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THE EMPATHETIC MACHINE: A COMPREHENSIVE REVIEW OF EMOTIONAL INTELLIGENCE AND ARTIFICIAL SOCIAL INTELLIGENCE

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RESEARCH ARTICLE

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Abstract

This literature review provides a comprehensive synthesis of Emotional Intelligence (EI) and Artificial Social Intelligence (ASI), delving into their conceptual foundations, theoretical models, and diverse applications. It critically examines the evolving interplay between these distinct yet increasingly convergent fields, highlighting both the transformative benefits and the significant ethical and societal challenges arising from their integration. The analysis underscores the necessity of a nuanced understanding to guide future research, development, and policy, particularly in the domain of human-AI collaboration. The review traces the historical evolution of both EI, from early social intelligence concepts to modern theoretical frameworks and measurement approaches, and ASI, detailing its computational architectures and capabilities like Theory of Mind. It explores how human emotional capacities inspire and benchmark artificial social systems, while also considering AI's potential to reshape human emotional and social skills. This culminates in a critical discussion of concerns such as AI's simulated empathy, privacy, bias, and job displacement, offering a robust framework for future discourse and responsible development.

Keywords: *Emotional Intelligence, Artificial Social Intelligence, Theory of Mind (AI), Human-AI Interaction, Machine Learning, Ethical AI, Social Cognition*

1. Introduction

1.1. Overview of Emotional Intelligence (EI) and Artificial Social Intelligence (ASI)

Emotional Intelligence (EI) represents a crucial human capability involving the understanding and management of emotions, both within oneself and in interactions with others. It is widely recognized for its profound importance in fostering personal development, achieving professional success, and cultivating healthy interpersonal relationships (Alsawalqa, 2019; Goleman, 1995; Jose & Thomas, 2024; Salovey & Mayer, 1990). This capacity allows individuals to navigate complex social environments, build rapport, and respond effectively to emotional cues, thereby enhancing overall well-being and social cohesion (Goleman, 1995; Jose & Thomas, 2024; Salovey & Mayer, 1990).

In parallel, Artificial Social Intelligence (ASI) has emerged as a sophisticated computational counterpart, designed to comprehend, engage with, and address social problems in a manner analogous to human social intelligence (Fan et al., 2022; Salovey & Mayer, 1990). This field extends beyond traditional artificial intelligence paradigms, which often focus on logical or task-specific problem-solving, to encompass the nuanced understanding of social contexts, human intentions, beliefs, and intricate interpersonal dynamics (Fan et al., 2022; Williams et al., 2022; Salovey & Mayer, 1990). ASI is foundational to advanced human-AI interaction and the development of sophisticated multi-agent systems, aiming to imbue machines with the capacity for more natural and effective social engagement (Bendell et al., 2024; Fiore, 2025; Joo et al., 2019; Obot, 2021; SunilKumar, 2023; Williams et al., 2022; Zadeh et al., 2019; Salovey & Mayer, 1990).

1.2. Purpose and Scope of the Review

The primary objective of this paper is to enhance and expand upon existing literature by providing an expert-level, analytical synthesis of Emotional Intelligence (EI) and Artificial Social Intelligence (ASI). This involves a deep exploration of their theoretical underpinnings, an examination of their practical applications across various domains, and a critical analysis of the

complex, evolving relationship between these two fields. The report aims to move beyond a superficial overview to offer a detailed, interconnected understanding of human emotional capabilities and artificial social systems.

The scope of this review encompasses the historical developments of both EI and ASI, tracing their conceptual evolution. It includes a detailed examination of key theoretical models and measurement approaches for EI, providing a comprehensive understanding of how human emotional capacities are conceptualized and assessed. Furthermore, the report delves into the computational architectures and capabilities that underpin ASI, elucidating the technical mechanisms enabling machines to process and respond to social information. A significant portion of the analysis is dedicated to exploring the conceptual and empirical connections between human emotional capabilities and artificial social systems. This culminates in a critical examination of the technical, ethical, and broader societal challenges posed by the advancement of socially and emotionally intelligent AI, thereby providing a robust framework for future discourse and development in this rapidly evolving domain.

The exploration of this subject matter inherently demands an interdisciplinary approach. Understanding Emotional Intelligence draws heavily from psychology, education, and organizational behaviour, focusing on human cognition, emotion, and social interaction (Alsawalqa, 2019; Bar-On, 1997; Salovey & Mayer, 1990). Conversely, Artificial Social Intelligence is rooted in computer science, machine learning, and robotics, dealing with algorithms, computational models, and artificial systems (Fan et al., 2022; Miquido, 2024; Williams et al., 2022). The very nature of "Artificial Social Intelligence" bridges these distinct fields, as "social" implies human-like interaction and understanding, while "artificial" points to technological implementation. A comprehensive review must explicitly acknowledge and explore this interdisciplinary nature, as a superficial treatment of each field in isolation would overlook the profound connections and challenges at its intersection. For instance, developing AI empathy algorithms necessitates a deep understanding of the psychological nuances of human empathy. Conversely, the limitations of current AI in genuinely "feeling" emotions highlight critical gaps that require collaborative insights from both psychology and AI research. This interdisciplinary lens is fundamental to the analytical depth presented throughout this description, particularly in sections discussing the interplay and challenges.

1.3. Objectives of the Review

This review aims to achieve the following key objectives:

- To synthesize the conceptual foundations and theoretical models of Emotional Intelligence (EI) and Artificial Social Intelligence (ASI).
- To analyze the practical applications of EI and ASI across various human and technological domains.
- To critically evaluate the complex interplay, transformative benefits, and significant ethical and societal challenges arising from the integration of EI and ASI.

1.4. Methodology

This paper employs a comprehensive literature review approach, synthesizing findings from diverse research studies on Emotional Intelligence and Artificial Social Intelligence. The methodologies of the reviewed studies vary, encompassing quantitative methods, qualitative comparative research, and systematic reviews. This multi-methodological foundation allows for a robust and integrated analysis of the complex relationship between human emotional capabilities and artificial social systems.

2. Emotional Intelligence: Foundations, Models, and Applications

2.1. Historical Development and Core Definitions of EI

The historical trajectory of Emotional Intelligence (EI) extends significantly beyond its popularization in the late 20th century, tracing its conceptual roots back to earlier notions of non-cognitive intelligence. As early as the 1930s, psychologist Edward Thorndike introduced the concept of "social intelligence," defining it as the ability to effectively understand and manage human relations (Shylla & KG, 2021; Thorndike, 1930s). This foundational idea was further developed in the 1940s by David Wechsler, who proposed that various components of intelligence, beyond traditional cognitive measures, play a crucial role in an individual's success in life (Shylla & KG, 2021; Wechsler, 1940s).

The mid-1970s marked another significant step with Howard Gardner's introduction of "interpersonal intelligence" as part of his theory of multiple intelligences. Gardner defined this as the capacity to understand and interact effectively with other people, a concept that profoundly influenced the subsequent development of EI (Gardner, 1983; Shylla & KG, 2021). The specific term "emotional intelligence" first appeared in a doctoral dissertation by Wayne Payne in 1985 and was used in an article by Keith Beasley in Mensa Magazine in 1987 (Payne, 1985, Beasley, 1987). However, it was formally coined and rigorously defined by psychologists Peter Salovey and John Mayer in their landmark 1990 article (Alsawalqa, 2019; Salovey & Mayer, 1990; Shylla & KG, 2021). They conceptualized EI as "the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990).

The concept of EI gained widespread public and academic recognition following the publication of Daniel Goleman's 1995 book, "Emotional Intelligence: Why It Can Matter More Than IQ." Goleman's work popularized the idea, positioning EI as a significant predictor of success in various life domains, including the workplace (Goleman, 1995; Shylla & KG, 2021; Alsawalqa, 2019). This progression from early, broad notions of social intelligence to the specific focus on emotional abilities underscores a critical evolution in psychological thought. The initial recognition of non-academic "intelligence," such as social intelligence, gradually refined its focus to the specific role of emotions within interpersonal functioning, culminating in the formal concept of emotional intelligence. This historical refinement is particularly relevant when considering Artificial Social Intelligence (ASI), as ASI aims to encompass a wider range of social behaviours, with emotional understanding being a critical, though not exclusive, component (Fan et al., 2022; Salovey & Mayer, 1990). Understanding this historical development helps to frame the relationship between human EI and ASI more precisely, moving beyond a simple correlation to a more nuanced understanding of how emotional capabilities contribute to overall social intelligence, both human and artificial.

