Twins and Supertwins

Twins and Supertwins

A Handbook for Early Childhood Professionals

Eve-Marie Arce, EdD

Redleaf Press®
www.redleafpress.org
800-423-8309

Published by Redleaf Press
10 Yorkton Court
St. Paul, MN 55117
www.redleafpress.org

First edition 2010
Cover design by Jim Handrigan
Cover photograph ©iStock
Interior typeset in Minion Pro and Gill Sans and designed by Michelle L. N. Cook
Printed in the United States of America
17 16 15 14 13 12 11 10 1 2 3 4 5 6 7 8

Photographic contributors: Blakely Fetridge Bundy; Lisa Dirito—Lisa Dirito Photography; Rachel Hill—Rachel Hill Photography; Jim Ramirez

Library of Congress Cataloging-in-Publication Data
Arce, Eve-Marie.
Twins and supertwins : a handbook for early childhood professionals / Eve-Marie Arce, EdD.
p. cm.
Includes bibliographical references and index.
ISBN 978-1-60554-030-6 (alk. paper)
1. Twins—Psychology. 2. Early childhood education. 3. Child development. I. Title.
HQ777.35.A73 2010
306.875—dc22
2009053177

Printed on acid-free paper

To Henry

You kept the wind in our sail

Contents

Acknowledgments

Special appreciation is due to many—family, friends, and professional colleagues. I am grateful to each one for supporting and encouraging me to inform the early childhood profession about twins and supertwins.

Numerous professional colleagues played a particularly important role. To each, I express an unending message of gratitude and much joy in our mutual dedication to acknowledging multiples.

- Pat Malmstrom, founder of Twin Services, inspired me over thirty years ago. She became my mentor when we finally met during my doctoral studies. Her commitment and enthusiasm profoundly helped me formulate this book.
- Cary Larson-McKay was my go-to colleague. Our friendship and affiliation generated wonderful suggestions. Cary's critical reviews influenced this book's application as a resource for teachers.
- Sherry Magee and the other professors in the Organizational Leadership Department at the University of La Verne supported my doctoral dissertation about twins and early childhood.
- Rachel Franklin responded to my request to read the chapter about the meaning of twins and supertwins. This was an extraordinarily generous and supportive gesture, considering her schedule as a family medicine specialist and associate professor of family and preventive medicine at the University of Oklahoma College of Medicine.

I am in debt to the researchers whose work is cited throughout the book. Four international experts established the foundation for what you will read: David Hay, Patricia Malmstrom, Pat Preedy, and Nancy Segal.

I thank them and sincerely desire that the book honors their work and meets their expectations.

The children whose photographs are featured throughout the book are twins and supertwins. I am extremely appreciative to the following families for their contribution of the photographs:

The Ager Family
The Annan Family
The Blek Family
The Bose Family
The Brooks Family
The Bush Family
The Chapin Family
The Goulet Family
The Houchin Family
The Irwin Family
The McGredy Family
The McKay Family
The Mendell Family
The Pearson Family
The Perry Family
The Rapinoe Family
The Rodrigo Family
The Simpson-Showalter Family
The Villafana Family

Children's names used throughout the book to illustrate examples are not the names of the children in the related photographs.

Personal and professional colleagues from early childhood education centers throughout the United States submitted photographs. To each, I extend a huge and sincere thank-you.

Arleen Uryu, Director, Santa Margarita Children's Center
Cecily Mendell
Clovis Unifed School District, Clovis, California
Dakota Circle Head Start Preschool Program, Fresno, California
Denise Holder
Eunice Thiesen

Kathy Ramirez, Executive Director, Village Infant/Toddler Center and Preschool
Liz Dacey
Lori Rodrigo
Marva Lyons, Director, Happy Town Family Child Care
Olivia Brooks
Regina Martin
Shasta College Early Childhood Education Center, Redding, California

Most essentially, it is my family who deserves the most appreciation. They guide my reality and encourage my work. My daughters, Cecily and Olivia, led me into the realm of twins, and my grandsons give perpetual meaning to encourage the recognition of multiples.

Introduction

"What is it like to have twins?"

As I prepared to answer this question, I scanned the eighty or so college students assembled in the lecture hall. The question was very familiar, asked innumerable times during the semesters I taught child and human development courses. Would this student, this semester, want a professional response? Or was the student seeking a reply with personal insight?

Even now, I think about my responses. Most were simple, and all elicited more inquiry because I couldn't really answer the question. Students rarely missed responding to me with, "But why not? You're a mother of twins." While I confidently taught the courses, I was unable at that time to answer with enough substantiated resources and information. My bachelor's degree in child development and master's degree in human development and early childhood education had not included training about twins. Throughout my years teaching preschoolers in Head Start, publicly funded preschools, and a university laboratory school, none of the children who were enrolled were twins. My own experience as a mother of twins provided only one example of a set of twins, in one family, in one community, in one less-than-objective environment.

