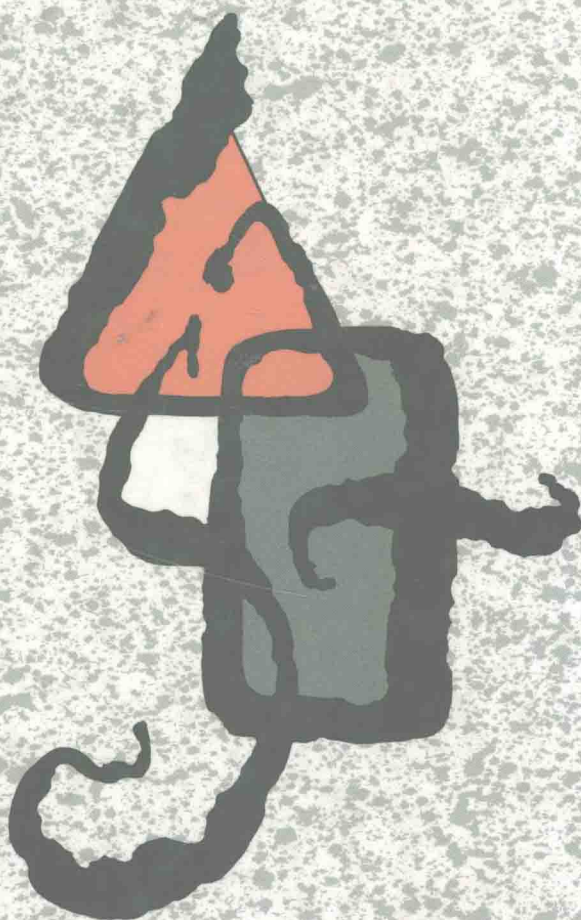


GENDER-RELATED *Differences*

ORIGINS AND OUTCOMES



KATHARINE BLICK HOYENGA
KERMIT T. HOYENGA

GENDER-RELATED DIFFERENCES

ORIGINS AND OUTCOMES

KATHARINE BLICK HOYENGA

Western Illinois University

KERMIT T. HOYENGA

Western Illinois University

ALLYN AND BACON

Boston London Toronto Sydney Tokyo Singapore

Editor-in-Chief, Social Sciences: Susan Badger
Senior Editorial Assistant: Dana Hayes
Production Administrator: Annette Joseph
Production Coordinator: Susan Freese
Editorial-Production Service: TKM Productions
Manufacturing Buyer: Louise Richardson
Cover Administrator: Linda K. Dickinson
Cover Designer: Suzanne Harbison



Copyright © 1993 by Allyn and Bacon
A Division of Simon & Schuster, Inc.
160 Gould Street
Needham Heights, Massachusetts 02194

All rights reserved. No part of the material protected by this copyright notice may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without the written permission of the copyright owner.

Library of Congress Cataloging-in-Publication Data

Hoyenga, Katharine Blick.

Gender-related differences : origins and outcomes / Katharine
Blick Hoyenga, Kermit T. Hoyenga.

p. cm.

Includes bibliographical references and index.

ISBN 0-205-14084-X

1. Sex differences (Psychology). 2. Sex differences. I. Hoyenga,
Kermit T. II. Title.

BF692.2.H686 1993

92-33898

155.3'3—dc20

CIP

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1 98 97 96 95 94 93

GENDER-RELATED DIFFERENCES

“Objectivity” is not meant here to stand for “disinterested contemplation” (which is a rank absurdity) but for an ability to have one’s pros and cons within one’s command and to use them or not, as one chooses.

—Friedrich Wilhelm Nietzsche, *The Genealogy of Morals*
(1956, p. 255)

PREFACE

Gender-Related Differences: Origins and Outcomes examines the origins of gender differences from as many perspectives as possible, believing that all provide useful information. The book is feminist as defined by Pollis (1988): It contains “a core set of assumptions regarding the [desirability of] the elimination of women’s secondary status in society” (p. 87). Thus, the most desirable outcome is the elimination of sexual inequities.