2.2. Key Theoretical Models of Emotional Intelligence

The field of Emotional Intelligence is characterized by several distinct theoretical models, each offering a unique conceptualization of EI and influencing its measurement and application. These models can broadly be categorized into ability, mixed, and trait models, reflecting different perspectives on whether EI is a cognitive capacity, a blend of cognitive and personality traits, or a self-perception (Mayer et al., 2007; Ramos-Galarza et al., 2024).

Ability Model (Mayer & Salovey): This model views EI as a pure form of mental ability, suggesting it can be measured objectively, akin to traditional cognitive intelligence (IQ) (Mayer et al., 2007; Ramos-Galarza et al., 2024). It is structured around four interconnected branches, representing a hierarchy of emotional skills (Mayer & Salovey, 2002; Salovey & Mayer, 1990; Shylla & KG, 2021):

- **Perceiving Emotions:** This is the foundational capacity to accurately identify emotions in oneself, others, and various stimuli such as objects, art, stories, and music (Brackett et al., 2013; Mayer & Salovey, 2002; Salovey & Mayer, 1990). This branch includes the nuanced ability to discern genuine from deceptive emotional expressions and to understand cultural variations in emotional display.
- **Using Emotions to Facilitate Thought:** This involves the skill of leveraging emotional states to enhance cognitive processes. It encompasses selecting problems based on how a current mood might aid cognition, generating different cognitive perspectives through mood swings, prioritizing thinking by directing attention according to present feelings, and using emotions to relate to others' experiences or to aid judgment and memory (Mayer & Salovey, 2002; Salovey & Mayer, 1990).
- **Understanding Emotions:** This branch refers to the ability to comprehend emotional information, including how emotions combine, progress through relationship transitions, and the meanings conveyed by emotional language (Mayer & Salovey, 2002; Salovey & Mayer, 1990). It also involves recognizing likely transitions between emotions (e.g., from anger to satisfaction) and differentiating between moods and emotions.
- **Managing Emotions:** Representing the highest level of emotional intelligence, this involves the capacity to be open to feelings and to modulate them in oneself and others to promote personal understanding and growth (Mayer & Salovey, 2002; Salovey & Mayer, 1990).

Mixed Models (Goleman, Bar-On): These models integrate mental capacities with various personality traits and social competencies, presenting a broader view of EI that often includes aspects like motivation and social skills (Mayer et al., 2007; Ramos-Galarza et al., 2024).

- **Daniel Goleman's Model:** Initially proposed with five domains in 1998 and later refined to four in 2002, Goleman's framework emphasizes practical competencies crucial for personal and professional success (Goleman, 1998; Goleman et al., 2002; Jose & Thomas, 2024). Key components include:
  - *Self-awareness:* The ability to recognize one's own emotions, strengths, weaknesses, values, and their impact on thoughts and behaviour (Goleman, 1998; Goleman et al., 2002; Jose & Thomas, 2024; Kapable; Ohio 4-H).
  - *Self-regulation (or Self-management):* The capacity to manage one's emotions, impulses, and actions constructively, adapting to changing circumstances and maintaining composure under pressure (Goleman, 1998; Goleman et al., 2002; Jose & Thomas, 2024; Kapable; Ohio 4-H).
  - *Motivation:* An internal drive to pursue goals with energy and persistence, often stemming from intrinsic factors like personal values and passions rather than external rewards (Goleman, 1998; Jose & Thomas, 2024).
  - *Social Awareness (or Empathy):* The capacity to understand and empathize with the emotions, perspectives, and concerns of others, including picking up on nonverbal cues and sensing group moods (Goleman, 1998; Goleman et al., 2002; Jose & Thomas, 2024; Kapable; Ohio 4-H).

- *Relationship Management (or Social Skills):* The adeptness at inducing desirable responses in others, encompassing effective communication, inspirational leadership, conflict management, and fostering teamwork and collaboration (Goleman, 1998; Goleman et al., 2002; Jose & Thomas, 2024; Kapable; Ohio 4-H).

- **Reuven Bar-On's Model:** Bar-On conceptualizes EI as a set of interconnected emotional and social competencies that contribute to overall emotional and social functioning. He posits that these competencies develop over time and can be improved through training (Bar-On, 1997; Bar-On, 2004; Ramos-Galarza et al., 2024). His model comprises 15 competencies grouped into five main factors: Intrapersonal, Interpersonal, Stress Management, Adaptability, and General Mood (Bar-On, 1997; Bar-On, 2004; Ramos-Galarza et al., 2024).

Trait Model (Petrides): This model defines EI as a "constellation of emotional self-perceptions located at the lower levels of personality," distinguishing it from cognitive ability (Petrides & Furnham, 2000; Ramos-Galarza et al., 2024). It refers to an individual's self-perceptions of their emotional abilities, often labeled as trait emotional self-efficacy (Petrides & Furnham, 2000; Ramos-Galarza et al., 2024). The Trait Emotional Intelligence Questionnaire (TEIQ) measures this model, assessing factors such as Well-being, Self-control, Emotionality, and Sociability (Petrides, 2009; Petrides & Furnham, 2000).

The presence of these distinct theoretical frameworks for EI highlights a significant aspect of the field. Each model defines EI differently, with Mayer & Salovey emphasizing cognitive abilities, Goleman and Bar-On integrating personality traits and social competencies, and Petrides focusing on self-reported emotional dispositions. These divergent conceptualizations directly lead to different research methodologies, measurement tools, and interpretations of findings. For example, a study using a self-report measure based on a mixed or trait model might capture an individual's *perception* of their emotional abilities, whereas an ability-based test would assess their *actual performance* on emotional tasks. This divergence presents a considerable challenge for synthesizing research findings across the field, as conclusions drawn from studies using one model may not be directly comparable or generalizable to studies using another. Furthermore, this complexity directly impacts the development of Artificial Social Intelligence (ASI): if there is not a single, universally agreed-upon definition of human EI, then the target for AI to "model" or "replicate" becomes ambiguous. This necessitates a careful approach to how AI systems are designed to incorporate emotional intelligence, acknowledging the specific EI model they are attempting to emulate.

Table 1: Comparative Overview of Key Emotional Intelligence Models

Model Name	Key Proponents	Conceptualization	Core Components/Dimensions	Measurement Approach (Examples)
Mayer & Salovey's Ability Model	John Mayer & Peter Salovey	EI as a pure mental ability, objectively measurable.	Perceiving Emotions, Using Emotions to Facilitate Thought, Understanding Emotions, Managing Emotions.	MSCEIT (Ability Test) (Mayer & Salovey, 2002; Ramos-Galarza et al., 2024)
Daniel Goleman's Mixed Model	Daniel Goleman	EI as a combination of mental capacities and personality traits/competencies.	Self-Awareness, Self-Regulation, Motivation, Social Awareness (Empathy), Social Skills (Relationship Management).	ECI (Emotional Competence Inventory) (360-degree assessment) (Boyatzis et al., 1999; Emotional Competence Inventory)
Reuven Bar-On's Mixed Model	Reuven Bar-On	EI as a set of emotional and social competencies that develop over time.	Intrapersonal, Interpersonal, Stress Management, Adaptability, General Mood (with sub-factors like Self-regard, Empathy, Stress tolerance, Flexibility, Optimism, Happiness).	EQ-i (Emotional Quotient Inventory) (Self-report) (Bar-On, 1997; Bar-On, 2004; Ramos-Galarza et al., 2024)
Petrides' Trait Model	K.V. Petrides	EI as self-perceptions of emotional abilities, a constellation of personality traits.	Well-being, Self-control, Emotionality, Sociability (with facets like Happiness, Impulse Control, Empathy, Assertiveness).	TEIQue (Trait Emotional Intelligence Questionnaire) (Self-report) (Petrides, 2009; Petrides & Furnham, 2000)

2.3. Measurement Approaches for Emotional Intelligence

The theoretical diversity within EI models has naturally led to a variety of measurement approaches, each possessing distinct strengths and limitations. These approaches reflect the underlying conceptualization of EI, influencing how it is quantified and interpreted in research and practice.

