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PREFACE

It is surprising that C. Darwin's (1871) discovery of the principles of sexual selection—the evolutionary sources of most sex differences (e.g., male–male competition for mates)—languished in the biological sciences for nearly 100 years (Cronin, 1991), whereas his discovery (with Alfred Wallace) of the principles of natural selection was confirmed and hailed as one of the greatest achievements in the history of science. Despite its slow start, sexual selection is now a vibrant area of research in evolutionary biology, one that explains myriad sex differences across invertebrate and vertebrate species (Andersson, 1994). In the 1970s and 1980s, evolutionary anthropologists and psychologists, including David Buss, Martin Daly, Margo Wilson, and Donald Symons, began to apply the principles of sexual selection to human sex differences, primarily to sex differences in aggression, parenting, and mating strategies. These were significant and groundbreaking achievements, but did not provide an integration of human sex differences across the many domains in which they are found (e.g., in brain architecture and play patterns); this is, in part, because much of what we know about sex differences was still unknown even a few decades ago.

My primary goal in writing the first edition of *Male, Female* was to attempt to provide this integration and, in doing so, to provide the proof that C. Darwin's (1871) big picture of the origin and expression of sex differences was largely correct. In the second edition, I was able to flesh out many of the details with the substantial advances that had occurred, including important advances in population genetics and cognitive neuroscience. The pace of new advances in these and in other relevant areas has accelerated since the publication of the second edition, not just with respect to human sex differences but also in our

understanding of the evolution and expression of sex differences in nonhuman species. This latter work is critical because it securely anchors our understanding of our own species. There have also been advances in analyses of the historical record, as related to individual differences in reproductive outcomes, as well as new insights from anthropological studies of people living in more traditional contexts.

All these advances and more can be found in this third edition. In writing this edition, I went through each section of the book, attempted to make the prose more accessible, and included more direct interpretations of the gist of the section. A few sections here and there are largely the same as in the second edition, but most sections have been expanded (or newly added), and many of them have been completely rewritten to accommodate new advances in the area. With the third edition, I was able to add the chapter on “Sex Differences in the Modern World.” This chapter had been dropped and replaced by an Afterword in the second edition because the expanded coverage of basic sex differences exceeded the contracted page budget. I negotiated an expanded budget for this third edition and was able to include this chapter, as well as many additions to other chapters. This last chapter includes updates in many of the topics covered in the first edition (e.g., sex differences in academic competencies). The chapter also includes new discussions of variation in sexual orientation, gender identity, and relationships, as well as sex-specific vulnerabilities to various stressors (e.g., toxin exposure) based on some of my more recent work (Geary, 2015, 2017, 2019).

The most difficult aspect of writing the first edition of *Male, Female* was to develop a model that tied together research on sex differences that are clearly related to sexual selection (e.g., aggression, parenting, mating strategies) with more than a century of research on sex differences that are not obviously related (e.g., play, social development, cognitive strengths and weaknesses). This model—the motivation to control—was developed over the course of a year (see Geary, 1998a) and was presented as Chapter 6 in the first edition of *Male, Female*. I elaborated the model in the context of brain and cognitive evolution in a subsequent book, *The Origin of Mind: Evolution of Brain, Cognition, and General Intelligence* (Geary, 2005). In this third edition, the same general theoretical framework is melded with sexual selection to provide a framework for understanding the evolution and here-and-now, proximate expression of sex differences in many traits, from physical and behavioral to cognitive and neural. I have also elaborated on this model by better integrating it with theories of human motivation and with work in systems neuroscience related to self-awareness and the use of mental models for social problem-solving.

In effect, when writing the first edition of *Male, Female*, I was convinced that C. Darwin (1871) was correct and that Buss, Daly, Wilson, Symons, and others were on the right track in using sexual selection as the theoretical framework for understanding human sex differences. I also knew that most social scientists were unaware of the principles of sexual selection and the supporting research in nonhuman species. Even if they were aware of this

work, most social scientists preferred to believe that humans were different: specifically, that human sex differences were due largely to socialization. In the two decades since the first edition of *Male, Female* appeared, our understanding of the biology of human sex differences has flourished but the politics of sex differences has become more heated or at least has not cooled much. The stronger the evidence for biological influences on sex differences, the more strident the arguments that any such influences do not exist or are unimportant. I have chosen not to address these arguments, as this would leave less space for the coverage of substantive work on sex differences. I leave it to readers to decide for themselves the extent to which biology informs our understanding of human sex differences.

In any case, to counter the general bias to discount the importance of evolution as a contributor to human sex differences, in the first edition I included three chapters on the basics of sexual reproduction and sexual selection in nonhuman species (Chapters 1–3). I added a fourth chapter on life history and sexual selection to the second edition to provide a better foundation for understanding human developmental sex differences (Chapter 4). These chapters, along with the chapter on primates and human evolution (Chapter 5), have been retained and thoroughly updated for the third edition. I refer readers to these basics throughout the extensive discussions of human sex differences to make explicit links to patterns found across species. At the same time, the expression of many sex differences can be significantly influenced by social factors, such as marriage rules (e.g., whether polygyny is legal) and levels of intergroup violence, among many other factors. We cannot fully understand human sex differences without consideration of these social and cultural factors. I weave discussion of these factors with biologically based biases throughout the nine chapters devoted to human sex differences (Chapters 6–14).

I note that my referencing is extensive and perhaps excessive at times. I did this to provide a listing of sources for interested readers to pursue, but largely to provide documentation for my claims in light of the highly contentious nature of evolutionary accounts of human sex differences. I also tried to make the writing style more reader friendly (i.e., less academic) than the first two editions but no less scientifically documented. I believe the result is a book that is more accessible and useful for a wider audience, from the educated lay reader to the working scientist.

As when I wrote the first two editions of this book, I asked for feedback on each of the chapters to ensure clarity of the presentation and to ensure that I had not missed an important study or topic. I did the same for this edition and thank all these individuals: Rosalind Arden, Mary Hoard, Ted Koditschek, Joseph LaMendola, John Schofield, and Carol Ward. I further thank John Schofield for preparing some of the brain images found in Chapters 9, 12, and 13, and Carl Gerhardt for the bower photo in Chapter 3. I also thank Chris Kelaher at the American Psychological Association for his persistence that ultimately convinced me to do this third edition, and Beth Hatch, Anna Reinhart, and Joe Albrecht for their assistance during the production process,

and the following people for help with the proofs: Kristin Balentine, Mandar Bhoyar, Amanda Campbell, Heather Miller, Lara Nugent, and Madelyn Trost. I am of course responsible for all statements herein. Finally, my deepest thanks go to my wife, Yin Xia, the love of my life. Her continual support and kindness contributed greatly to my ability to focus on and significantly improve this edition of *Male, Female*.