

# The Relationship between Emotional Recognition and Psychopathic Trait

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**Abstract.** The ability to recognize and understand emotions plays a fundamental role in human social interaction and is essential for effective communication and interpersonal relationships. Psychopathy, a personality disorder characterized by persistent antisocial behavior and impaired empathy, holds significant relevance in understanding criminal behavior, societal impact, and the implications of psychopathic traits on social functioning. In the intricate interplay between psychopathic traits and emotion recognition, prior research has highlighted the profound role of emotional processing in an individual's social functioning and development, alongside the considerable impact of psychopathic traits on these facets of life. To develop further into this complex relationship, this paper synthesizes existing research findings while elucidating current research gaps. These studies collectively revealed the diminished accuracy and efficiency in the emotional processing capabilities of high psychopathic individuals, as well as the emergence of atypical automatic emotional responses and subjective selection of emotional information in their interactions with emotional stimuli. Additionally, this review emphasizes the critical role played by primary psychopathic traits in shaping abnormal attention patterns, particularly the tendency of highly psychopathic individuals to divert their attention away from crucial emotion-carrying cues, such as the eyes of facial stimuli, especially when confronted with negative emotional expressions. The present review also recognizes certain limitations, mainly arising from sample size, self-report assessments, and the lack of comparison between clinical and nonclinical populations with high psychopathic traits. To address these constraints and further enrich people's comprehension, future research should focus on conducting longitudinal studies within high-risk populations.

**Keywords:** psychopathic trait; emotional recognition; attention pattern; eye-tracking.

## 1. Introduction

Psychopathy is a complex and intriguing psychological construct, which has long captivated the attention of researchers, clinicians, and the public alike. The term "psychopath" is commonly associated with individuals characterized by a distinctive set of personality traits and behaviors, including callousness, impulsivity, and a propensity for interpersonal manipulation [1]. Psychopathic traits, on the other hand, refer to a continuum of personality traits observed in varying degrees within the general population. These traits include a variety of primary traits like pathological lying, shallow affect, lack of empathy, guilt-free attitude, and superficial charm, as well as secondary traits like impulsivity, need for stimulation, poor behavioral controls, and criminal versatility [2]. Emotional recognition pertains to the capacity to recognize, comprehend, and react correctly to one's own and other people's emotions. This capacity plays a crucial role in social functioning and forms an integral aspect of empathy, a trait notably deficient in individuals with psychopathy [3].

Emotional recognition is a fundamental cognitive ability that underpins people's everyday interactions and profoundly influences interpersonal relationships and social functioning. It allows people to decipher and appropriately respond to the emotions of others, which is the base of communication, empathy, and cooperation. The loss or impairment of emotional recognition can have far-reaching consequences, leading to difficulties in navigating social situations, establishing meaningful connections, and comprehending the emotional states of others. For instance, individuals with impaired emotional recognition may struggle to interpret facial expressions or vocal cues, potentially resulting in misunderstandings and interpersonal conflicts [4].



Meanwhile, the study of psychopathic traits is also important in the field of psychological research. Psychopathic traits do not necessarily represent forensic psychopathy, but severe psychopathic traits can have a significant impact on a person's life and functioning. People who possess high degrees of psychopathic tendencies might display a variety of disconcerting behaviors, including manipulative tendencies, impulsivity, and a diminished ability to form genuine emotional bonds, etc. These traits can adversely affect interpersonal relationships, professional success, and social integration. The exploration of the association between psychopathic traits and emotional awareness is crucial. Understanding how these traits intersect and influence each other can provide valuable insights into the underlying mechanisms of psychopathy and its impact on social functioning. It can serve as an indicator of the extent to which psychopathic traits impede the capacity to recognize and react to other people's emotions, thereby revealing the significance of emotional deficits in psychopathy. This finding, in turn, can inform therapeutic interventions and strategies for individuals with psychopathic traits, thereby improving their ability to recognize emotions and, in turn, their social adjustment [5].