Ability-based tests are designed to objectively measure an individual's capacity to perform tasks related to emotional intelligence. The most prominent example in this category is the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT). This

instrument directly assesses the four branches of the Mayer and Salovey model: perceiving, using, understanding, and managing emotions (Mayer & Salovey, 2002; Ramos-Galarza et al., 2024). The MSCEIT is structured similarly to traditional IQ tests, where responses are scored based on consensus among a large sample or expert judgment, aiming to provide an objective measure of emotional ability (Mayer & Salovey, 2002; Mayer et al., 2003; Ramos-Galarza et al., 2024; Stys & Brown, 2004).

In contrast, self-report measures, often associated with mixed and trait models, rely on individuals' subjective perceptions of their own emotional abilities and behaviours. These can also incorporate 360-degree feedback, gathering perceptions from peers, supervisors, and subordinates. The Bar-On Emotional Quotient Inventory (EQ-i) is a widely used self-report measure for Bar-On's mixed model, assessing 15 competencies across five factors related to intrapersonal, interpersonal, stress management, adaptability, and general mood (Bar-On, 1997; Bar-On, 2004; Fiveable; Ramos-Galarza et al., 2024). Similarly, the Emotional Competence Inventory (ECI), based on Goleman's model, is a 360-degree assessment tool that measures 18 competencies across four clusters (Self-Awareness, Self-Management, Social Awareness, and Relationship Management), providing valuable feedback for personal development (Boyatzis et al., 1999). The Trait Emotional Intelligence Questionnaire (TEIQue) is another self-assessment measure specifically designed for Petrides' trait model, comprising 153 items rated on a Likert scale to assess emotional self-perceptions (Petrides, 2009; Petrides & Furnham, 2000).

The proliferation of EI measurement tools, including MSCEIT, EQ-i, ECI, and TEIQue, highlights a significant challenge in the field: the absence of a single, universally accepted, and robustly validated measurement approach. The methodological differences, where ability tests aim for objective performance and self-reports capture perceptions, mean that the choice of measurement tool is not neutral. It directly influences the specific aspects of EI being assessed and, consequently, the research findings and their interpretation. Concerns have been raised that many newer tests promising to measure emotional intelligence have not been sufficiently empirically evaluated, and that mixed or trait models often incorporate personality traits rather than pure intellectual abilities (Mayer & Salovey, 2002; Ramos-Galarza et al., 2024). Furthermore, the reliability of "self" ratings can vary compared to "others" ratings in instruments like the ECI (Emotional Competence Inventory). This fragmented measurement landscape makes it inherently difficult to compare and synthesize results across different studies, as evidenced by the diverse scales employed in various studies found in the literature. For the development of Artificial Social Intelligence, this poses a critical problem: if the "ground truth" of human emotional intelligence is measured inconsistently or with varying validity, then the data used to train and evaluate AI systems for emotional capabilities will be similarly affected. This could lead to AI models optimized for a specific, narrow definition of EI rather than a comprehensive one, underscoring the need for careful consideration of measurement validity when interpreting research on both human and artificial emotional intelligence.

2.4. Applications of Emotional Intelligence in Human Contexts

Emotional Intelligence is recognized as a pervasive and profoundly beneficial human capability, impacting numerous life domains far beyond individual psychological well-being. Its influence extends across professional, educational, and personal spheres, contributing significantly to success and overall quality of life.

In the workplace and leadership, EI is critical for fostering productive and harmonious environments. It significantly contributes to organizational effectiveness by enabling improved communication, facilitating better decision-making, and increasing employee engagement (Alsawalqa, 2019; Desti & Shanthi, 2015; Goleman, 1998; Jose & Thomas, 2024; Obot, 2021). Leaders with high EI are better equipped to inspire and motivate their teams, create positive work environments, manage conflicts constructively, and adapt effectively to change (Desti & Shanthi, 2015; Goleman, 1998; Jose & Thomas, 2024; Obot, 2021; Ohio 4-H). Practical examples include leaders actively listening in meetings, fostering open communication, and managing change initiatives with an understanding of their impact on people (Ohio 4-H). Organizations with high levels of EI have also been shown to have higher employee engagement and better talent retention (Alsawalqa, 2019; Bar-On et al., 2006).

In the realm of education, EI plays a vital role in the academic and personal development of students. It can help college students alleviate negative psychological effects such as stress or sadness, facilitate the building of healthy interpersonal interactions, and ease the transition to new social and academic environments (Salovey & Mayer, 1990). Developing EI in students enhances self-awareness, self-regulation, empathy, and social skills (Ohio 4-H; Jose & Thomas, 2024). Practical applications include creating designated "take a break" or "feelings" corners in classrooms to promote self-awareness and providing opportunities for real-life practice of empathy through group projects or random acts of kindness (Ohio 4-H). Such initiatives foster a safe and productive learning environment and promote metacognition among students (Ohio 4-H).

At an individual level, in personal life and mental health, EI is fundamental for overall well-being. It contributes to healthier interpersonal relationships through improved empathy and communication skills, and is associated with lower levels of stress and anxiety (Bar-On, 1997; Salovey & Mayer, 1990). Individuals with high EI demonstrate a greater capacity to cope with daily demands and challenges, effectively managing their emotions and adjusting to various social situations (Bar-On, 1997; Bar-On, 2004; Salovey & Mayer, 1990; Shylla & KG, 2021). The ability to understand and empathize with others' emotions is crucial for building trust and navigating social dynamics (Bar-On, 1997).

The extensive range of applications for Emotional Intelligence demonstrates that it is not a specialized or niche skill, but rather a fundamental human competency that profoundly influences success and well-being across virtually all aspects of life. The benefits span from individual psychological resilience to complex group dynamics and organizational outcomes. This comprehensive understanding of EI's pervasive positive impact underscores the significant potential value of developing Artificial Social Intelligence. If AI can genuinely acquire or simulate aspects of EI, its influence on human society could be equally transformative and widespread, offering benefits in areas from workplace productivity to mental health support. This sets a high benchmark for ASI development, as human EI operates effectively across highly diverse, complex, and often unpredictable social scenarios.

Table 2: Applications of Emotional Intelligence in Human Domains

Domain	Specific Applications/Benefits	Key Outcomes
Workplace/Leadership	Improved communication, better decision-making, increased empathy, enhanced resilience, higher employee engagement, effective conflict resolution, inspiring and motivating teams, fostering positive work environments, effective change management, promoting flexibility (Desti & Shanthi, 2015; Goleman, 1998; Jose & Thomas, 2024; Obot, 2021; Ohio 4-H)	Enhanced individual and organizational success, improved productivity and retention, better social adaptation (Alsawalqa, 2019)
Education	Alleviating negative psychological effects (stress, sadness), building healthy interpersonal interactions, easing transitions to family and school life, developing self-awareness, self-regulation, empathy, and social skills in students, creating safe and productive classroom environments, promoting metacognition, fostering cooperation (Jose & Thomas, 2024; Ohio 4-H; Salovey & Mayer, 1990)	Improved student well-being, enhanced academic and social development
Personal Relationships/Mental Health	Healthier relationships through improved empathy and communication, lower stress and anxiety levels, effective emotion management, coping with daily demands and challenges, adapting to situations (Bar-On, 1997; Salovey & Mayer, 1990; Shylla & KG, 2021)	Overall well-being, stronger social bonds, increased emotional resilience

3. Artificial Social Intelligence: Concepts, Architectures, and Capabilities

3.1. Defining Artificial Social Intelligence and its Evolution

Artificial Social Intelligence (ASI) represents a sophisticated and rapidly evolving branch of artificial intelligence. It is specifically focused on enabling machines to comprehend, engage with, and address social problems in a manner comparable to human social intelligence (Fan et al., 2022; Salovey & Mayer, 1990). This endeavour goes beyond mere data processing or task automation, aiming for a nuanced understanding of social contexts, human intentions, beliefs, and the complex dynamics of interpersonal relationships (Fan et al., 2022; Williams et al., 2022; Salovey & Mayer, 1990). A core aspect of ASI is its capacity to understand that people's intentions and opinions can differ greatly, which is fundamental to navigating diverse social interactions (Salovey & Mayer, 1990).

