e. nurturing, while the opposite holds true for men who are viewed as more agentic, i.e. assertive and independent (Eagly, 1987; Eagly & Wood, 2012).

Cognitive theories state that individuals are "active constructors of knowledge" and align their behaviour to their understanding of gender (Miller, 2016). As such, Kohlberg (1966) stressed 'gender constancy' and believed that children gradually learn to match their behaviour to gender norms (Miller, 2016).

The present study aims to review existing literature on the nature and extent of gender differences in risk-taking behaviour and in manifestations of ASPD.

Method

This was a review of existing literature on the gender differences in risk-taking behaviour and in manifestations of ASPD. Objectives:

- 1. To identify context-specific risky behaviour that individuals may engage in.
- 2. To study how gender influences risktaking behaviour.
- To study gender differences among those with Anti-Social Personality Disorder.

Research Evidence

Gender and Risk -Taking

Research on gendered patterns in risktaking behaviour has produced some notable insights. It is indicated that males tend to take more risks than females, particularly under ambiguity in competitive environments (Liu et al., 2020). Women take more risks when competing against men, while men reduce risktaking when competing against women (Jetter & Walker, 2018). Following stress exposure, boys are likely to show increased risk-taking, while girls tend to decrease risk-taking behaviours (Daughters et al., 2013). Similarly, decisionmaking patterns under financial gains and losses appear to differ by gender-men are more likely to take greater risks after a win, while women are more inclined to escalate their commitment to risks following a loss (Lam & Ozorio, 2012). However, gender differences in risk-taking may develop and change gradually in life rather than being innate (Säve-Söderbergh & Lindquist, 2017). A meta-analysis of 150 studies found that males generally took more risks than females across various tasks and age levels, with notable gender differences in areas like intellectual risks and physical skills (Byrnes et al., 1999).

Gender dynamics also play a role in risk-taking during routine corporate decision-making. Some studies suggest that the presence of female directors on corporate boards enhances firms' adaptability to industry changes (Saeed & Mukarram, 2019). Reduction in financial risk and improved capital adequacy in banks has also been found (Sbai & Dafali, 2023). However, the negative link between gender diversity and risktaking indicates that increased female representation may lead to more conservative decision-making in certain contexts (Abou-El-Sood, 2019; Elsaid & Ursel, 2011; Faccio et al., 2016; Menicucci & Paolucci, 2021; Perryman et al., 2016).

Research has further noted that women in nonfinancial industries exhibit lower risk aversion than those in financial industries, and that women in high-tech firms take more risks than those in low-tech firms (Yarram & Adapa, 2022). In a recent study, men reported more positive past consequences to risk-taking (Morgenroth et al., 2022). This reinforcement of men's risk-taking challenges the assumption that women are inherently risk-aversive (Morgenroth et al., 2022). Additionally, gender differences in risktaking are often mediated by culturally conditioned risk-benefit perceptions rather than innate differences in risk attitudes (Weber & Johnson, 2008).

A review of 31 studies on reward sensitivity (RS) showed that individuals with higher RS are more likely to engage in risky behaviours, including dangerous driving, and substance use (Scott-Parker & Weston. 2017). Additionally, personality traits like aggressiveness, meanness, sensation-seeking, and disinhibition are associated with a greater likelihood of engaging in various forms of antisocial behaviour (Duvall & Stivers, 2024). Men often demonstrate greater sensation seeking, greater reward sensitivity, and lower punishment sensitivity (Cross et al., 2011). This highlights the intricate relationship between personality traits, social structures, and environmental contexts in influencing both risktaking behaviours and antisocial tendencies.

Gender and ASPD Incidence and Prevalence

The prevalence of ASPD in clinical settings is around 3–30% (Holthausen & Habel, 2018). In India, the prevalence is estimated to be

1.7 percent among the general population (ANI, 2018). Both ASPD and psychopathy are significantly present within male populations (Dolan & Völlm, 2009; Weldon, 2021) with them having a 3 to 5 times higher likelihood of being diagnosed with ASPD than females (Fisher & Hany, 2020).

Causative and Risk Factors

Research shows similarity in rates of neurocognitive deficits as well as family adversity among males and females with ASPD (Moffitt et al., 2001). Meanwhile, numerous socio-environmental factors such as higher age, male gender, low education, unemployment, being unmarried, weak religious beliefs, low selfesteem, lower parental education, single-parent households, antisocial family behaviours, parenting style, poor parental intimacy, parental absence. peer pressure. community environments, lack of appropriate recreation, early heroin use, use of multiple substances, and co-occurring psychiatric disorders have been documented as predictors of antisocial behaviour (Anika et al., 2024; Yang et al., 2019; Yazdi-Feyzabadi et al., 2019).

