

# Preface

**Hamar Nastasy Palhares Alves**

## **Neuroscience of Drug Abuse in Adolescence: What Do We Know?**

The fact that prefaces often begin by describing how difficult it is to write one should have been a warning. But prefaces are there, and their existence is a reminder that trying to escape from praising a book is much more difficult than writing one.

To write the preface to a book is a complex human behavior. Sedimented on variegated motivations, affinities, and skills, it's an honor and something that makes its author proud. But it is not, and cannot be, just that. By "complex," I mean, "unique," without any obvious, reproducible recipe.

Behavior, the mind, the human soul—pick what you like best—has a deep and intricate nature. Linearity is one of the fallacies of human behavior. In a linear world, man would be a drawing on a sheet of paper, easily enclosed by a circle around him. That is the world of yes and no. Not being constrained to a 2D world is reassuring; nevertheless, we often fall back into the "all or nothing" world. Let me explain. You must have already watched interview shows in which some celebrity is required to opine on a recent event, like a soccer championship or a massacre: "Do you believe that on-screen violence might have influenced those kids?" One interviewee answers "yes," whereas the other swears to the contrary. The discussion heats up, and the presenter announces an advertising break; you go grab a snack from the fridge while awaiting the next round.... The point is that both opinions are wrong. But they are also right. Behavior is complex and follows the laws of multicausality; for that reason, behavior unfolds within the vast gap that extends from "never" to "always."

As humans, we walk together along a long and preset path. As individuals, however, our paths are singular and unique.

A part of that path, one of the most beautiful and unforgettable ones is conventionally named “adolescence.” The notion of adolescence is recent phenomenon, created by Western men. As a concept, adolescence is still in its cradle.

A period of synesthetic experiences, of “friends for life”; intense, hot, with the onset of strong, powerful passions; the discovery of the petals of sensuality, of the rapture of bodily sensations. Of the oh-so-welcome butterflies in the stomach. Of fights at schools, threats, rebelling against the ones we love most, the shaping of new social groups, cliques, gangs. To pull an all-nighter studying. Or at the nightclub. Of experiences fueled by the 24/7, non-stop flow of online social networks. And, like it or not, the most circumspect experiences: the time when the use of alcohol, tobacco, and other drugs starts in real life. Although not systematically nefarious, the lives of many will be deeply touched, if not actually interrupted, by that encounter. But the consequences can be (somewhat) different. This is what we shall see in the present journey.

The book you now have in your hands and are beginning to leaf through shyly, dear reader, is a well-marked path composed of dense, tempting, and viscerally well-crafted essays on the interface among neuroscience, adolescence, and drug use. You can start with any chapter, but if I may make a suggestion, read it as if you were listening to a concept album, like *The Dark Side of the Moon* or *Sgt. Pepper’s*, because the sequence of the first essays makes the following ones richer. Notably, each voice in this book has its due time of discourse, which grants them density, reach, expressiveness, and reciprocally, bestowing a beneficial “human touch” to the book.

The word “interface” is apt. It’s enticing, sexy, tempting. At the same time, it is a vow of humbleness. It represents an acknowledgment of the fact that the human experience demands several skills and fields of knowledge to achieve broad and deep-rooted understanding. It is a signal that investigators are exploring the living matter of change. To place oneself at an interface is to place oneself at the edge of an abyss: to assert that what we do not yet know is as important as that we already know. But it is precisely there that the wind of inspiration blows the strongest, where the landscape is precious and delightful. It is there that the truly unforgettable portraits of the soul are grasped.

Neuroscience is evocative of a primordially instigating and fascinating field of studies; it provides us tools to understand that which makes us common and viable, that which makes us unique, erring, and exciting. Several focal levels coexist in the understanding of behavior, attitudes, and the uniqueness of each individual; as will be demonstrated, however, it is not a matter of molecules dictating social phenomena. Rather, it is one and the other at the same time, in multiple concurring and inter-fertilizing planes of experience.