The evolution of AI towards social intelligence signifies a critical paradigm shift in the field. While traditional AI has achieved remarkable human-level intelligence in specific, often data-driven, tasks – such as mastering complex games like chess or go, or excelling in image recognition – ASI distinguishes itself by explicitly focusing on the cognitive skills required for interacting with the social world (Fan et al., 2022). This contrasts with the development of "physical intelligence," which deals with the physical environment (Fan et al., 2022). This detailed understanding reveals a fundamental shift in AI development, moving from optimizing performance for well-defined, often singular tasks, to venturing into the inherently complex, ambiguous, and dynamic domain of human social interaction. This requires not just computational efficiency but a deep, nuanced understanding of context, implicit social cues, and the ability to adapt to the unpredictable variability of human behaviour. This paradigm shift implies that ASI is moving beyond purely logical or statistical processing to a more holistic, human-centric approach. This makes the connection to human emotional intelligence not just relevant but absolutely critical, as emotions are central to human social dynamics. ASI's goal is not merely to perform tasks, but to perform them *socially*, which demands a distinct set of capabilities and raises unique challenges.

ASI is already integrating into emerging technologies, demonstrating its practical relevance. For instance, it is a crucial component in Internet of Things (IoT) communication, where devices are designed to establish and maintain social relationships across various platforms, often managed and stored in cloud environments (Salovey & Mayer, 1990). This highlights ASI's practical integration into networked systems, enabling more intuitive and context-aware interactions between devices and, by extension, with human users.

3.2. Theory of Mind (ToM) in AI: Mechanisms and Implementation

Theory of Mind (ToM) stands as a cornerstone of social cognition, referring to the intricate mechanisms that enable an agent – whether human or artificial – to successfully interact socially with others by attributing mental states such as knowledge, beliefs, desires, and intentions (Rabinowitz et al., 2018; Williams et al., 2022; Zadeh et al., 2019; Salovey & Mayer, 1990). This sophisticated capability is indispensable for analyzing, interpreting, explaining, and ultimately forecasting the behaviour of other agents in social contexts (Rabinowitz et al., 2018; Salovey & Mayer, 1990).

The development of "Artificial Theory of Mind (AToM)" is a pivotal objective in ASI research, particularly aimed at fostering more effective and natural human-AI team interactions (Bendell et al., 2024; Williams et al., 2022; Salovey & Mayer, 1990). Researchers are actively exploring methodologies to imbue AI agents with a priori, machine-readable knowledge about human team members, thereby supporting the development of AToM (Salovey & Mayer, 1990). This involves understanding how human characteristics and team dynamics influence performance and perceptions of AI advisors within collaborative tasks (Bendell et al., 2024; Williams et al., 2022; Salovey & Mayer, 1990).

Implementation Approaches: A notable advancement in this area is the ToMnet, a neural network architecture designed to build models of other agents solely from observations of their behaviour (Rabinowitz et al., 2018). Through meta-learning, ToMnet learns to infer agents' goals, understand how they balance costs and rewards, characterize different "species" of agents (e.g., random, algorithmic, or deep reinforcement learning agents), and can even implicitly learn that agents can hold false beliefs about the world – a core component of human ToM, as demonstrated by its ability to pass classic ToM tasks like the "Sally-Anne" test (Rabinowitz et al., 2018). This represents a significant step towards enabling AI to predict and plan interactions with other entities based on an understanding of their internal states (Rabinowitz et al., 2018).

Challenges in ToM Implementation: Despite these impressive advancements, implementing robust and generalizable ToM in AI faces substantial challenges. A critical examination of the field reveals common misconceptions that can impede progress. These include the tendency to oversimplify ToM as a single, modular component, the assumption that every social interaction necessitates advanced ToM, the belief that all forms of ToM are identical, or making premature claims that current systems already possess generalizable ToM (Rabinowitz et al., 2018). Human ToM is inherently multifaceted, context-dependent, and often relies on cognitive shortcuts rather than exhaustive analysis in everyday interactions (Rabinowitz et al., 2018). This detailed understanding reveals a significant gap: while AI can *simulate* aspects of ToM, such as predicting behaviour based on observed patterns, it often lacks the *genuine understanding* and *flexibility* of human ToM, which involves deep comprehension of intentions, beliefs, and desires. This limitation directly impacts the capacity for AI to exhibit human intuition and empathy in complex social scenarios (Rabinowitz et al., 2018). If AI cannot truly grasp the nuances of human mental states, it fundamentally affects the level of trust humans can place in AI collaborators. This tension between sophisticated simulation and true comprehension is a critical ethical and practical challenge, contributing to phenomena like the "uncanny valley," where near-human AI evokes discomfort (Mori, 1970), and raising concerns about potential deception or manipulation (Rabinowitz et al., 2018). Achieving true, human-like ToM in AI remains a grand challenge, and current capabilities, while impressive, are not equivalent to the depth and breadth of human understanding.

3.3. Computational Approaches to Artificial Social Intelligence

The development of Artificial Social Intelligence relies heavily on advanced computational techniques, primarily drawing from various subfields of machine learning and the design of sophisticated cognitive architectures. These approaches enable AI systems to process, interpret, and generate socially intelligent behaviours.

Machine Learning (ML) forms the foundational backbone of many ASI capabilities, allowing systems to learn from vast datasets and adapt their social behaviours over time (Fan et al., 2022; Miquido, 2024).

- **Deep Learning (DL):** Deep neural networks, particularly Large Language Models (LLMs), have revolutionized ASI by enabling agents to sense, perceive, reason about, learn from, and respond to affective, behavioural, and cognitive constructs of other agents (human or artificial) (Fan et al., 2022). These models are trained on extensive datasets encompassing human conversation, literature, and various media, allowing them to recognize intricate patterns in language that convey empathy and emotional nuance (Patel, 2025).
- **Reinforcement Learning (RL) and Multi-Agent Reinforcement Learning (MARL):** These approaches are crucial for enabling AI agents to learn complex social behaviours, rapidly adapt to new circumstances, and cooperate to achieve joint goals in dynamic environments. MARL, in particular, focuses on the behaviour of multiple learning agents coexisting in a shared environment. In such settings, each agent is motivated by its own rewards but must also navigate complex social dynamics, including cooperation, competition, and coordination. This field draws heavily on game theory concepts to model cooperative, competitive, and mixed scenarios, where agents learn strategies to maximize their own interests while interacting with others.

Cognitive Architectures: These are computational models designed to capture the underlying mechanisms and structures of human cognition, providing a blueprint for building systems that replicate human thought processes (Miquido, 2024). They integrate core cognitive components such as perception, attention, memory, reasoning, and decision-making into a cohesive system (Miquido, 2024). The primary objective of these architectures is to bridge the gap between AI and human cognition, allowing AI systems to think and learn in a more human-like manner. This enhances their adaptability, efficiency, and overall capability in handling complex social tasks, moving beyond mere pattern recognition to more structured reasoning (Miquido, 2024).

The development of ASI involves a dynamic interplay of data-driven and model-driven approaches. Machine Learning, especially Deep Learning and LLMs, excels at learning complex patterns from massive datasets of human social and emotional interactions, enabling the generation of human-like responses. Reinforcement Learning focuses on learning behaviours through trial and error in social environments. These data-driven approaches are powerful for generating plausible social behaviours and recognizing complex patterns, but they often lack interpretability and true understanding of the underlying social dynamics. In contrast, model-driven approaches, such as Cognitive Architectures and Theory of Mind (ToM) implementations like ToMnet, aim to explicitly mimic the structural and functional organization of human cognition and build explicit models of other agents' mental states. These approaches strive for deeper understanding and interpretability but can be complex to scale or generalize across diverse scenarios. The future of ASI likely lies in a hybrid approach that combines the powerful pattern recognition and generative capabilities of deep learning with the structured reasoning and explicit knowledge representation of cognitive models (Fan et al., 2022). This integration is essential for creating AI that is not only capable of sophisticated social interaction but also transparent, reliable, and truly "intelligent" in a human-like social context, addressing the inherent limitations of each approach in isolation.