A study with 323 participants with ASPD found that women had fewer episodes of antisocial behaviour with or without involvement of police, and higher rates of childhood trauma including emotional and sexual abuse than did men (Sher et al., 2015). Meanwhile, childhood trauma was associated with more antisocial behaviour involving police among men but not women (Sher et al., 2015). Few other studies also support this finding, but it remains unclear whether it holds true for the general population (Alegria et al., 2013; Keyes et al., 2012). Bullying shows significant gender differences with men reporting higher rates of physical and sexual bullying, and women experiencing more psychological and social bullying (Almuneef et al., 2017). Victims of bullying are more likely to engage in risky behaviours, including smoking (1.8 times more likely), alcohol use (2.3 times), drug use (2.9 times), extramarital sexual relations (2.1 times), and suicidal ideation (2.5 times) compared to those who were not bullied (Almuneef et al., 2017).

Comorbidities

It has been noted that even when those with ASPD seek treatment for any comorbidity, they struggle with accessing care (Van Dam et al., 2022). They have been reported to have a fourfold increased risk of mood disorders, are 13 times more prone to substance abuse, and 7 and 9 times more likely to experience suicidal thoughts and to attempt suicide (Werner et al., 2015). A crosssectional study among heroin users in Australia found ASPD to be related to attempted suicide, use of multiple substances, lifetime overdose, depression and psychological distress while BPD had strong associations with attempted suicide, needle sharing and psychopathology (Darke et al., 2003). A study with a clinical sample of individuals with comorbid ASPD and Substance Use Disorder reported greater psychiatric comorbidity among women (Goldstein et al., 1996). Borderline and Histrionic Personality

Disorders as well as anxiety and mood disorders are more commonly comorbid in women, and their management is recommended as part of effective treatment plan (Goldstein et al., 2007a; Goldstein et al., 2007b; Sher et al., 2015).

Although men and women with ASPD are both likely to have comorbid psychiatric disorders, a study highlighted that women scored much lower in mental health as well as social support and functioning scales (Alegria et al., 2013). The low scores could be attributed to the stronger rejection they face when they do not stereotypical conform to gender-specific behaviour among other things (Alegria et al., 2013). According to the threshold of risk hypothesis, women require a higher loading of risk factors in order to manifest ASPD (Yang & Coid, 2007) which may explain why they have a lower prevalence of but greater impairment with ASPD than men do (Alegria et al., 2013).

Gender Perceptions and Prescriptions Affecting APSD

There is higher prevalence of Conduct Disorder in boys, which has been attributed to differential socialization where it is more socially acceptable for boys to be violent towards others (Conduct Disorder, n.d.) as well as to low parental supervision (Jurado, 2017). In cases where boys and girls under 13 years had been accused of similar offenses, boys were more likely to undergo formal processing, be legally recognized as delinquent if the petition is approved, and be assigned an appropriate placement (Flores et al., 2003). According to the Office of Juvenile Justice and Delinquency Prevention (2019) statistics, around 86% of juveniles in residential placement were males (Hockenberry, 2022). Female defendants may also be treated with more leniency (Holmes et al., 2022).

It is common for women to be perceived as more emotional and neurotic whereas men are seen as assertive (Holthausen & Habel 2018). A study found that the masculine gender role was positively associated with antisocial behaviour, while the feminine gender role was negatively related to it (Castro et al, 2012). Additionally, due to similar patterns of maladaptive behaviours ASPD and BPD are often challenging to diagnose (Chun et al. 2017). Clinicians often diagnose women with BPD, and men with ASPD, when they present with similar complaints (Skodol et al., 2003). A study exploring gender bias among psychiatrists randomly presenting three cases as male or female. The results showed that a female ASPD case was 5.1 times more likely to get a misdiagnosis of BPD than would a male with ASPD (Özel et al., 2023). The Diagnostic and Statistical Manual of Mental Disorders's personality disorders section has also faced criticism over perceived gender bias, as a diagnostic criterion if deemed common among women, is likely to get applied more readily by clinicians and lead to ineffective treatment attempts (Kaplan, 1983; Samuel & Widiger, 2009; Sprock et al. 1990; Weldon, 2021).

Manifestations of ASPD

Earlier research shows that while women with ASPD are more likely to be impulsive, run away from home, lack remorse, and have multiple sexual partners, men with ASPD are commonly more aggressive, have histories of multiple traffic offenses and arrests, being cruel to animals, having fights, using weapons, setting fires, and disregarding others' safety (Cottler et al., 1995). Women with ASPD often experience greater marital instability, unemployment, financial dependence, and higher rates of comorbid disorders like substance abuse and depression (Mulder et al., 1994).

Hence, among those with ASPD, women may show higher impulsivity but less aggression than men, making gender-specific interventions such as impulse-control and anger-management crucial for the two groups respectively (Alegria et al., 2013). Due to their non-violent manifestations, there may be more under- or misdiagnosis of women with ASPD (Goldstein et al., 1996; Mikulich-Gilbertson et al., 2007; Robins et al., 1991; Weldon, 2021). Although research shows women to have consistently committed fewer crimes than men, recent trends show a steady increase in their involvement with the criminal justice system (Rogstad & Rogers, 2008).