Psychopathic traits have been extensively theorized in the field of psychological research. In their review, Hare and Neumann pointed out that psychopathic traits are closely related to the under-control and basic antisocial characteristics of psychopathy, and that psychopathic traits have been recognized as a fundamental component of psychopathy [2]. Based on this theory, some investigators believe that psychopathy and under-controlled pathology are inherently related, while others consider that the disorder is primarily caused by an affective deficit. Evolving research has emphasized the inextricable link between affective and under-control components, revealing their significance in the construct of psychopathy. In addition, research has hinted at the important role of a wide range of genetic factors in shaping various psychopathic traits, which adds to the complexity of researchers' understanding of these traits within a psychopathic framework. Furthermore, studies of psychopathic traits have utilized assessment scales for neuroimaging studies, revealing structural and functional correlates of psychopathy, which continue to reveal abnormalities in cognitive and affective processes. Besides, some studies have focused on longitudinal aspects of psychopathic traits. Recent longitudinal studies have attempted to demonstrate moderate stability of these traits throughout development, thus reinforcing their integral role in the broader construct of psychopathy. However, despite the growing body of community-based research on psychopathy, very few large-scale, randomly selected sample studies have been implemented out. This weakness prevents investigators from generalizing their findings with greater confidence and comprehending the manner in which psychopathic traits are distributed and how they operate in the broader population [2].

The other main theme of this paper, emotion recognition, is also a fascinating area of psychology, and its evolution is marked by a wealth of theories and approaches. Thanapattheerakul et al. discussed several important theories in the psychology of emotions. Earlier theories, such as the James Lange theory, emphasized physiological responses as the source of emotions, while the Cannon-Bard theory suggested that emotions and physiological responses occur independently and simultaneously [6]. In addition, the Schachter-Singer theory added a cognitive dimension by suggesting that emotions arise from physiological responses and cognitive interpretations, embedding emotions in the contextual structure of people's experience. Complementing these theories were more cognitive aspects that emphasize the effects of perception, memory, and attention on the experience of emotions. The increasing prominence of these cognitive theories in recent decades has shifted the theoretical focus toward cognitive rather than visceral responses. With these theories, methodologies have evolved, with unimodal studies, multimodal approaches, and machine learning algorithms at the forefront. Unimodal studies delve into single modalities such as facial expressions or vocal tones to decode emotions, while multimodal studies utilize a range of holistic modalities. The rise of machine learning algorithms such as convolutional neural networks has revolutionized emotion recognition with their ability to analyze large data sets and adapt to new contexts. However, it is crucial to recognize the inherent imperfections of these algorithms as influenced by the quality of the data and underlying assumptions [6]. In this evolving process, theories and methods intertwine to shape people's complex understanding of human emotions and their recognition.

As the two distinct fields of emotion recognition and psychopathic traits become intertwined, contemporary research has begun to explore the relationship as well as practical applications in greater depth. In the field of emotion recognition, people have experienced a century of theoretical evolution, and these explorations have emphasized the intricate interplay of physiological, cognitive, and external stimuli in the experience of emotions. At the same time, studies on psychopathic traits have revealed the multifaceted nature of psychopathy, with emotional deficits being an important and influential trait in an individual's life. However, within these existing findings, there remains a distinct research gap — a comprehensive understanding of the association between emotion recognition and psychopathic traits. The purpose of this review article is twofold: to synthesize the results of existing research on the interactions between psychopathic traits and emotion recognition, and to point out the research gaps that remain. Further exploration of this area can provide new insights into psychopathology, as well as point the way forward in recognizing and treating psychopathy.

## **2. Emotional Processing and Psychopathic Traits**

### **2.1. Outcomes of Emotional Processing and High Level of Psychopathic Traits**

Facial expressions of emotion are an important indicator in social interactions, enabling appropriate or socially desirable responses and behaviors. Negative expressions such as fear, anger, and sadness especially, can help individuals to stop engaging in hurtful behaviors. Poor emotion recognition is one of the recognized consequences of psychopathic traits. This deficit may play an important role in developing low empathy and low guilt in psychopathic populations, causing them to treat others with indifference, and ultimately impairing their social functioning to the point of developing antisocial tendencies. The study conducted by Pardo et al. explored the interaction and moderating role between psychopathic traits, low facial emotion recognition (FER) competence, and low guilt among nonclinical samples [7]. The study measured participants' psychopathic traits and level of guilt feeling with self-reporting scales and evaluated their FER ability by asking them to label standard pictures of facial emotion. The result found that FER ability was positively associated with guilt-proneness, suggesting that those with higher FER skills are more likely to perceive guilty. Also, psychopathic traits were found to negatively impact FER ability for various facial expressions and were associated with lower levels of guilt-proneness [7]. Thus, a theory can be drawn from this study that psychopathic traits can be relative to deficiencies in identifying facial emotions as well as low guilt.