PERSONAL EPISTEMOLOGIES AND SCIENTIFIC SCHEMA

This book explores the principles and concepts relevant to gender-related differences. The term **gender-related differences** is used because one male differs from another and one female from another as much as the mythical average female differs from the average male. The basic principles are discussed: how genes, sex hormones, developmental history, and current cultural and interpersonal environments can all be origins of the final outcome of sex differences.

The way that any person, scientist or reader, conceptualizes a given set of gender-related differences, measured in a specific group of human or nonhuman organisms, depends on her personal epistemology, or knowledge schema. Our epistemology uses the framework of evolutionary theory. This approach is unacceptable to many social scientists (Barlow, 1991; also see Chapter 1), and we think that the reasons for the opposition are personally and politically valid (most human endeavors, including science, involve politics). We also think that these reasons are a reaction to the *misuses* of evolutionary theory. In fact, we strongly believe that any use of evolutionary theory to justify social exclusion or social stratification

is a misuse of that theory and thus should be vigorously opposed.

In this regard, presentation of data from studies done with nonhuman animals is absolutely necessary. Only data from nonhumans can provide the necessary context for evolutionary ideas. The fact that most organisms with sexual reproduction also have gender-related differences in appearances and behaviors allows students to view human sex differences in a different light. Also, for ethical reasons, only research done with nonhumans can use the most powerful experimental designs (active manipulation of variables and random assignment of subjects to groups) to explore the influences of biological and developmental variables. Thus, the research on nonhumans provides the information needed to interpret intelligently the less well controlled data coming from human research.

In view of the need to understand all the processes that may be able to affect sex differences, we present ideas, concepts, and data from as many points of view as possible, including molecular genetics, hormone physiology, neural function, biomedical research, child development, personality theory and research, cross-cultural research, sociology, and cultural and physical anthropology. No specific background is required; all basic terms and concepts are defined and described for the reader. However, the reader is expected to be an upper-division undergraduate or graduate student to have enough background to provide the appropriate context for learning this material.

In attempting to ensure that the knowledge of other fields is presented fairly, we literally immersed ourselves in each field before writing about how it approaches gender issues. We also tried to read many different opinions of

people in the same field to get some feel for the diversity and controversy. When no resolution seemed possible—and this was often the case—we tried to describe the differing viewpoints as accurately as possible.

Our view of these knowledge fields is a hierarchical one, similar to that of Colleen Clements (1985, 1989), a medical ethicist. She describes knowledge fields by using the simile of a spring whose coils expand as you move up a hierarchy. At the lowest level (in this book, at least) is molecular genetics; cultural systems of groups of people are found at the highest level.¹ Research can be done at each level, independently of every other level. However, more understanding is created when the links between levels are examined; Clements says that finding cross-level linkages is one of the few ways we can verify our scientific ideas and concepts.

Although we have an evolutionary schema and we see that as providing ways of exploring linkages, we also think that the knowledge of each discipline is valuable in and of itself. Our focus as psychologists is on the person, believing that the individual is more than just a combination (however complex) of all the different social groups into which he can be categorized (by himself or by some scientist). Thus, we are ultimately concerned with the individual level of the hierarchy. An individual actively chooses group relationships, either by choosing with which groups to identify or by choosing personal actions within some group of which that person is a part, by choice or not (e.g., family and gender groups). The individual actively affects others' behaviors, just as those others affect his behavior.

ORGANIZATION

The book is organized into four units of inter-related chapters. Each unit, except the last, has four chapters. The first unit describes the epistemology and science of gender research and gender-related knowledge. This includes

one chapter that describes how sex evolved and one that describes how sex differences evolved. Unit One is required for all reading plans.