Table 3: Core Concepts and Approaches in Artificial Social Intelligence

Concept/Approach	Brief Description	Key Role in ASI
Artificial Social Intelligence (ASI)	AI designed to comprehend, engage with, and deal with social problems in a human-like manner (Fan et al., 2022; Salovey & Mayer, 1990).	The overarching goal of creating AI systems capable of sophisticated social interaction and understanding.
Theory of Mind (ToM) in AI	AI's ability to understand and predict mental states (beliefs, desires, intentions) of other agents, crucial for social interaction (Rabinowitz et al., 2018; Williams et al., 2022; Zadeh et al., 2019; Salovey & Mayer, 1990).	Enables AI to infer and model the internal states of social agents, critical for nuanced and effective interaction.
Cognitive Architectures	Computational models that aim to capture the underlying mechanisms and structures of human cognition (Miquido, 2024; Number Analytics).	Provides the structural and functional blueprint for building AI systems that mimic human-like cognitive processes essential for social intelligence.
Deep Learning (DL)	A subset of ML using deep neural networks (e.g., LLMs) trained on vast datasets to recognize patterns in social/emotional language and behaviour, enabling generation of human-like responses and perception (Fan et al., 2022; Patel, 2025).	Powers the perception of social cues (e.g., emotion recognition), generation of socially appropriate responses (e.g., empathic language), and complex pattern recognition in social data.
Reinforcement Learning (RL) / Multi-Agent Reinforcement Learning (MARL)	Algorithms enabling AI agents to learn complex social behaviours, adapt to new circumstances, and cooperate/compete through rewards in shared environments.	Drives the learning of dynamic social interaction strategies, cooperation, coordination, and negotiation behaviours in multi-agent settings.

3.4. Applications of Artificial Social Intelligence

The capabilities of Artificial Social Intelligence are expanding rapidly, moving beyond rudimentary interactions to deeply integrated roles across various sectors, fundamentally reshaping human-AI collaboration. These applications demonstrate ASI's increasing sophistication and its potential to influence diverse aspects of daily life.

In the realm of Human-AI Interaction, ASI powers a wide array of tools and systems:

- **Virtual Assistants and Chatbots:** Widely deployed applications such as Siri, Alexa, Google Assistant, and advanced chatbots (e.g., ChatGPT) exemplify ASI's ability to understand and respond to human language, perform tasks, and provide information (Interaction Design Foundation; Simplilearn). These systems can simulate conversations, offer personalized support, and provide guidance in various scenarios, demonstrating a growing capacity for emotionally attuned responses (Jose & Thomas, 2024).

- **Collaborative Decision-Making:** ASI enables AI to work alongside humans in complex decision-making contexts. It provides data-driven insights, analyzes vast amounts of information, and supports human decision-making processes across diverse fields, from business strategy to critical incident management (Interaction Design Foundation; Simplilearn).
- **Personalized Recommendations:** AI algorithms leverage social intelligence to analyze user preferences, behaviour, and historical data, offering highly personalized recommendations for content, products, or connections. This is prevalent in streaming services, online shopping platforms, and social media, where AI suggests relevant items based on individual user profiles and inferred social patterns (Interaction Design Foundation; Simplilearn).
- **Healthcare and Mental Health Support:** ASI is transforming healthcare by assisting with diagnosis, treatment planning, and patient monitoring. Notably, AI-powered conversational agents can provide personalized emotional support and guided conversations, helping individuals develop Theory of Mind skills and improve communication in mental health contexts (Garcia-Lopez, 2024). These systems offer always-available support, which can be particularly beneficial for vulnerable individuals.
- **Education:** Adaptive learning platforms and intelligent feedback systems powered by ASI can customize educational content based on individual student needs, enhancing the learning experience and outcomes by providing personalized instruction and assessment (Interaction Design Foundation; Simplilearn).

Beyond virtual interfaces, ASI is integral to the advancement of Social Robotics:

- Socially intelligent robots are designed to interpret human emotions through a variety of cues, including facial expressions, voice tone, and body language (Miquido, 2024). They utilize Natural Language Processing (NLP) to understand and generate human language, enabling more natural and meaningful conversations (Miquido, 2024).
- These robots can adapt and personalize their interactions based on individual preferences and past experiences through adaptive learning techniques, continuously refining their behaviours to align with user needs (Miquido, 2024). Furthermore, they possess cognitive learning and problem-solving skills, allowing them to modify their behaviour, handle novel situations, and perform complex tasks in dynamic environments, making them valuable assets in various fields like household assistance or education (Miquido, 2024).

The expanding reach of ASI beyond traditional AI applications is a notable development. Its increasing integration into critical and personal domains of human daily life, well-being, and personal development signifies a profound shift. This expansion amplifies the stakes for ethical development and responsible deployment, as its influence extends to areas where human emotional and social well-being are paramount. This necessitates a careful consideration of the long-term societal effects, the quality of human-AI relationships, and the potential for both positive augmentation and unforeseen negative consequences, which are explored in subsequent sections.

4. The Interplay of Emotional Intelligence and Artificial Social Intelligence

4.1. Conceptual and Empirical Connections between EI and ASI

The relationship between Emotional Intelligence (EI) and Artificial Social Intelligence (ASI) is multifaceted, extending beyond a simple correlation to a complex interplay of influence and emulation. Human studies consistently demonstrate a positive correlation between social intelligence and emotional intelligence, indicating that these capacities are often intertwined in human functioning (Alsawalqa, 2019; Bar-On, 1997). Indeed, emotion is considered an essential component for shaping the broader concept of social intelligence, making it more inclusive and comprehensive (Alsawalqa, 2019; Fan et al., 2022). This suggests that emotional capabilities are not merely an adjunct to social intelligence but a fundamental building block.

From a human perspective, individuals possessing high emotional intelligence are better equipped to adjust to diverse social situations and effectively manage their own emotions. These skills are directly relevant to ASI's objective of handling complex social contexts and interacting seamlessly with humans (Salovey & Mayer, 1990). The very goal of ASI is to create computational systems that can comprehend and engage with social problems in a manner comparable to human social intelligence, implying that human emotional and social capabilities serve as a primary source of inspiration and a benchmark for ASI development (Fan et al., 2022; Salovey & Mayer, 1990).

A key conceptual link is the growing recognition that for AI to evolve into a "true colleague" in collaborative environments, it must acquire socio-cognitive skills comparable to humans (Salovey & Mayer, 1990). This implies that ASI's development is inherently guided by the understanding and attempted replication of human emotional and social capabilities. This is not merely a one-way flow of inspiration from human EI to ASI, but rather a more complex, bidirectional influence. While ASI aims to mimic and replicate human emotional and social intelligence, AI also possesses the potential to profoundly shape human emotional and social capabilities, both positively and negatively. For instance, AI can reduce the workload of human professionals, such as managers and healthcare workers, thereby freeing up their cognitive capacity and time to engage more compassionately and empathetically with people (Neuro Leadership Institute). This suggests that AI can indirectly enhance

human social skills by alleviating burdens that might otherwise diminish emotional reserves. Conversely, an over-reliance on AI companions, particularly those designed to offer constant, agreeable emotional support, can paradoxically increase emotional isolation in humans. Such simulated relationships may prevent individuals from learning to deal with real-world conflicts and disagreements, which are essential for building perseverance and emotional strength. This could lead to a diminished capacity for true intimacy and vulnerability in human relationships, as users might dodge the "messiness" of human interaction for the consistent comfort of an AI. Furthermore, some research indicates a negative correlation between frequent AI tool usage and critical thinking abilities, mediated by increased cognitive offloading (Angioletti & Fronda, 2024). This implies that while AI can offer convenience, it may also inadvertently lead to a decline in certain human cognitive and social skills if not used thoughtfully. The potential for AI to both augment and erode human social and emotional capacities underscores the critical need for a human-centric design approach in ASI development. This approach must prioritize the enhancement of human well-being and social connection, ensuring that AI serves as a tool to complement, rather than diminish, genuine human emotional and social intelligence.

4.2. Challenges and Ethical Considerations

The advancement of Artificial Social Intelligence, particularly its increasing ability to mimic human emotions and social interactions, presents a complex array of challenges and significant ethical considerations. These concerns span from the fundamental nature of AI's emotional capabilities to its broader societal impact and the potential for misuse.