The college students remained curious about twins. They wanted to know about twin language, whether twins were always friends with each other, and which teaching methods would be most appropriate for twins. I realized that students intuitively recognized that twins might have particular needs.

Twins as a topic most often is addressed very briefly in child development textbooks. Generally, they are mentioned in a paragraph or two about conception. Teacher preparatory coursework and related instructional material,

however, do not include content about them. For this reason, I supplemented lecture topics with whatever information I could find. Handouts produced by Twin Services were the most helpful; they established a foundation for my course content. Twin Services was founded in 1978 by an educator and mother of twins, Patricia Malmstrom, to address the lack of resources for families.

Inquiries from students and conference attendees continue. Now the questions also address triplets and sometimes quadruplets and quintuplets, called *supertwins* or *multiples*. *Multiples* is an inclusive term referring to children who are twins, triplets, quadruplets, quintuplets, and the other higher-order numbers. *Multiples* will be used interchangeably with *twins* and *supertwins* throughout the book.

The continuing questions from students, conference attendees, and teachers ask for practical information. Many wonder, "What is going on?" Teachers and program administrations are not just seeing double and triple. They are, in fact, seeing more children whose last names are the same, whose parents are the same, whose birth dates fall on the same day, and who may physically look quite similar. This is because approximately one child in every thirty is now a multiple (Hay and Preedy 2006; Martin et al. 2009).

Teachers' comments validate the escalating population and present inquiries:

> "I have two sets of twins and one set of triplets."
>
> "We have eight sets of twins in our school. We're trying to figure out what to do."
>
> "Parents have demands. We're a co-op. None of us really knows anything about twins."
>
> "I have a group of twelve preschoolers; eight are twins."

The extraordinary increase in the multiple population is occurring along with efforts to increase preschool programs for all children. As an early childhood educator, you know that the preschool experience influences young children. It is their first point of entry into the educational system. Inquiries about twins and supertwins from teachers suggest that the preschool experience may affect twins and supertwins differently than it does singleborn children. The baby boom of multiples poses social, economical, and educational challenges. Conscientious teachers want to know how the challenges affect multiples and what the implications are for teaching them during their early childhood years.

Many multiples begin attending preschool programs with teachers who have not received appropriate professional preparation on the developmental needs of twins and supertwins. Too often, teachers and program administrators make decisions about the care of multiples based on popular misconceptions and generalizations. The very limited references to twins in child development books usually refer to dated case studies describing unusual and extreme behaviors.

Because the public remains fascinated with twins and supertwins, popular publications contain sensational stories about them. Most books written about twins are directed to families, and the contents primarily cover prenatal and early development of multiples. Medical professionals who are parents of twins write some of the parenting references.

The population of multiple-birth children is increasing, and information about them has been limited. As both of these circumstances merge, they offer the rationale for *Twins and Supertwins: A Handbook for Early Childhood Professionals*. This book grew out of the certainty that teachers will use new knowledge to enhance their interaction with children. Inspired by this conviction, I've written this book as a practical guide for early childhood educators and child caregivers.

This book lays out my understanding of twins and supertwins based on the information that was previously available only in the research literature and in books addressed specifically to parents (birth parents, adoptive parents, and any other adult guardians of twins or supertwins). As you begin absorbing the information, you can build a foundation of knowledge for making informed decisions about the twins and supertwins attending your preschools. Having such information helps you clarify misconceptions and dispel misinformation about multiples. The details are useful for staff members working toward agreement on the care and interaction with multiples, for instance, and agreement about the appropriate terms to use when describing multiples. Facts and figures prepare you to implement programs that can have a positive impact on the health and welfare of the twins and supertwins enrolled in your programs. The information in this book facilitates your interaction with the families of multiples.

Twins and Supertwins is organized into three parts. The book starts with background information in chapters 1 and 2, including definitions for twins and supertwins, data on their increasing numbers, and commentary about popular interest in and fascination about them. In the second part (chapters 3, 4, and 5), I discuss multiples' physical, social

and emotional, and learning and language development, enhancing the developmental areas with published research that is twin- and supertwin-specific. The third part synthesizes practical information for early childhood teachers. Chapters 6 and 7 introduce the unique needs of preschool multiples and the program practices that best meet their needs. These practices establish a foundation for school guidelines and prospective policies. My basic assumption is that as soon as teachers have adequate background and practical information about multiples, they will literally and figuratively make room for multiples in their classrooms.

You will find comments from preschool teachers, program administrators, and families of twins threaded throughout the chapters. I have gathered observations of twins for more than thirty-five years in varied educational settings. The names of teachers and children in all of the examples have been modified with the exception of direct quotes from adults. In the appendixes, you will find a list identifying the unique needs of twins, a list of the program practices that best meet their needs, and a Teachers Taking Action template to assist you in reviewing the needs and practices. A glossary, a list of additional resources, and references complete the book.