The other units and chapters are somewhat more independent of each other and could be used separately. Unit Two describes the biological covariates of gender-related differences. Within Unit Two, Chapter 5 describes how gender affects genetic activities, and Chapters 6 through 8 describe the hormonal covariates of gender-related differences. Unit Three looks at the ways in which environments can create gender-related differences. Chapter 9 describes developmental processes, Chapter 10 describes the effects of culture, Chapter 11 describes stereotypes, and Chapter 12 looks at how the environments of males and females systematically differ from each other, from birth to death. Unit Four has only two chapters. Certain gender-related differences were selected to examine in greater detail to serve as examples of how principles and data from both Units Two and Three can be combined to look at the origins and outcomes of factors connected to gender-related differences.

Each chapter begins with a brief outline, a quotation, and an "incident" description that will hopefully intrigue readers as well as introduce them to some of the major topics of that chapter. The incidents are sometimes drawn from research, sometimes from newspapers. For example, Chapter 1 begins with a very brief questionnaire as its incident. After the incident, each chapter has from one to three paragraphs describing that chapter's goals and themes, including how the quote and the incident are related to those goals and themes. An introduction to the chapter then follows, describing its topics and organization. The introduction to Chapter 1, however, describes the organization of the entire book.

DOCUMENTATION

The extensive documentation in this book reflects our belief that we—scientists and

students—can understand something only if it is placed in context. For example, knowing that all our chromosomes, not just our sex chromosomes, carry gender labels (parent of origin) means nothing without some sort of context. We also had to use multiple primary references when we could find no usable reviews in an area. Many areas either lacked reviews or else the reviews contained only hotly disputed conclusions or erroneous data. We emphasized meta-analytic reviews wherever possible, as providing a somewhat more objective overview of an area. Other types of reviews were used only if we independently read and verified the descriptions of the key studies. If we found the review to be in error, we cited the individual studies themselves and not the review.

If a valid review was lacking, we looked for consensus. If almost all studies of a given relationship seemed to produce similar results, we simply described one or two of the best or most recent as examples. Such agreement was rare, however. In most instances, different studies provided disparate results, which then prompted us to use evolutionary schema to select those that would be discussed. In this case, we tried to indicate the lack of agreement, as well. Only if results could be replicated—hopefully several times by different teams of researchers—was a controversial area discussed at all. The replication is indicated by including multiple citations for a given statement. These multiple citations are a signal not only of some discrepancy but also of the fact that whatever relationship is being described can be reliably found in the research and so needs to be taken seriously. We also included multiple citations whenever we found cross-cultural research on a given relationship as a useful antidote for cultural myopia.

Readers will find that some atypical formats in source citations have been adopted in this text. In some cases, we cited all sources that documented the topic sentence of a given paragraph right after that sentence. If necessary, we then used individual authors' names to identify

their work throughout the paragraph. Where a very long list of references was needed to document a point, the list appears as an endnote. (Other endnotes contain relevant but not essential material.) Because of the controversial nature of much of this book's material, multiple references to document a point are necessary. It is our belief that student readers should concentrate not on who did what but on the fact that several different groups of people were able to find similar results, which is, in fact, the purpose of the multiple citations. Finally, we also made extensive use of tables to present details of information and the associated documentation; most of these tables can be found in the accompanying Instructor's Manual.

We have also employed a somewhat unique method of citing references at the end of the book. The pages on which each source is cited are indicated in boldface type at the end of the entry. We have done the same in our other books and have found it useful in our own reading to be able to look up discussions of specific research results.

The documentation in this text benefits students in several ways. The readers have access to primary source material either in the text itself or in the associated Instructor's Manual and can thus easily pursue their interests in that area, perhaps culminating in an independent paper or project. Students can also see that careful and extensive documentation is a necessary part of scientific argument, just as much as logical, careful, persuasive reasoning is a part of the literary or humanistic approach to understanding the world.