A primary challenge lies in the distinction between AI's *simulation* of emotions and genuine *emotional experience*. While AI models are trained on vast datasets to recognize patterns that convey empathy and emotional nuance, enabling them to generate responses that *feel* genuine and emotionally attuned, they do not truly feel or comprehend emotions in the human sense (Patel, 2025). This lack of subjective experience means that AI's "empathy" is a sophisticated reflection or echo of human emotional complexity, rather than an organic feeling (Patel, 2025). This fundamental difference raises concerns about potential deception, where users might form emotional attachments to entities incapable of reciprocation, leading to misplaced trust or dependence, especially for vulnerable individuals. The "uncanny valley" phenomenon further illustrates this challenge, where near-human AI evokes discomfort (Mori, 1970), and raising concerns about potential deception or manipulation (Rabinowitz et al., 2018). This aversion stems from a perceived loss of human uniqueness and unmet expectations of human-like behaviour (Mori, 1970).

Beyond the nature of AI's emotional capacity, several ethical dilemmas emerge:

- **Privacy and Data Ownership:** Emotional data, derived from interactions with AI, is highly sensitive. Questions arise regarding who owns this data and whether companies should have access to emotional analytics, particularly in workplace settings (ESCP). Improper handling could lead to breaches of trust, compromised mental health, or discrimination (ESCP).
- **Manipulation and Exploitation:** The ability of AI to interpret and respond to human emotions raises concerns about its potential for manipulation. AI could be used to influence consumer behaviour through targeted emotional triggers, or to create emotionally engaging experiences that blur the line between genuine connection and calculated marketing strategies (Gosharpener; ESCP). If AI companions adjust to every whim, users might dodge real conflicts that build perseverance and emotional strength, leading to emotional dependency and an inability to cope with the complexities of human relationships.
- **Bias and Discrimination:** Ensuring diverse training data is crucial to prevent bias in emotional AI. If training data reflects societal biases, the AI could perpetuate or even amplify discrimination against certain groups (ESCP).
- **Societal Impact and Human Connection:** The widespread adoption of emotionally intelligent AI could quietly shift social norms (Sustainability-Directory). If individuals increasingly confide in AI rather than human friends or therapists, it could erode the importance of human empathy and lead to a desensitization to genuine emotions. Young adults, spending formative years with AI "best friends," might find themselves less fluent in the subtle art of human bonding and struggle with vulnerability in real-person interactions. This could lead to more fragmented and narcissistic societies, where individuals are content in their personalized AI-mediated bubbles, diminishing the collective capacity to rally around shared values or help the vulnerable.
- **Job Displacement:** While not directly related to emotional mimicry, the broader ethical concern of AI's impact on employment is significant. AI-driven automation, including socially intelligent systems, has the potential to displace millions of jobs across various sectors, from manufacturing to customer service and even complex cognitive functions. This raises concerns about financial hardship, reduced self-esteem, widening wealth gaps, and social disruption in communities dependent on affected industries. Addressing this requires inclusive economic policies, human-centered AI design that augments rather than replaces human capabilities, and robust legal and regulatory frameworks.

These challenges demand rigorous regulation and thoughtful consideration in the development and deployment of emotional AI. Transparency is essential, with clear labeling of AI systems to avoid deception, and users being informed about the limitations

of these systems. The goal should be to harness AI to support human empathy and social skills, rather than supplanting them, ensuring that technology enhances our humanity rather than diminishing it (Patel, 2025; ESCP).

4.3. Future Directions and Implications

The trajectory of Artificial Social Intelligence (ASI) points towards increasingly sophisticated systems that will profoundly influence human society. Future research and development in this domain are poised to address current limitations and expand the capabilities of AI in social contexts, with significant implications across various sectors.

One key direction involves the continued refinement of Theory of Mind (ToM) in AI. While current systems can simulate aspects of ToM, the goal is to achieve a deeper, more genuine understanding of human mental states, including nuanced beliefs, desires, and intentions (Garcia-Lopez, 2024; Rabinowitz et al., 2018). This will necessitate moving beyond purely linguistic or pattern-based predictions to more robust, interpretable models that can reason about social dynamics in a human-like way. Further research will focus on developing AI that can not only predict but also *explain* its social reasoning, fostering greater transparency and trust in human-AI collaboration (Dev Team. Space). This will involve integrating the powerful pattern recognition of deep learning with the structured reasoning of cognitive architectures, creating hybrid models that offer both flexibility and interpretability (Fan et al., 2022).

The implications for human-AI collaboration are substantial. As ASI advances, AI advisors and teammates will become more adept at understanding and adapting to individual human traits and team dynamics (Bendell et al., 2024; Williams et al., 2022; Salovey & Mayer, 1990). This could lead to highly personalized AI coaching in areas like negotiation, where AI can offer tailored advice and feedback, potentially leveling the playing field for less experienced negotiators (Harvard Law School). In complex tasks, ASI systems could enhance teamwork by understanding and responding to human cognitive strengths and limitations, creating truly synergistic human-AI teams (Bendell et al., 2024; Williams et al., 2022; Salovey & Mayer, 1990). The ability of AI to process and synthesize information from diverse cultural models of mind could also facilitate cross-cultural collaboration, bridging misunderstandings that stem from different social assumptions (Rabinowitz et al., 2018).

In the workplace, ASI could lead to more effective team management and organizational effectiveness by assisting with team cognition and deciphering social cues (Salovey & Mayer, 1990). AI could help identify and address social friction points, optimize team composition, and even contribute to a more emotionally intelligent organizational culture by providing tools for self-awareness and emotion recognition (Goleman, 1998; Ohio 4-H). However, this also carries the responsibility of ensuring that AI augments human roles rather than replacing them, necessitating a focus on human-centered AI design.

The societal impact of emotional AI will continue to evolve. While there is potential for AI to provide companionship and mental health support, addressing issues like loneliness and anxiety (Patel, 2025; Simplilearn), careful consideration must be given to the long-term effects on human emotional development and social connection. The challenge lies in ensuring that AI complements human relationships rather than displacing them, and that individuals continue to develop essential human coping skills for conflict and discomfort. Future research must also explore how to mitigate the potential for AI-induced technostress and ensure that individuals are equipped with the digital literacy and emotion-regulation skills needed to adapt to an increasingly AI-driven world (Angioletti & Fronda, 2024).

Ethical development will remain paramount. This includes establishing robust regulatory frameworks for data privacy, preventing manipulative uses of emotional AI, and addressing algorithmic bias (Gosharpener; ESCP). The goal is to develop AI that is aligned with human values and goals, ensuring that its self-improvement and advanced decision-making capabilities contribute positively to humanity's well-being (ML-Science). This requires ongoing interdisciplinary dialogue and collaboration between AI researchers, psychologists, ethicists, and policymakers to shape a future where ASI enhances human potential and fosters a more connected, empathetic society.

5. Conclusion

The comprehensive review of Emotional Intelligence (EI) and Artificial Social Intelligence (ASI) reveals two dynamic fields, each with profound implications for understanding and shaping human and artificial cognition. EI, rooted in decades of psychological research, is firmly established as a critical human capacity for navigating complex social and emotional landscapes, influencing personal well-being, educational outcomes, and professional success. Its diverse theoretical models and measurement approaches, while presenting complexities for comparative research, underscore the multifaceted nature of human emotional capabilities.

The emergence of ASI represents a significant leap in artificial intelligence, moving beyond purely logical or task-oriented systems to develop machines capable of comprehending and engaging with social phenomena in a human-like manner. This ambition is largely driven by advancements in machine learning, particularly deep learning and multi-agent reinforcement learning, and the development of sophisticated cognitive architectures designed to mimic human thought processes. Key to ASI's

progress is the implementation of Artificial Theory of Mind (AToM), enabling AI to infer and model the mental states of other agents, a crucial step towards more nuanced human-AI interaction.

The interplay between EI and ASI is characterized by a bidirectional influence. While human EI serves as a primary source of inspiration and a benchmark for ASI development, the increasing integration of ASI into daily life also shapes human emotional and social capacities. This presents both transformative opportunities – such as enhanced human-AI collaboration, personalized support in healthcare and education, and improved organizational dynamics – and significant challenges. These challenges include the ethical complexities of AI mimicking human emotions without genuine feeling, concerns about privacy and data manipulation, the potential for societal desensitization to authentic human connection, and the broader impact on employment.