With this theoretical relationship known, the next step in the research will focus on the specific deficits that psychopathic groups have in processing emotional information. Brennan and Baskin-Sommers evaluated the ability to identify the emotion of ambiguous facial expressions in incarcerated males [8]. This study primarily examined the speed of response and accuracy of recognizing emotions when participants were confronted with facial expression information while the images moved away or closer. The study found that participants with higher psychopathic traits showed lower precision in identifying fearful and depressed appearances, but no comparable performance in recognizing other emotions. Meanwhile, these participants were also less sensitive to the intensity of emotional expressions [8]. Overall, the results indicated that higher psychopathic trait bearers are less emotionally sensitive and need more time to gather and process this information, especially for negative emotions. The study also supports the further theory that negative emotion processing deficiencies are linked to psychopathy.

The concern still remained whether high psychopathic individuals are less competent to identify facial emotions than normal people. In the research by Faith et al., psychopathic offenders were asked to classify unambiguous emotional facial expressions [9]. Unexpectedly, psychopathy had no significant impact on the preciseness of any of the six basic emotions in the accurate expression image condition. In addition, people who exhibit high degrees of psychopathy may have difficulty recognizing high-intensity happy expressions, but the effect did not occur in terms of recognizing low-intensity happy expressions. Therefore, the researchers concluded that there were no significant speed-accuracy trade-

offs in recognizing explicit facial expressions in psychopaths [9]. Combined with the findings of the above studies, psychopathic individuals are capable of recognizing unambiguous expressions, which suggests that they do not lack emotion recognition capacity, but rather are somewhat less effective than the general population in ambiguous situations. Another potential influencing factor is that all of these experiments used static images of expressions, but emotions in reality are usually dynamic and mixed. Psychopathic group's responses to emotions in real life remains unclear, which warrants further investigation.

## **2.2. Atypical Automatic Emotional Response**

In addition to exploring the capacity of psychopathic groups to autonomously recognize emotions, it is imperative to dissect the origins of this deficiency—whether it arises from an instinctual impairment rooted in psychopathic traits or from a selective disregard for the emotions of others. An illuminating study by Pfabigan et al. sought to unravel this conundrum by examining affective empathy, which refers to the ability to resonance or connect emotionally with others, among male violent offenders exhibiting high and low levels of psychopathy [10]. The researchers applied skin conductance response (SCR) to measure empathic reactions as participants viewed videos portraying individuals in states of distress and pain. Moreover, participants were asked to report their degree of unpleasantness in these distressing scenarios. The findings suggested that both the high- and low-trait psychopathic violent offenders displayed reduced automatic physiological arousal, indicative of a shared trait within this population. Also, the high psychopathic offenders displayed empathetic reactions akin to those of the controls who were not institutionalized, while the lower psychopathic group seemingly amplified their displays of empathy. These findings demonstrated that psychopathy's automatic emotional response was lower than people in control groups. The study can also imply that subjective description of one's empathy might not be precise, which can be affected by self-report bias and social desirability. Overall, the researchers might underscore the complicated association between emotional recognition and psychopathic traits, which demands consideration of both instinctual impairments and subjective dimensions [10].

## **3. Abnormal Patterns of Attention and Psychopathic Traits**

To further understand the intricate relationship between psychopathic traits and facial emotion recognition, it is essential to build a multifaceted exploration of visual attention patterns, with a specific emphasis on the critical role played by the eye and mouth regions as fundamental cues in recognizing emotions. This notion aligns with prior studies indicating a preference for paying attention to the eye region, which is a phenomenon that is present regardless of the type of emotions [11]. In a study by Boll and Gamer, they utilized eye-tracking technology to analyze gaze patterns while participants viewed facial expressions encompassing anger, fear, happiness, and neutrality in a group of healthy young adults. According to their findings, persons who reveal greater psychopathic traits explored faces less comprehensively and exhibited a reduced gaze preference toward the eye region, especially when driven by primary psychopathic traits such as Fearless Dominance, Coldheartedness, and Self-Centered Impulsivity [11]. Similarly, Gillespie et al. used high-intensity emotional expressions in their study of adult non-criminal males [12]. The results first indicated that eye region fixation was positively correlated with the accuracy in which negative emotions such as anger and fear are recognized. Conversely, individuals with higher primary psychopathic traits displayed diminished concentration to the eyes when confronted with emotional faces, as evidenced by both the total number of fixations and aggregate dwell time [12]. In sum, both of these studies converge on a common observation—the presence of primary psychopathic traits can result in a reduced attention to the eye area, which, in turn, could make it more difficult to accurately identify emotions.