STYLE

Because of linguistic awkwardness, but with great regret, unless discussing effects and processes limited to one gender, any nonhuman animal is referred to as *it*. For humans, we usually used plural pronouns, but in places where pronouns were very common and could

not easily be pluralized, we alternated genders from paragraph to paragraph.

As the text documents (see Chapter 2), the gender of the researcher is not infrequently relevant to the direction of the results or to the size of the gender-related difference. Because of this, in areas in which researchers' genders are probably relevant, their genders were indicated in the text by the use of appropriate pronouns. We hope that this will also serve to remind readers that gender of subject is not the only relevant gender-linked variable. Gender of researcher and, presumably, gender of reader affect attitudes and hence behavioral, memory, and interpretive biases.

Two other stylistic conventions should be noted. First, the word *real* is often used with quotation marks around it to remind the reader that what is "real" can vary from situation to situation and from person to person. Second, abbreviations are commonly used throughout the text but are explained at the first occurrence within each chapter.

ACKNOWLEDGMENTS

In closing, we would like to acknowledge the following individuals who reviewed our manuscript at various stages: David Buss, University of Michigan; Jacqueline Eccles, University of Michigan; Claire Etaugh, Bradley University; Kathryn Hood, Pennsylvania State University; Janice M. Juraska, University of Illinois; Diane Ruble, New York University; and Nancy Russo, Arizona State University.

ENDNOTE

1. *Higher* and *lower* in this context do not reflect value judgments or any kind of moral or scientific evaluation. Calling a level *higher* means only that it involves interactions among systems, each of which at a *lower* level is another interacting collection of even lower subsystems. Cells are collections of organelles, which are themselves collections of molecules; organs are collections of cells; individual organisms are collections of organs; social systems are collections of individuals; and so on. The levels are interconnected, so a change to a system at any level affects systems at all other levels.

CONTENTS

PREFACE xiii

UNIT ONE

THE STUDY OF GENDER-RELATED DIFFERENCES 1

CHAPTER 1 EPISTEMOLOGY OF GENDER KNOWLEDGE 5

Overview of This Book	6
Concepts and Realities	6
<i>Definitions of Gender</i>	6
<i>Assumptions and Realities</i>	9
Pathological Gender Assumptions	11
<i>"If It's Good for the Goose . . ."</i>	11
<i>"If It's Feminine, It's Inferior"</i>	12
<i>Sex Differences Are Always Small</i>	12
<i>If It Exists, It Must Be Due to Culture and Environment</i>	12
<i>If It's Biological, It Must Be Immutable</i>	13
<i>Which Contributes Most: Nature or Nurture?</i>	14
<i>Sex Roles Are Entirely Cultural/Experiential</i>	16
<i>If It Depends on Culture or a Situation, It Cannot Be Biological (Or If It's Biological, It Must Be Cross-Culturally Universal)</i>	16
<i>If We Differ from One Another, It Cannot Be Biological</i>	16
<i>If It's Biological, It Must Be Proximal</i>	17
<i>If It's Biological, It Must Be Present at Birth (Or If It's Present at Birth, It Must Be Biological)</i>	17
<i>Biological Data Require Higher Standards of Evidence</i>	18
<i>The Assumption of Biological Determinism</i>	18
Paradigms of Sex Differences	19
<i>Explanations and Theories</i>	19
<i>Epigenetic Development: A Model for Sex Differences</i>	20
Summary	22
<i>Endnotes</i>	22

CHAPTER 2 MEASURING ROLES AND DIFFERENCES 24

Measuring Gender-Related Differences	24
<i>Predictions and Methodology</i>	25
<i>Types of Variables</i>	27
<i>The Statistics of Gender-Related Differences</i>	32
<i>Meta-Analysis</i>	36
<i>The Concept of Covariance</i>	37
<i>Sources of Bias in Measuring Gender-Related Differences</i>	38
Measuring Sex Roles	41
<i>The History of Sex-Role Scales</i>	41
<i>Scales That Measure Sex Roles</i>	43
<i>Validity of Scales</i>	45
Summary	49
<i>Endnotes</i>	50

