



Introduction to Special Issue on Incentive Relativity

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In 1996, Charles Flaherty opened the prologue of his book *Incentive Relativity* with these words: “We compare. Many of the pleasures and irritations of life are related to the match between an event and our expectancies. We compare meals, composers, presidents, books, performances, salaries, and many other events that have some interest or value” (Flaherty, 1996, p. 1). The capacity of organisms to acquire reward expectations based on prior experience and to contrast them with their immediate reality is referred as incentive relativity. Incentive relativity implies not only a mechanism for processing information, but also an emotional component resulting from such comparison. Our passions, feelings, and emotions are often based on a comparison of relative outcomes, and, when such comparison results in what is appraised as a significant loss, a state of stress, anxiety, aggression, depression, and substance abuse can follow, among other psychopathological states. Almost two decades after Flaherty’s words, the analysis of incentive relativity effects continues to engage specialists in behavior, cognition, clinical psychology, pharmacology, and neuroscience.

Nonhuman animals also compare incentives and exhibit affective responses to the outcome of such comparisons. This characteristic allows researchers coming from different disciplines to approach the scientific study of incentive relativity using animal models of human behavior. We now know a large variety of paradoxical learning effects based on the presentation of different reward values (contrast effects) or reward contingencies (partial reinforcement and extinction). The behavioral, environmental, hormonal, pharmacological, neurobiological, and genetic characterizations of these phenomena are part of a field of basic research of great tradition and, simultaneously, of current importance given their clinical and applied implications.

In this special issue, leading experts review incentive relativity from a multidisciplinary perspective. Research on different approaches is presented, including empirical articles and critical reviews. A key focus of the present special issue is to highlight the contribution of animal research to extend our knowledge of some basic principles of learning and their emotional correlates in a variety of organisms, including humans.

The first paper by Bueno, Judice-Daher, and Deliberato (pp. 410-419) investigates a phenomenon related to reward loss: the reinforcement omission effect. Bueno and co-authors aim to clarify the relationship between reinforcement magnitude and the reinforcement omission effect manipulating the magnitude linked to discriminative stimuli in a partial reinforcement fixed interval schedule. The empirical and theoretical implications of the results are discussed.

The second paper by Papini (pp. 420-445) focuses on reward-schedule effects, a family of learning phenomena involving surprising devaluations or omissions of an expected reward. The author reviews studies conducted in three taxonomic groups of vertebrates and shows how the analysis of reward-schedule effects from a comparative perspective helps identifying their underlying neural mechanisms.

Torres and Sabariego (pp. 446-458) review the genetic basis of frustration, with special attention devoted to studies conducted with animals selected on the basis of extreme differences in emotional reactivity. The review suggests that recent advances in genetics and molecular biology can shed light on the relationship between genotype, temperament traits, environmental events, and neural mechanisms underlying the vulnerability or resistance of organisms to reward-loss experiences.

The paper by Cuenya, Kamenetzky, and Mustaca (pp. 459-473) focuses on the long-lasting impact of early life experiences on the development of individual differences in frustration responses in later life. A series of studies related to pharmacological and environmental treatments during infancy and adolescence and their influence on incentive relativity is included. The theoretical and applied implications of these phenomena are discussed, showing that they are dependent on the interplay between genes and environment.

Justel and co-authors (pp. 474-487) discuss the role of neuroendocrine mechanisms in successive negative contrast and extinction. They specifically analyze the action of monoamines, adrenal hormones, and sexual hormones in these phenomena and suggest their utility as animal models of clinical psychopathologies in which emotions and cognitions are assessed.

Finally, Colechio and Grigson (pp. 488-500) investigate the conditioned aversive taste reactivity that follows the intraoral delivery of a cocaine-paired taste cue. They try to determine when the change in taste behavior occurs and at what point individual differences in cue reactivity become predictive of cocaine-seeking and cocaine-taking. The results show the utility of this empirical approach to analyze the role of comparison and incentive relativity in addictive behavior.

I hope that these articles trigger a stimulating and thought-provoking collection of new works in the field of incentive relativity. There is no doubt that the coming years will bring about still other exciting studies in this area, bridging the various disciplines together and connecting basic research with clinical practice.

I would like to thank everyone who has contributed to this special issue. I wish to express my thanks to Dani Bruner, Editor-in-Chief of the *International Journal of Comparative Psychology*, for giving me the opportunity to be Guest Editor for this issue. Thanks to the authors for their interesting contributions, to the reviewers for improving the quality of the manuscripts, and to the editorial staff for their help in the production of this special issue.

References

Flaherty, C. F. (1996). *Incentive relativity*. New York: Cambridge University Press.