Building upon the previous insights, it becomes evident that psychopathic traits extend beyond mere cognitive processes. The interpersonal-affective dimensions of psychopathy, often referred to as primary traits, delve into the core of this condition and carry potential implications for fundamental aspects of social cognition and interpersonal relationships [13]. Dargis et al.'s research explored the

connection between primary psychopathic traits and attention patterns. In this study, adult male criminal offenders were observed using eye-tracking techniques to record recognition and passive viewing of emotional facial expressions, including happiness, anger, fear, and neutrality, presented simultaneously on the screen. The findings demonstrated a strong correlation between psychopathic characteristics and decreased stabilization on the eye region of terrified faces during an emotion recognition test, which was notably influenced by interpersonal psychopathic traits, such as self-centeredness and deception. Conversely, the accuracy of fear recognition displayed an inverse relationship with affective psychopathic traits, such as callousness and a lack of empathy [13]. These findings suggest a compelling inference: individuals exhibiting a high degree of interpersonal-affective psychopathic traits tend to allocate less attention to the eyes of fearful faces. This effect may hold substantial implications for their emotional functioning.

To proceed with demonstrating how primary psychopathic traits affect the ability to recognize emotions, as well as clarify the automatic response and subjective attention selection, Burley and Gary measured the pupil responses of male mentally disordered offenders in the context of negative and positive emotional stimuli [14]. The findings showed that those with high primary psychopathic trait scores displayed reduced emotion regulation in their pupillary responses when exposed to negative and irate facial expressions, in contrast to their responses to positive stimuli. It is of note that these effects were transient, manifesting briefly after the onset of emotional stimuli. This implied that primary psychopathic patients might experience a delay in processing negative emotional cues rather than sustained insensitivity. In contrast, secondary psychopathic trait scores displayed no significant associations with alterations in pupillary responses [14]. These collective findings underscore that individuals bearing primary psychopathic traits exhibit specific psychological deficits when processing negative stimuli, especially within the realm of interpersonal-affective dimensions.

#### **4. Conclusion**

In conclusion, the exploration of psychopathic traits has revealed a complex interplay of factors that significantly influence emotional recognition in psychopathic individuals. First and foremost, it becomes evident that while psychopathic groups are not entirely devoid of emotion recognition competencies, they do exhibit distinct weaknesses in comparison to the general population, particularly in situations where emotional cues are ambiguous. Their processing of emotional information is characterized by reduced efficiency and a greater propensity for inaccuracies, reflecting a nuanced impairment in their ability to interpret and respond to emotional stimuli. This nuanced impairment takes center stage under the influence of primary psychopathic traits, which are marked by interpersonal-affective dimensions. Psychopathic individuals with intensive primary traits exhibit a striking deficiency in attending to the critical cue for emotion recognition—the eyes. This disregard for the area around the eyes has significant consequences, particularly in the accurate identification and interpretation of emotions, especially negative ones such as fear and anger. It is important to note that these deficits appear to stem from instinctive or automatic reactions, rather than conscious choices or deliberate cognitive processes. However, it is uncertain how research subjects will respond when confronted with dynamic and complex displays of others' emotions in a realistic situation outside of the experimental setup.

Taken together, these findings shed light on the multifaceted nature of psychopathy, highlighting the intricate relationship between emotional recognition deficits, attention patterns, and specific psychopathic traits. The influence of primary psychopathic traits, with their direct impact on attention to the eyes and their role in the delayed processing of negative emotional cues, emerges as a potential central theme. These insights not only deepen people's understanding of psychopathy but also have implications for the development of interventions and treatments aimed at addressing these nuanced impairments, contributing to a more comprehensive approach to the study and management of psychopathic traits.

However, it's crucial to acknowledge several limitations within this article. First, a recurring limitation across many of the studies reviewed is the sample size's relative smallness and the emphasis on adult male participants. This restricted participant pool may not fully capture the nuances of psychopathic traits and their effects on emotion recognition in a more diverse and representative sample. Expanding the participant pool to encompass a broader demographic would help advance a more thorough comprehension of the consequences of psychopathy on emotion recognition, as well as the potential gender-related variations in these dynamics. Another noteworthy limitation lies in the assessment of psychopathic traits, which primarily relies on self-assessment tools in the studies discussed. While these instruments provide valuable insights into the self-perception of psychopathy, they may not consistently align with clinical diagnoses. The precision of the results may be impacted by response biases and inaccuracies brought about by the use of self-reported measures. Incorporating clinician-administered assessments and objective measures in conjunction with self-reports could yield a more robust and accurate evaluation of psychopathic traits and their impact on emotion recognition. Furthermore, this article does not distinctly compare the general population and individuals within clinical or offender settings. Consequently, the magnitude of the impact of various psychopathic trait levels on the ability to recognize emotions and the extent to which deficits in emotion recognition are associated with criminal propensities remain unclear. This absence of differentiation limits the broader understanding of psychopathy's implications on a spectrum that encompasses both non-offending individuals and those involved in criminal activities. Addressing this distinction would contribute to a more nuanced comprehension of the specific dynamics involved in emotion recognition across diverse populations.