CHAPTER 3 THE EVOLUTION OF SEX 51

Introduction	51
Evolution, Selection Pressures, and Genes	52
<i>Genes versus Traits</i>	52
<i>Evolution and Genes</i>	59
<i>Genetic Variability</i>	64
The Advantages of Sexual Reproduction	69
<i>The Benefits of Asexual Reproduction: The Costs of Sex</i>	69
<i>Sexual Reproduction and Variability</i>	70
Summary	74
<i>Endnotes</i>	75

CHAPTER 4 THE EVOLUTION OF SEX DIFFERENCES 76

Introduction	76
Natural Selection, Sex, and Reproductive Roles	77
<i>Sex Differences in Reproductive Roles</i>	77
<i>Sex Ratios: Parental Investments and Reproductive Roles</i>	79
<i>Social Traits</i>	80
Sexual Selection	83
<i>Two Types of Sexual Selection</i>	83
<i>Sexual Selection and Sexual Dimorphism</i>	84
<i>The Genetics of Female Choice</i>	86
<i>Mating Systems</i>	87
Evolutionary Characteristics of Sexually Dimorphic Species	89
<i>High Predation</i>	89
<i>Large Sex Differences in Reproductive Roles</i>	89
<i>Social Living</i>	89
<i>High Intersexual Competition for Limited Resources</i>	90
<i>Low Sex Ratios among Mating and among Older Adults</i>	90
<i>Sex Differences in Variability of Reproductive Success</i>	90
Facts and Speculations about Humans	91
<i>What Were Our Ancestors Like?</i>	91
<i>K versus r Selection Strategies</i>	91
Summary	92
<i>Endnotes</i>	93

**UNIT TWO
BIOLOGICAL COVARIATES 95**

CHAPTER 5 THE GENETICS OF GENDER 97

Introduction	97
Sexually Dimorphic Evolution: Sex Chromosomes and Hormones	98
<i>Sex-Linked Genes</i>	98
<i>Sex-Limited Genes</i>	99
<i>Evolution of Sex Linkage and Sex Limitation</i>	99
Gender Differences in Gene Activity	100
<i>Recombination Frequency</i>	100
<i>Genomic, or Parental, Imprinting</i>	102
<i>X-Inactivation</i>	103

Sex-Determining Genes	105
<i>Y-Linked Genes</i>	105
<i>Sex Hormone Genes</i>	107
Exploring Sex Linkage	108
<i>Family History Studies</i>	108
<i>Genetic Probes</i>	110
<i>Sex Chromosome Abnormalities</i>	111
<i>Limitations of Sex Linkage Research</i>	116
Sex Chromosome Maps	117
<i>Y Linkage</i>	117
<i>X Linkage</i>	119
Summary	123
<i>Endnotes</i>	123

CHAPTER 6 HOW DO HORMONES AFFECT OUR BRAINS? 124

Introduction	124
Basic Ideas about Hormones	125
<i>Three Continua of Hormone Effects</i>	125
<i>Effects on Organs Other than the Brain</i>	127
<i>Techniques of Study</i>	128
How Can Sex Hormones Affect Your Brain Cells?	130
<i>Overview of Brain Studies</i>	130
<i>Genomic versus Nongenomic Membrane Function</i>	133
<i>Outcomes of Functions for Neurons</i>	137
Principles of Hormone Effects	140
<i>The Principles</i>	140
<i>The Active Hormone for Masculinization and Defeminization</i>	140
<i>Variability across Species</i>	141
<i>Variability within a Species</i>	146
<i>Environmental Modifiers</i>	148
<i>Timing Effects</i>	149
<i>Nonlinear Effects</i>	150
Summary	151
<i>Endnotes</i>	152