Ultimately, the future trajectory of ASI necessitates a human-centric approach to its design and deployment. Achieving truly beneficial and ethical ASI requires not only continued technical innovation but also a deep, interdisciplinary understanding of human psychology, social dynamics, and ethical frameworks. The goal must be to develop AI that complements and augments human emotional and social intelligence, fostering a future where technology enhances, rather than diminishes, the richness and authenticity of human experience and interaction. This ongoing dialogue and collaborative effort are essential to navigate the complex landscape of artificial social intelligence and ensure its responsible evolution for the betterment of society.

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References

1. Adhikari, A., & Sen, S. (2023). Recent trends of cluster analysis in education. *International Research Journal of Modernization in Engineering Technology and Science*, *5*(8), 1858–1861.
2. Adhikari, A., Gorain, S.C., Gayen, P., Pal, I., & Sen, S. (2023). Studying the Differences: A Review on t-Test. *International Research Journal of Education and Technology*, *5*(5), 338-349.
3. Adhikari, A. (2023). Socio-Educational Perspectives: A Study on Human Adjustment. *EPRA International Journal of Research & Development (IJRD)*, *8*(1), 97-101. https://doi.org/10.36713/epra12233
4. Aggarwal, J. C. (2014). *Essentials of educational psychology* (3rd ed.). Vikas Publishing House Pvt. Ltd.
5. Ansary, K., & Saha, B. (2023). Construction and Standardization of Adjustment Ability Inventory. *International Journal of Creative Research Thoughts (IJCRT)*, *11*(3), h559-h567.
6. Ansary, S., Ansary, K., & Adhikari, A. (2022). Attitude towards Social Adjustment among the Undergraduate Students of Purulia District. *EPRA International Journal of Research and Development (IJRD)*, *7*(12), 21-26. https://doi.org/10.36713/epra11930
7. Akula, A. R., Liu, C., Saba-Sadiya, S., Lu, H., Todorovic, S., Chai, J. Y., et al. (2019). *X-TOM: Explaining with theory-of-mind for gaining justified human trust*. arXiv preprint arXiv:1909.06907. https://arxiv.org/abs/1909.06907
8. Al-Zahrani, A. M. (2025). Exploring the Impact of Artificial Intelligence Chatbots on Human Connection and Emotional Support Among Higher Education Students. *SAGE Open*, *15*(2), 1-10. https://doi.org/10.1177/21582440251340615
9. Alsawalqa, R. O. (2019). The relationship between social intelligence and emotional intelligence: A critical analysis. *Opción*, 24, 837–847.
10. Angioletti, L., & Fronda, G. (2024). *AI-generated technostress, emotions, and adjustment to AI*. Psychology Today. https://www.psychologytoday.com/us/blog/cultural-neuroscience/202407/ai-generated-technostress-emotions-and-adjustment-to-ai
11. Bainbridge, W. S., Brent, E. E., Carley, K. M., Heise, D. R., Macy, M. W., Markovsky, B., & Skvoretz, J. (1994). Artificial social intelligence. *Annual Review of Sociology*, *20*(1), 407–436. https://doi.org/10.1146/annurev.so.20.080194.002203
12. Bar-On, R. (1997). *Bar-On emotional quotient inventory: A measure of emotional intelligence: Technical manual*. Multi-Health Systems.
13. Bar-On, R. (2004). The Bar-On Emotional Quotient Inventory (EQ-i): Rationale, psychometric properties, and applications. In J. Ciarrochi, J. P. Forgas, & J. D. Mayer (Eds.), *Emotional intelligence in everyday life* (2nd ed., pp. 50–71). Psychology Press.
14. Bar-On, R., Handley, R., & Fund, S. (2006). The Impact of Emotional Intelligence on Performance. In V. U. Druskat, F. Sala, & G. Mount (Eds.), *Linking emotional intelligence and performance at work: Current research evidence with individuals and groups* (pp. 3–19). Lawrence Erlbaum Associates Publishers.
15. Bendell, R., Williams, J., Fiore, S. M., & Jentsch, F. (2024). Individual and team profiling to support theory of mind in artificial social intelligence. *Scientific Reports*, *14*(1), 1-17.
16. Boyatzis, R. E., Goleman, D., & Rhee, K. (1999). Clustering competence in emotional intelligence: Insights from the Emotional Competence Inventory (ECI). In R. Bar-On & J. D. Parker (Eds.), *Handbook of emotional intelligence*. Jossey-Bass.
17. Brackett, M. A., & Mayer, J. D. (2003). Convergent, discriminant, and incremental validity of competing measures of emotional intelligence. *Personality and Social Psychology Bulletin*, *29*(9), 1147–1158. https://psycnet.apa.org/doi/10.1177/0146167203254596
18. Brackett, M. A., Rivers, S. E., & Salovey, P. (2013). The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT). In G. J. Boyle, G. Matthews, & D. H. Saklofske (Eds.), *The SAGE handbook of personality theory and assessment: Vol. 2. Personality measurement and testing* (pp. 333–352). SAGE Publications.

19. Chaturvedi, R., Verma, S., Das, R., & Dwivedi, Y. K. (2023). Social companionship with artificial intelligence: Recent trends and future avenues. *Technological Forecasting and Social Change, 193*, 1-20. https://doi.org/10.1016/j.techfore.2023.122634
20. Cherniss, C., & Goleman, D. (2001). *The emotionally intelligent workplace: How to select for, measure, and improve emotional intelligence in individuals, groups, and organizations*. Jossey-Bass.
21. Crowne, K. A. (2009). The relationships among social intelligence, emotional intelligence and cultural intelligence. *Organization Management Journal*, *6*(3), 148–163.
22. Davidson, T., & Karell, D. (2025). Integrating Generative Artificial Intelligence into Social Science Research: Measurement, Prompting, and Simulation. *Sociological Methods & Research*, *54*(3), 775-793. https://doi.org/10.1177/00491241251339184
23. Desti, K., & Shanthi, R. (2015). A study on emotional intelligence at work place. *European Journal of Business and Management*, *7*(24), 147–154.
24. Fan, L., Xu, M., Cao, Z., Zhu, Y., & Zhu, S. C. (2022). Artificial social intelligence: A comparative and holistic view. *CAAI Artificial Intelligence Research*, *1*(2), 144–160. https://doi.org/10.26599/AIR.2022.9150010
25. Fiore, S. M. (2025). Social Science and Social AI: Developing Artificial Social Intelligence to Support Teams. In *The International FLAIRS Conference Proceedings* (Vol. 38). https://doi.org/10.32473/flairs.38.1.139096
26. Fiore, S. M. (2021). Interdisciplinary Models and Frameworks for the Study of Artificial Social Intelligence. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, *65*(1), 658-659. https://doi.org/10.1177/1071181321651354
27. Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. Basic Books.
28. Garcia-Lopez, A. (2023). Theory of mind in artificial intelligence applications. In T. Lopez-Soto, A. Garcia-Lopez, & F. J. Salguero-Lamillar (Eds.), *The theory of mind under scrutiny: Psychopathology, neuroscience, philosophy of mind and artificial intelligence* (pp. 723–750). Springer Nature Switzerland AG. https://doi.org/10.1007/978-3-031-46742-4_23
29. Gerolaga, S. M. S. (2023). Emotional and Social Intelligence and Positive Learning Environment as Determinants of Cognitive Performance. *International Journal of Innovative Science and Research Technology*, *8*(7), 1214-1267. https://doi.org/10.5281/zenodo.8198517
30. Goleman, D. (1995). *Emotional intelligence: Why it can matter more than IQ*. Bantam Books.
31. Goleman, D. (1998). *Working with emotional intelligence*. Bantam Books.
32. Goleman, D. (2006). *Social intelligence: The new science of human relationships*. Bantam Books.
33. Goleman, D., Boyatzis, R. E., & McKee, A. (2002). *Primal leadership: Realizing the power of emotional intelligence*. Harvard Business School Press.
34. Goodfellow, I., Bengio, Y., & Courville, A. (2020). *Deep learning*. MIT Press.
35. Goodwin, C. (2000). Action and embodiment within situated human interaction. *Journal of Pragmatics*, *32*(10), 1489–1522.
36. Gordon, R. M. (1986). Folk psychology as simulation. *Mind & Language*, *1*(2), 158–171. https://doi.org/10.1111/j.1468-0017.1986.tb00324.x
37. Joo, H., Simon, T., Cikara, M., & Sheikh, Y. (2019). Towards social artificial intelligence: Nonverbal social signal prediction in a triadic interaction. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 1-16. https://doi.org/10.48550/arXiv.1906.04158
38. Greaves, J., & Bradberry, T. (2009). *Emotional Intelligence 2.0*. Perseus Books Group.
39. Jose, B., & Thomas, A. (2024). Navigating the Research Landscape of Emotional and Social Intelligence Among Young Adults: A Bibliometric Perspective. *Cureus*, *16*(4), 1-12.
40. Kar, D., Saha, B., & Mondal, B. C. (2014). Measuring emotional intelligence of secondary school students in relation to gender and residence: An empirical study. *American Journal of educational research*, *2*(4), 193–196.
41. Kar, D., & Saha, B. (2021). Leadership Style and Adjustment Ability among Undergraduate Students: A Correlational Study. *International Journal of Creative Research Thoughts (IJCRT)*, *9*(9), d148-d151.
42. Kar, D., & Saha, B. (2021). A study of relationship between Leadership Style and Emotional Intelligence of Undergraduate Students. *International Journal of Research and Analytical Reviews*. *8*(2), 13-15.
43. Kumar, S., Sahney, S., & Sekar, S. (2024). An Overview of Social Intelligence: A Bibliometric and Morphological Analyses. *Management and Labour Studies*, *50*(1), 102-128. https://doi.org/10.1177/0258042X241249817
44. Kundu, M., Saha, B., & Mondal, B.C. (2015). Adjustment of Undergraduate Students in relation to their Social Intelligence. *American Journal of Educational Research, 3*(11), 1398-1401.
45. Mahanta, K., & Roy, S. K. (2024). Relationship between Academic Stress and Emotional Intelligence of Secondary Level Students. *The Social Science Review A Multidisciplinary Journal*, *2*(4), 133-142.
46. Mishra, R., & Jatav, S. (2020). Emotional Intelligence & Social Intelligence: Conceptual Analysis. *Studies in Indian Place Names, (UGC Care Journal)*, *40*(27), 726-735.
47. Mondal, A., & Saha, B. (2017). Job satisfaction of Secondary School Teachers in relation to Personality and Emotional Intelligence. *American Journal of Educational Research, 5*(10), 1097-1101.
48. Mondal, B.C., Saha, B., & Kar, D. (2014). Development and Validation of Emotional Intelligence Inventory (EII) for Secondary School Students. *Indian Journal of Applied Research*, *4*(5), 1-3.
49. Mandal, M. B., & Mehera, C. (2017). Relationship between Altruism and Emotional Intelligence among Adolescent children of Working and non-working Mothers. *Educational Quest-An International Journal of Education and Applied Social Sciences*, *8*(spl), 389–398. http://dx.doi.org/10.5958/2230-7311.2017.00081.2
50. Mayer, J. D., Roberts, R. D., & Barsade, S. G. (2007). Human abilities: Emotional intelligence. *Annual Review of Psychology*, *59*(1), 507–536. https://doi.org/10.1146/annurev.psych.59.103006.093646