When I was a medical resident, one patient often came to me to ask: “Can a remedy change the way I experience the world?” I’d become stunned and give him the explanations my teachers had taught me. The fact is, I admit, that I was confused.

Yet, a remedy might help a person stand on his or her feet again—exactly as a drug might make him or her lose his or her mind. But neither a remedy nor a drug will define what the individual will do with his or her head or feet.

In the pages of this book, dear reader, you will be invited to explore a highly and exquisitely elaborated set of reactions and relationships that shape, expand, depress, and, unfortunately, usually put the odyssey of living in chains. The book describes a self-inflicted type of slavery that is paid with one's own freedom to choose. However, because we are humans, there will always be opportunity. And one such opportunity is that for getting our freedom back.

A *zen* text compares man to a vase delicately brought into warmth and light by the potter's hands. As the clay dries, the vase acquires its final shape, and little flexibility will then remain in it. Changes will only concern its polishing and painting, the use that will be made of it—they will not affect its intimate structure. This is a significant part of the (simple and rich) view neuroscience has relative to the shaping of personal development. The stages with the greatest potentiality and plasticity are childhood and adolescence, when continuous processes involving new knowledge and challenges condense, expand and chisel the personality, bestowing shine and suffering on it. However, because we are humans, some flexibility will always remain.

One rich metaphor used in Buddhist psychology compares the subconscious to a granary, where non-manifested attitudes wait in silence. All of the seeds wait dormant in the endless and multiform warehouse of the self. From the ground of actual and manifested behavior springs that which we sprinkle with water, and also that which we did not take care enough to pluck off. Pruning defines that which will grow in a more exuberant manner. Watering is necessary. Watering, pruning, and pulling away are verbs that serve to assert who we are, what we can and might be, and what we would like to change.

The time has arrived in this preface, which might have bored the readers more than was expected, to praise the magnificent effort to bring this book to the public, which is priceless as a function of the careful research that underpins each essay. In addition to having been sophisticatedly orchestrated by the chief maestros, Denise De Micheli, André Luiz Monezi Andrade, Eroy Aparecida da Silva, and Maria Lucia Oliveira de Souza-Formigoni, the essays, at the necessary and optimal level, make us feel that we are bestowed new, applicable and useful knowledge, without being taken to a lofty and piddling world of secret, unprofitable or inaccessible information. Warm bread freshly taken from the oven: this is what you have here, dear reader. Once the book has been read, we will have the pleasant feeling of having treaded a coherent, enriching, and luminous path. And it will make us come back to it in the search of inspiration for further journeys and coziness amidst the troubled waters of so many pieces of knowledge disconnected from the hyper-connectivity in which we are immersed.

I'd like to finish by relating an experience from my own adolescence. Several crossroads had multiplied, and the associated problems had become intertwined: a dear aunt, Martha, hurried to help me. That particular crisis was characterized by a singular factor of aggravation, which made it especially dramatic: it was about myself! I did not want to fit in any model or statistics. No adolescent ever wants so. Nothing that would stretch me or shrink me within already worn models. Recognizing these limits, my aunt was sensitive in bringing one of the most precious sections of the Bible to me, from the Book of Ecclesiastes:

To every thing there is a season, and a time to every purpose under the heaven: a time to be born, and a time to die; a time to weep, and a time to laugh; a time to embrace, and a time to refrain from embracing; a time to love, and a time to hate; a time of war, and a time of peace.

That fragment copied by hand brings comfort, appeasement and focus to me to this day. It was tattooed in multiple neurons and minute crevices that make me feel and live as I am: sometimes, one loving word at the right time is all a youth might need.

Adolescence is the time of the ardent flame, and that which distinguishes us from adolescents is that the latter do not forget that now is the time to live.

For you, my dear companion, valued reader, it is the time to enjoy this precious journey that begins on the next pages. And, yes, to live! Enjoy!