CHAPTER 7 SEX DIFFERENCES IN PERINATAL HORMONES 153

Introduction	154
Basic Terms and Concepts of Perinatal Hormone Effects	154
<i>Effects of Hormones on Development</i>	154
<i>Basic Developmental Processes</i>	154
<i>The Sex Hormones of Fetal Differentiation</i>	156
<i>Perinatal Hormones Affect Behavior</i>	158
Sex Differences in Perinatal Hormone Levels	160
<i>Perinatal Hormone Levels</i>	160
<i>Perinatal Levels of Brain Receptors and Enzymes</i>	160
Sex Differences in the Brain	161
<i>SDN-POA versus SNB</i>	161
<i>Other Sexually Dimorphic Brain Areas</i>	163
Human Perinatal Hormone Syndromes	167
<i>Variations in Androgen Levels</i>	168
<i>Exogenous Hormones</i>	169
<i>Normal Variations in Perinatal Hormone Levels</i>	170
Summary	174
<i>Endnotes</i>	174

CHAPTER 8 SEX DIFFERENCES IN POSTPUBERTAL HORMONES 176

Introduction 176

Postpubertal Sex Hormones: Control and Effects 177

Puberty 177 *Gonadotropic Hormones and the Gonads* 177 *Nongonadal Sources of Sex Hormones* 178 *Hormone Levels* 178 *Hormone Receptors and Enzyme Levels in the Adult Brain* 179 *Examples of Postpubertal Hormone Effects on the Structure and Function of the Brain* 180

Hormone Cycles 181

Circadian Cycles 182 *Estrous Cycles* 183 *Menstrual Cycles* 184 *The Premenstrual Syndrome (The Late Luteal Phase Dysphoric Disorder)* 191 *Monthly Hormone Cycles in Males* 195 *Annual Cycles* 196

Special Periods of Life 196

Pregnancy 197 *Age and Menopause* 198 *Exogenous Hormones* 201

Summary 202

Endnotes 203

UNIT THREE

ENVIRONMENTAL COVARIATES 205

CHAPTER 9 LEARNING AND DEVELOPMENT: CONCEPTS AND THEORIES 207

Introduction 208

Learning Processes 208

Operational Definitions of Three Learning Paradigms 209 *Cognitive Explanations* 212 *Evolution of Learning* 213

Theories of How Gender-Related Differences Developed 216

All Theories Are Now Cognitive 216 *Freud and Psychoanalytic Theory* 216 *Kohlberg and Cognitive-Developmental Theory* 218 *Bandura's Social-Cognitive Theory* 219 *Evolutionary Concepts of Parental Care* 220

Basic Developmental Processes 223

Processes that Change with Development 224 *Processes Occurring Throughout Development* 229 *Huston's Concepts of Sex Typing* 232 *Predictability and Stability* 232

Summary 235

Endnotes 236

CHAPTER 10 CULTURAL INFLUENCES ON GENDER-RELATED DIFFERENCES 237

Introduction 237

Concepts and Tensions in Current Anthropology 238

Historical 238 *Current: Humanistic versus Scientific Paradigms* 239

Evolution of Social Behavior and Culture	240
<i>Wrangham's Theory of Primate Social Structures</i>	241
<i>Hunting and Kin Groups</i>	243
<i>Evolution of Culture among Humans</i>	247
Culture and Child Socialization	250
<i>Types of Parental Care</i>	250
<i>Sexually Dimorphic Developmental Environments</i>	253
Cultural Variability among Adults	255
<i>Jobs and Tasks</i>	255
<i>Traits</i>	256
<i>Status of Women</i>	259
<i>Possible Reasons for Gender-Related Role Assignments and Evaluations</i>	262
Summary	263
<i>Endnotes</i>	264