A promising avenue for future research lies in the development of longitudinal studies, particularly within high-risk populations. These studies could provide valuable insights into the nature of the emotion recognition deficits associated with psychopathy—whether they stem from inherent, inborn traits or are shaped by environmental influences over time. By following individuals from an early age and tracking their psychopathic traits and emotional recognition abilities across various life stages, researchers can better discern whether these deficits and relationships are present from birth or develop in response to environmental factors. This approach would not only offer a deeper understanding of the origins of emotion recognition impairments but also shed light on potential intervention strategies to mitigate or prevent these deficits. Longitudinal studies in high-risk populations have the potential to illuminate the intricate interplay between genetics, environmental factors, and psychopathy, contributing to a more comprehensive comprehension of this complex phenomenon.

## References

- [1] Hare R. D. Psychopathy checklist—revised. *PsycTESTS Dataset*, 1991.
- [2] Hare R. D., Neumann C. S. Psychopathy as a clinical and empirical construct. *Annual Review of Clinical Psychology*, 2008, 4(1): 217–246.
- [3] Blair R. J. R. Responding to the emotions of others: Dissociating forms of empathy through the study of typical and psychiatric populations. *Consciousness and Cognition*, 2005, 14(4): 698-718.
- [4] Adolphs R. Recognizing emotion from facial expressions: Psychological and neurological mechanisms. *Behavioral and Cognitive Neuroscience Reviews*, 2002, 1(1): 21–62.
- [5] Dadds M. R., Perry Y., Hawes D. J., Merz S., Riddell A. C., Haines D. J., Solak E., Abeygunawardane A. I. Attention to the eyes reverses fear-recognition deficits in child psychopathy. *British Journal of Psychiatry*, 2006, 189(3): 280-281.
- [6] Thanapattheerakul T., Mao, K., Amoranto J., Chan J. H. Emotion in a century. *Proceedings of the 10th International Conference on Advances in Information Technology*, 2018.
- [7] Prado C. E., Treeby M. S., Rice S. M., Crowe S. F. Facial emotion recognition, guilt and sub-clinical psychopathic traits: An exploration of Mediation Effects. *Motivation and Emotion*, 2017, 41(5): 636–645.
- [8] Brennan G. M., Baskin-Sommers A. R. Cognitive mechanisms influencing facial emotion processing in psychopathy and externalizing. *Personality Disorders: Theory, Research, and Treatment*, 2021, 12(6): 581–593.

- [9] Faith R. N., Beussink C. N., Miller S. A., Kosson D. S. Examining the association between speed–accuracy trade-offs and psychopathy among male offenders in a facial affect recognition task. *Personality Disorders: Theory, Research, and Treatment*, 2023, 14(2): 249–257.
- [10] Pfabigan D. M., Seidel, E.-M., Wucherer A. M., Keckeis K., Derntl B., Lamm C. Affective empathy differs in male violent offenders with high- and low-trait psychopathy. *Journal of Personality Disorders*, 2015, 29(1):42–61.
- [11] Boll S., Gamer M. Psychopathic traits affect the visual exploration of facial expressions. *Biological Psychology*, 2016, 117: 194–201.
- [12] Gillespie S. M., Rotshtein P., Wells L. J., Beech A. R., Mitchell I. J. Psychopathic traits are associated with reduced attention to the eyes of emotional faces among adult male non-offenders. *Frontiers in Human Neuroscience*, 2015, 9.
- [13] Dargis M., Wolf R. C., Koenigs M. Psychopathic traits are associated with reduced fixations to the eye region of fearful faces. *Journal of Abnormal Psychology*, 2018, 127(1): 43–50.
- [14] Burley D. T., Gray N. S., Snowden R. J. Emotional modulation of the pupil response in psychopathy. *Personality Disorders: Theory, Research, and Treatment*, 2019, 10(4): 365–375.