Hamer Nastasy Palhares Alves  
Psychiatrist

# Preface

**Sidarta Tollendal Gomes Ribeiro**

Since the very beginnings of civilization, humankind has had an intimate relationship with drugs, which are used to heal the body and the mind from their many pains. However, to the best of our knowledge, there was not such tremendous abuse of drugs in the past as in the present. That problem has become increasingly more severe in parallel to the vertiginous growth of the world population, whereby the deepest human contacts become rarer and, consequently, the mechanisms of social regulation degrade. Uprooted, deritualized, and dislodged from their traditional contexts of use, drugs especially affect the least informed and most impulsive individuals, woefully ravaging the youngest ones. Adolescence is a period of major discoveries and adventures; however, it is also a time when existential instability, a lack of motivation to comply with adult norms, diffuse rebellion against authority and peers' ethical and esthetic pressures exert the greatest power. Several significant choices are made at that age, most of them as the result of trial and error. It is at that crossroads in life that so many adolescents enter into contact with drugs, and many of them get hurt.

Unfortunately, society offers very little help and support to youngsters. A culture of prohibition still rules over almost the entire continent, hindering the free circulation of ideas, blocking candid conversation, and promoting paranoia, at the expense of damage control. Education aiming at the responsible use of drugs is incipient, from alcohol to sugar, from marijuana to benzodiazepines; instead, the emphasis falls on the pure, simple, inefficacious, and excluding method of repression, which does not distinguish among classes of substances, ignores neuroscience, and does not acknowledge social contexts. For all of those reasons, our society strikingly fails in its attempts to reduce the suffering associated with drugs.

The antidote against such major disaster is known as high-quality information. This new book, *Neuroscience of Drug Abuse in Adolescence: What Do We Know?*, fills in significant gaps relative to the neurobiological, cognitive, and psychological aspects of drug abuse and addiction in adolescence. The book editors, Denise De Micheli, André Luiz Monezi Andrade, Eroy Aparecida da Silva, and Maria Lucia Oliveira de Souza-Formigoni, dissected and mounted a vast corpus of multidisciplinary literature to paint a broadly scoped picture of the mechanisms that underlie chemical dependency in adolescence. The book chapters, written by reputed

experts, discuss legal and illegal drugs in their complex relationships with mental diseases and disorders. The book is organized along two axes focused on adolescence: “Psychobiological Transformations” and “Drugs and the Central Nervous System.” Epidemiological, chronobiological, endocrinological, neurochemical, physiological, and neurological aspects in human beings, as well as in animal models of adolescence, are discussed. Disorders of mood, motivation, and cognition are particularly significant.

Although its main thrust is coherent, the book is not monolithic as to the social implications of the biological findings. Although some chapters advocate a more traditional view on the interpretation of associations and comorbidities, others make it quite clear that cause and correlation are different. As a whole, the book reflects a time of transition, in which science is increasingly rejecting prohibitionist bias to begin facing the problem posed by drug abuse without preconceptions and, in particular, to focus on the early use of drugs.

This is a serious problem—a true, complex, and multifaceted problem in both monstrous megalopolises and boondocks lost to the twenty-first century. We must confront it with our eyes wide open, armed with as much information as possible, as well as with the necessary component of utopia that allows us to hope that we will learn how to coexist with all types of drugs, as revealed in their manifold relations to users, their relatives, and clinicians. No drug is pure evil. Pure evil is the ignorant use of so much power.

Sidarta Tollendal Gomes Ribeiro  
Neuroscientist, Full Professor and Director,  
Brain Institute, Federal University of Rio Grande do Norte

Drug Abuse in Adolescence

Neurobiological, Cognitive, and Psychological Issues

de Micheli, D.; Andrade, A.L.M.; da Silva, E.A.; de Souza

Formigoni, M.L.O. (Eds.)

2016, XXIII, 200 p. 40 illus., 13 illus. in color., Hardcover

ISBN: 978-3-319-17794-6