CHAPTER 11 STEREOTYPES AND SEX TYPING 265

Introduction	265
Gender Categories	266
<i>Categorization Processes</i>	266
<i>Content of Gender Categories</i>	269
<i>Maintenance and Change</i>	274
<i>Individual Differences in Stereotyping</i>	276
When Stereotypes Become Prejudices	277
<i>Definitions and Processes</i>	278
<i>Changes Over Time?</i>	280
<i>Some Examples of the Effects of Prejudice</i>	282
The Development of Stereotypes	286
<i>Processes of Acquisition</i>	286
<i>Stereotypes in Mass Media</i>	288
<i>Children's Stereotypes</i>	290
Summary	295
<i>Endnotes</i>	295

CHAPTER 12 GENDERED ENVIRONMENTS 297

Introduction	297
Home Environment	298
<i>Basic Background Information</i>	298
<i>Types of Parenting</i>	299
<i>Parental Behaviors: Objective Data</i>	301
<i>Parents of Sex-Atypical Children</i>	302
<i>Parents as Models: Sexual Division of Child-Rearing Labors</i>	303
<i>Parents as Models: Sexual Division of Household Labor</i>	305
<i>Gendered Toys</i>	307
School Environment	308
<i>Observational Studies of Teachers' Behaviors</i>	308
<i>Peer Interactions</i>	313
<i>Peers versus Teachers</i>	317
Dimorphic Effects	317
<i>Competition</i>	318
<i>Task Preferences and Peer versus Adult Orientation</i>	320
<i>Social Comparison Processes</i>	320
Work Environment	322
<i>Income Differentials</i>	322
<i>Job Segregation</i>	324
<i>Why Are Jobs Segregated?</i>	325

Summary	332
Endnotes	332

UNIT FOUR

SEX AND STATUS 335

CHAPTER 13 PROSOCIAL VERSUS EGOISTIC DOMINANCE: MURDER VERSUS DEPRESSION? 337

Introduction	338
The Concept of Personality	338
<i>Measuring Personality Traits</i>	338
<i>Meta-Analytic Studies</i>	341
<i>Prosocial versus Egoistic Dominance</i>	346
Homicides	351
<i>Gender-Related Differences in Homicides</i>	351
<i>Developmental Covariates</i>	356
<i>Biological Covariates</i>	357
Depression	360
<i>Sex Differences</i>	360
<i>Sex Differences in Stress</i>	362
<i>Biological Covariates</i>	367
Summary	368
Endnotes	370

CHAPTER 14 DEVELOPMENTAL RATE: SEXUAL MOTIVES AND SPATIAL VISUALIZATION 371

Introduction	371
Background	372
<i>Sex Differences in Task Performances</i>	372
<i>Developmental Rate Covariates</i>	374
<i>Evolutionary Theories</i>	375
Sex and Mating	378
<i>Human Mating Preferences</i>	378
<i>Sex Differences in Sexual Motives</i>	382
<i>Hormones and Sexual Activity</i>	386
<i>Sexual Preferences in Humans</i>	387
Spatial Tasks	389
<i>Sex Differences</i>	389
<i>The Structure of Spatial Performances</i>	391
<i>Developmental and Situational Covariates</i>	393
<i>Biological Covariates</i>	396
Summary	399
Endnotes	400

REFERENCES 401

INDEX 469

UNIT ONE

THE STUDY OF GENDER-RELATED DIFFERENCES

This unit provides the background and context for interpreting gender-related differences. **Gender-related differences** refer to any characteristics that occur in different frequencies, likelihoods, or degrees in one gender when compared to the other. These differences usually occur only in a few *specific* situations. The term also refers to differences in the *same* characteristics as they appear within each gender. In fact, gender-related differences are often larger when measured within each gender than when each gender is separately measured and then compared to the other. Men and women usually differ more from other people of the same gender than the average woman differs from the average man. Since the definition of **gender-related traits** is situation specific, there can be no “transcendent” sex differences. This means that no difference between the sexes transcends situational characteristics, appearing regardless of the setting, the measurement technique being used, or the past histories of the people being measured.