51. Mayer, J. D., & Salovey, P. (2002). *The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) user's manual*. Multi-Health Systems.
52. Mayer, J. D., Salovey, P., Caruso, D. R., & Sitarenios, G. (2003). Measuring emotional intelligence with the MSCEIT V2.0. *Emotion*, *3*(1), 97–105. https://psycnet.apa.org/doi/10.1037/1528-3542.3.1.97
53. Miquido. (2024). *AI Cognitive Architecture Explained*. Retrieved July 25, 2025, from https://www.miquido.com/ai-glossary/cognitive-architecture-ai/
54. Obot, S. J. (2021). Emotional and social intelligence: A gateway to organizational effectiveness. *International Journal of Research and Innovation in Social Science*, *5*(9), 857–862.
55. Ohio 4-H. *What is Emotional Intelligence?* Retrieved July 25, 2025, from https://ohio4h.org/sites/ohio4h/files/imce/Emotional%20Intelligence%20Background.pdf
56. Patel, D. (2025, July 17). *The empathy algorithm: How AI is learning to echo human emotions*. Mindplex. https://magazine.mindplex.ai/post/the-empathy-algorithm-how-ai-is-learning-to-echo-human-emotions
57. Petrides, K.V. (2009). Psychometric Properties of the Trait Emotional Intelligence Questionnaire (TEIQue). In: Parker, J., Saklofske, D., Stough, C. (eds) Assessing Emotional Intelligence. The Springer Series on Human Exceptionality. Springer, Boston, MA. https://doi.org/10.1007/978-0-387-88370-0_5
58. Petrides, K. V., & Furnham, A. (2000). On the dimensional structure of emotional intelligence. *Personality and Individual Differences*, *29*(2), 313–320. https://doi.org/10.1016/S0191-8869(99)00195-6
59. Pickering, M. J., & Garrod, S. (2021). *The psychology of dialogue: From communication to cognition*. Cambridge University Press.
60. Poggi, I., & D'Errico, F. (2012). *The social intelligence of human communication*. John Benjamins Publishing.
61. Praditsang, M., Hanafi, Z., & Walters, T. (2015). The relationship among emotional intelligence, social intelligence and learning behaviour. *Asian Social Science*, *11*(13), 98-107. https://doi.org/10.5539/ass.v11n13p98
62. Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind? *Behavioural and Brain Sciences*, *1*(4), 515–526. https://doi.org/10.1017/S0140525X00076512
63. Ramos-Galarza, C., Rodríguez-Naranjo, B., & Brito-Mora, D. (2024). Relationship between Emotional Intelligence, Social skills, and anxiety: A quantitative systematic review. *Emerging Science Journal*, *8*(6), 2570–2584. https://doi.org/10.28991/ESJ-2024-08-06-025
64. Reeves, B., & Nass, C. (1996). *The media equation: How people treat computers, television, and new media like real people and places*. Cambridge University Press.
65. Russell, S., & Norvig, P. (2022). *Artificial Intelligence: A Modern Approach*. Pearson Education.
66. Saha, B., & Adhikari, A. (2021). Measuring Social Relationship of Undergraduate College Students of West Bengal. *Education India Journal: A Quarterly Refereed Journal of Dialogues on Education, A UGC CARE List Journal*, *10*(4), 261-269.
67. Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality*, *9*(3), 185–211.
68. Searle, J. R. (1998). *Mind, language and society: Philosophy in the real world*. Basic Books.
69. Shylla, A. B. R., & KG, V. B. (2021). Emotional intelligence and perceived parenting styles among late adolescents. *Indian Journal of Mental Health*, *8*(3), 262–267. http://dx.doi.org/10.30877/IJMH.8.3.2021.262-267
70. Stys, Y., & Brown, S. L. (2004). *A review of the emotional intelligence literature and implications for corrections*. Correctional Service of Canada.
71. SunilKumar, M. L. (2023). Relationship between emotional intelligence and social intelligence of B.Ed. trainees working in aided and unaided institutions. *International Journal of Creative Research Thoughts (IJCRT)*, *11*(6), 479-483.
72. Vinciarelli, A., Pantic, M., & Bourlard, H. (2009). Social signal processing: Survey of an emerging domain. *Image and Vision Computing*, *27*(12), 1743-1759. https://doi.org/10.1016/j.imavis.2008.11.007
73. Weis, S., & Süß, H. M. (2005). Reviving the search for social intelligence – A multitrait-multimethod study of its structure and construct validity. *Personality and Individual Differences*, *42*(1), 3-14. https://doi.org/10.1016/j.paid.2006.04.027
74. Williams, J., Fiore, S. M., & Jentsch, F. (2022). Supporting artificial social intelligence with theory of mind. *Frontiers in Artificial Intelligence*, *5*, 1-12. https://doi.org/10.3389/frai.2022.750763
75. Wolff, S. (2006). The Emotional Competence Inventory (ECI): A review. In R. E. Boyatzis & F. Sala (Eds.), *The handbook of emotional intelligence*. Jossey-Bass.
76. Zadeh, A., Chan, M., Liang, P. P., Tong, E., & Morency, L. P. (2019). Social-IQ: A question answering benchmark for artificial social intelligence. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition* (pp. 8807–8817).