Given the link between psychopathy and ASPD, research has explored how these conditions differ in women (Rutherford et al., 1994). In incarcerated women, ASPD has been linked to aggression, impulsivity, irresponsible behavior, childhood abuse, and Cluster A

comorbidity, while psychopathy has been associated with property crimes, prior incarcerations, and lack of remorse (Warren & South, 2006). Research shows that psychopathy is less common in female offenders than their counterparts (Logan & Weizmannmale Henelius, 2012; Pinheiro et al., 2019; Salekin et al., 1997). A direct gender comparison found psychopathy in 11% of violent female offenders versus 31% in males (Grann, 2000). In a largescale study, only 9% of 528 non-psychotic female offenders were identified as psychopaths (Vitale et al., 2002). These studies highlight important gender-based differences in how psychopathy and ASPD manifest.

Discussion

Research on gendered patterns in ASPD presentation have produced notable evidence and shown that women with ASPD report higher rates of childhood trauma, including emotional and sexual abuse, compared to men (Sher et al., 2015). However, childhood trauma appears to have different behavioural outcomes across genders, as it is linked to increased antisocial behaviour involving police in men but not in women (Sher et al., 2015). Similarly, those who have experienced bullying are much more likely to engage in a variety of risky behaviours (Almuneef et al., 2017). The Threshold of Risk Hypothesis provides another insightful finding, stating that women require a higher loading of risk factors in order to manifest ASPD (Yang & Coid, 2007). However, even though men and

women with ASPD are both likely to have comorbid psychiatric disorders, women often suffer from much worse mental health (Alegria et al., 2013). Behavioural differences further highlight the role of gender in ASPD, with men exhibiting more aggression, violence and reckless behaviours while their women counterparts are more likely to demonstrate impulsivity (Cottler et al., 1995; Sher et al., 2015). Males perceive behaviours as less risky, take more risks, and exhibit lower social anxiety than females (Reniers et al., 2016). Furthermore, the less overtly aggressive nature of ASPD in women may contribute to under- or misdiagnosis, as their behaviours do not always align with the traditional, male-centered criteria for ASPD (Goldstein et al., 1996; Mikulich-Gilbertson et al., 2007; Robins et al., 1991; Weldon, 2021).

The majority of research on risk-taking has focused on corporate and board diversity across firms. Findings consistently suggest that increased female representation in decisionmaking roles may lead to more conservative approaches in certain contexts (Abou-El-Sood, 2019; Elsaid & Ursel, 2011; Faccio et al., 2016; Menicucci & Paolucci, 2021; Perryman et al., 2016). Notably, even among women, industries such as non-financial sectors and high-tech firms exhibit lower levels of risk aversion (Yarram & 2022), challenging Adapa, generalized assumptions about gender and risk. A pivotal study found no inherent gender differences in initial risk-taking, as men and women anticipated similar outcomes when faced with unfamiliar risks (Morgenroth et al., 2022). However, men were more likely to report positive past experiences with risk-taking, reinforcing their willingness to take risks again. These findings refute the notion that women are naturally riskaverse, suggesting instead that disparities arise from unequal consequences rather than an inherent reluctance to take risks. Workplace equality efforts, therefore, should focus on addressing these inequities rather than simply encouraging women to take more risks (Morgenroth et al., 2022). Gender differences in risk-taking are largely shaped by culturally conditioned perceptions rather than innate differences (Weber & Johnson. 2008), underscoring the importance of challenging stereotypes around gender and risk, to promote greater equity in decision-making contexts.

Hence, gender differences in risk-taking and antisocial behaviour are influenced by a complex interplay of biological, psychological, and social factors. Understanding these dynamics is crucial for developing more effective, genderresponsive interventions and policies that address the challenges faced by different genders.

Future Research Directions

Future studies should prioritise culturally specific investigations into how gender influences risk-taking and ASPD, especially in the Indian context where social norms and stigma play a major role in shaping behaviour and diagnosis. There is a clear need for Indian-based research that examines how early experiences like abuse and bullying affect antisocial outcomes in men and women differently. Studies should explore whether the Threshold of Risk Hypothesis applies across cultural settings and whether current diagnostic criteria, developed largely around male behaviours, overlook ASPD in women. To do this effectively, researchers should use longitudinal designs to track behavioural patterns over time, and qualitative approaches—such as interviews or case studies to understand personal experiences and social influences. Mixed-methods studies combining statistical analysis with narrative insights would be especially useful in building a more complete picture of how risk and antisocial traits develop and vary by gender in diverse contexts.

Conclusion

Risk-taking and antisocial behaviour are deeply intertwined and influenced by a complex interplay of biological, psychological, and socioenvironmental factors. Extreme risk-taking is often associated with antisocial tendencies. Gender differences play a significant role in how these behaviours manifest, with men more frequently engaging in overtly aggressive and law-violating behaviours, whereas women exhibit impulsivity and emotional dysregulation. These disparities may stem from both biological predispositions and societal expectations, which shape perception, diagnosis, and intervention Emerging research strategies. challenges traditional notions of inherent gender differences in risk attitudes, suggesting that cultural and experiential factors significantly contribute to these patterns. Addressing gender biases in both

research and clinical practice is therefore crucial for developing more effective interventions.

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Competing interests

The authors declare no competing interests.

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