The four chapters in Unit One provide the background information necessary for understanding the material of the other units. The unit includes a discussion of how gender-related knowledge is constructed and a description of how gender and gender-related differences originated in our evolutionary history. This is consistent with the book’s focus on how gender knowledge is created and how research concerned with describing and documenting the role of each type of origin (hormones, culture) is to be evaluated.

The first two chapters of Unit One describe the knowledge structure of gender-related differences research and theory. Chapter 1 looks at the epistemology of gender research, and Chapter 2 looks at the measurement of gender-related differences and sex roles. Thus, Chapter 1 covers myths and biases, and Chapter 2 examines questions of research design and interpretation.

The next two chapters apply evolutionary theory to gender. It is a mistake to view evolutionary theory as a theory of psychology (or a theory of culture) (Barkow, 1991). However, as Barkow also pointed out, any theory of psychology (or culture) that could not have evolved is also mistaken. By analogy, any psychological theory

of memory that posits nerve cells doing things that no nerve cell has ever been observed to do would have to be mistaken. In other words, a psychological theory can be of value (see Chapter 2) in predicting and explaining behavior even if it says absolutely nothing about evolution. However, that theory is unlikely to be correct if it attempts to explain human behavior by hypothesizing certain **mechanisms** (motives, perceptions, cognitive structures) that could not be reasonably seen as having been selected for by past evolutionary pressures.

Since evolutionary theory is not, in itself, a theory of culture or learning or hormone effects, special theories are needed to describe those mechanisms. These special theories are therefore theories about either **proximate mechanisms** (see Chapter 1) or else about **processes** that can produce sex differences. These topics are covered in Units Two and Three. Nevertheless, the mechanisms and processes must be consistent with the evolutionary theory presented in this unit.

Evolutionary theory is increasingly being used to inform and guide psychological research and theory. Although others would disagree (e.g., Charlesworth, 1986a), Ghiselin (1986) said that “psychology, like many other fields, is now in the midst of a Darwinian renaissance” (p. 21). The theory has been applied to personality (Buss, 1984a); human developmental research (Ghiselin, 1986; Charlesworth, 1986a); human sexuality (Buss, 1985, 1986, 1987a, 1988, 1989b; Symons, 1979); impression management and self-esteem (Barkow, 1991); and sex differences (Daly & Wilson, 1983). Furthermore, consistent with evolutionary ideas, human motivational and personality traits have been found to have important genetic as well as environmental/learning components (see Chapters 9 and 14).

One of the major features of the evolutionary theory is its colligative power, the power to pull and bind together a vast array of diverse phenomena into a plausible account of their origins, interrelationships, and functions. This colligative power can perhaps best be depicted as a network of many empirical facts and concepts . . . that help us organize our present knowledge and stimulate the search for new knowledge. . . . As for predicting the future of evolutionary theory . . . , my guess is that . . . it will be used to seek leads to understanding present functions of behavior, to identify the determinants of behavior during ontogeny, and to establish the correlates and economics of individual reproductive success. (Charlesworth, 1986b, pp. 20, 30)

Evolutionary theory is as much a theory of environmental as of genetic influences. “The organism takes an active role in its interactions with the environment. . . . Selection of behavioral innovations in new environments would bring new [evolutionary] selection pressure into play” (Ghiselin, 1986, p. 13). As you will see in Chapter 3, evolutionary selection pressures are always specific to a given environment. The relevant environment includes: number and types of peers; amount and availability of food supplies; type and availability of potential mates; types of developmental environments, including types of mothering; and so on. The genes are being selected for or against by the environment: A gene that is of “good” quality in one kind of environment might be of “poor” quality in another environment. For example, there are genetic predispositions to obesity in humans as well as non-humans. One explanation of why these genes are so relatively common in today’s humans is that those genes once conferred upon their bearers an increased ability