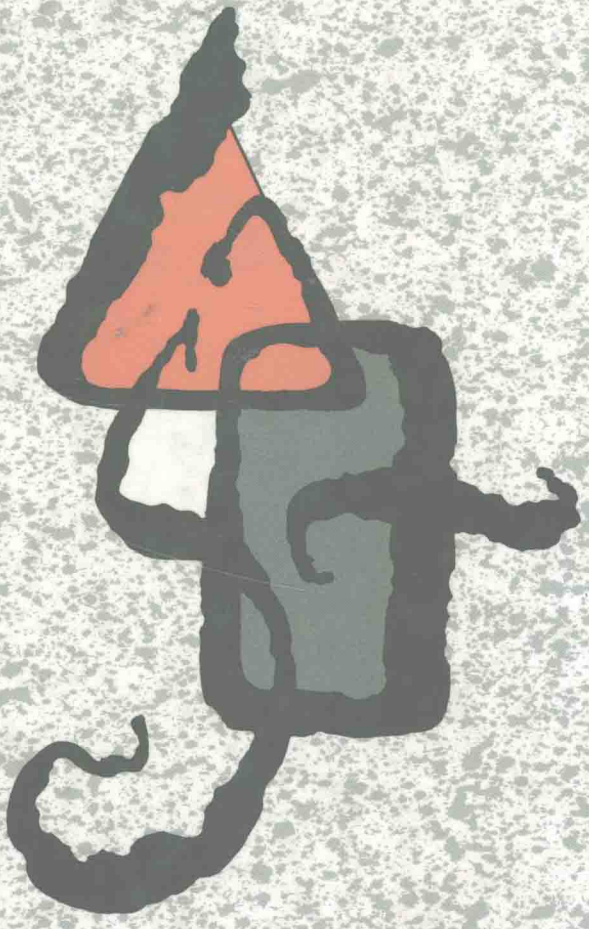
GENDER-RELATED *Differences*

ORIGINS AND OUTCOMES



KATHARINE BLICK HOYENGA
KERMIT T. HOYENGA

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KATHARINE BLICK HOYENGA
Western Illinois University

KERMIT T. HOYENGA
Western Illinois University

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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 interrelated 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.

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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

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 characteristicistics 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 nonhumans. 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