



Editorial: Spanning the spectrum of social behavior: towards more translationally relevant animal models

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Our mechanistic understanding of neuropsychiatric disorders is primarily based on preclinical studies using animal models (Shemesh and Chen 2023). However, despite the emergence of powerful new technologies, the translation and development of effective therapeutic treatments from these models and direct improvements to health outcomes has been slow (Venniro et al. 2020). We believe this impasse is partly due to limitations in animal models, particularly the omission of key social factors, which play a major role in the etiology of human psychiatric disorders (Heilig et al. 2016).

Social factors encompass ethologically complex behaviors ranging from positive affiliative social interactions to agitation and aggression. Both affiliative and aggressive interactions can be rewarding for humans and laboratory animals. Recently, efforts to enhance the translational relevance of rodent models have increasingly incorporated these behaviors to better understand their effects on neuropsychiatric disorders and their underlying neural mechanisms (Golden et al. 2017; Navarrete et al. 2024; Ramsey et al. 2022; Venniro et al. 2018).

Building on these directions, we organized a workshop for the European Behavioral Pharmacology Society (EBPS) to bridge the gap between researchers studying social factors and behavioral neuroscientists investigating neuropsychiatric disorders. The workshop aimed to create a collaborative forum focused on leveraging translationally relevant models of social behavior to investigate neuropsychiatric disorders. By doing so, we sought to facilitate future collaborations that use social behavior to bridge the translational gap between preclinical models and their clinical counterparts, improving strategies for identifying novel therapeutic targets for effective treatment of neuropsychiatric disorders.

The workshop was held in Rome at the “Acquario Romano” amphitheater and featured a stellar schedule of keynote speakers and panels led by leading experts in the field, including Dr. Nora Volkow, Dr. Camilla Bellone, Dr. Alon Chen, Dr. Lique Coolen, and Dr. Ofer Yizhar. Highlights included a Data Blitz for trainees and an EBPS Power Hour led by Dr. Leslie Ramsey and Dr. Kimberlei Richardson. Sessions covered diverse aspects of social behavior, from its importance in addiction neuroscience and affiliative

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social play behaviors in rodents to aggression as a social reinforcer and cutting-edge technologies to advance the study of complex social behaviors.

The workshop, and the scientific discussions it inspired, was simply remarkable. To continue fostering discussions and collaborations, we proposed a Special Issue for Psychopharmacology as an ideal platform to compile manuscripts on this topic. The Special Issue features manuscripts ensuring the momentum generated by the workshop continues to drive advancements in the field.

This Special Issue offers a comprehensive look at social behavior and its link to psychiatric and addiction-related disorders, ranging from preclinical to clinical studies. Carnevali, Barbetti, and colleagues (Carnevali et al. 2023) examine how stress-induced social avoidance and anxiety-like behaviors can be prevented by the FAAH inhibitor URB937. Siviý and colleagues (Siviý et al. 2023) focus on the role of norepinephrine in social play and its genetic regulation, highlighting how NE-targeting compounds affect play behavior in rats. Peretz-Rivlin and colleagues (Peretz-Rivlin et al. 2024) introduce HOMECAGE, a new method for studying opioid addiction in group-housed mice, allowing for more natural behaviors while self-administering opioids. Reguilón and colleagues (Reguilón et al. 2023) show that physical exercise can reduce alcohol consumption triggered by social defeat stress, though it doesn't fully restore BDNF levels. Wallace and colleagues (Wallace et al. 2023) demonstrate that early social experiences can shape how the brain processes social information later in life. González-Portilla and colleagues (Gonzalez-Portilla et al. 2023) investigate oleoylethanolamide (OEA) in socially stressed mice, showing that it improves behavior without altering inflammation markers. Wang and colleagues (Wang et al. 2024) present a meta-analysis on ginsenoside Rg1, suggesting its potential as a treatment for depression through neurotransmitter, oxidative stress, and inflammation pathways. Other studies, including those by Pasquetta and colleagues (Pasquetta et al. 2024) on single-mother versus biparental rearing, Barretto-de-Souza and colleagues (Barretto-de-Souza et al. 2023) on how hunger and thirst affect social preferences, and Achterberg and colleagues (Achterberg et al. 2024) on Neurexin1 α knockout rats, explore the impact of genetic and environmental factors on behavior. Olaniran, Garcia, and colleagues (Olaniran et al. 2022) show that social isolation increases social reward-seeking behavior, while Hess and colleagues (Hess et al. 2023) and Vignal and colleagues (Vignal et al. 2024) examine empathy and how the presence of a congener, associated with deep brain stimulation, modulates alcohol consumption. Casile and colleagues (Casile et al. 2024) introduce a new animal model for Gaming Disorder, while Lee and colleagues (Lee et al. 2024) study social reward-driven behaviors in male mice. Ishaq and colleagues

(Ishaq et al. 2023) and Humburg and Bardo (Humburg and Bardo 2023) highlight the sex-dependent effects of various drugs on social behavior, and Perini and colleagues (Perini et al. 2024) stress the importance of social cognition in alcohol use disorder. Finally, Raghuraman and colleagues (Raghuraman et al. 2024) explore placebo effects driven by brain and body mechanisms, demonstrating that observational learning can reduce pain and symptoms.

In conclusion, this Special Issue provides a thorough exploration of how social behavior and environmental factors influence addiction and mental health disorders, offering novel methodologies and insights for both clinical and preclinical research. These manuscripts represent many new collaborations linking diverse labs efforts to synchronize our understanding of social context in neuropsychiatric disorders. These findings underscore the potential for new avenues addressing the complex interplay of social, genetic, and environmental factors on mental health.

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Declarations

Competing interests The authors declare no competing interests.

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