The groundwork for establishing the unique needs and program practices is based on a study I conducted that was specifically designed to identify the needs of twins in center-based preschools (Arce 2008). A panel of four experts reviewed and confirmed the conceptual framework. Most the foundational concepts emerged from the valuable work of David Hay, Patricia Maxwell Malmstrom, Pat Preedy, and Nancy Segal. The contributions from these four international experts provide important insight regarding multiples and their early development and education. Two additional groups of professionals, teachers, and academics contributed to the study. The teachers were drawn from the center-based preschools accredited by the National Association for the Education of Young Children (NAEYC). The sample of preschools was included because NAEYC Accreditation Academy includes the widest range of early childhood programs, including publicly funded, private-for-profit, and faith-based programs for young children. The academics were researchers, authors, professors, physicians, counselors, and children's advocates.

The needs and practices lists that emerged from my study synthesize the perceptions of experts, teachers, and academics. The wording in a few of the statements that identify the needs and practices have been slightly

modified from the study findings. You will find in *Twins and Supertwins* that the changes enhance readability while sustaining the perceptions of the study participants.

Twins and Supertwins: A Handbook for Early Childhood Professionals is valuable for everyone involved in early childhood education. Teachers, program administrators, and families can benefit from the informative strategies identified to enhance the well-being of twins and supertwins during their preschool years. The information in this book can enhance your confidence in teaching twins and supertwins by helping you identify the most suitable practices for multiples. Once this knowledge finds its way into pre-service professional preparation, teachers can arrive at preschools ready to meet the needs of multiples. Perhaps then some of the questions previously asked by college students will no longer be asked. Or perhaps new questions will be raised by educators, especially by those with three, four, and sometimes seven sets of multiples attending their preschool programs at once.

Now, attendees who learn through my presentation that besides being a mother of twins, I am a grandmother of twins, regularly ask, "What it is like to have twin grandsons?"

PART ONE

Historical Perspectives

The Meaning of Twins and Supertwins

chapter one

Teacher, what's a twin?"

How does an early childhood educator answer four-year-old Jackson's question? What indeed, is the meaning of *twin*? What is the meaning of *supertwin*?

Every profession uses its own definitions and acronyms for communicating. The definitions evolve as the discipline advances. Today that information evolves much more quickly than it did even a few years ago. Increasingly, sophisticated technologies reveal findings never before imagined; this is especially true about prenatal development. New terms are added, definitions are refined and updated, and old terms become obsolete. The changes influence relationships, procedures, and people, including our understanding of twins.

The quest to understand twins and supertwins is significant for many reasons. Most important, teachers need to respond appropriately to questions from the preschoolers attending their programs. A teacher's immediate answer may be something like this: "Your friend Max is a twin. Your friend Joseph is a twin. They are also brothers." You have opportunities to answer the children's inquiries when the twins are first introduced to the class or as the children ask questions. "We have two new friends today who are joining our group. Their names are Anna and Isabella. They are twins. They are sisters."

Older preschoolers may probe further and insist on more information to answer the question "But teacher, if they are twins, why

don't they look the same?" The teacher who is informed about twins and supertwins is prepared to answer, "Twins do not always look alike. Anna and Isabella are twins. They are sisters. They were born on the same day. Ethan and Ava are twins too. Ava is Ethan's sister and Ethan is Ava's brother. They were born on the same day and they have the same mother and father."

Twinship and *supertwinship* are terms that identify the relationships between children born on the same day to the same parents. Twinship includes two children. Supertwinship may include triplets, quadruplets, or larger groups. The relationship defines a particular phenomenon—one that is normal to the pair or the group in a world in which singletons are the usual reference point (Stewart 2003).

Some parents enrolling their twins and supertwins in early childhood programs are aware and knowledgeable about the facts, statistics, and descriptive nuances of multiplehood. They are advocates for their children and have strong preferences about their children's education. Your familiarity with the information in this chapter establishes a base of knowledge for your work with multiples. This knowledge probably replicates much that is already known by their families. Equipped with similar information, you are ready to build an inventory of responses to questions about multiples and to develop materials that complement your existing preschool program policies and family education plan.

Twins and supertwins are individual preschoolers who enroll in and attend preschool or prekindergarten with one or more of their same-age siblings. Their increasing numbers may initially give the impression that their enrollment will double and triple the demands on you. They will not, because you are already prepared to work with children in groups. Even so, you may become absorbed in learning as much about the new arrivals as possible. Your need for information does not require that you become overloaded with statistics and scientific data. This chapter includes the basic facts about twins and supertwins you need.

Avoid generalized information about multiples. Just like each singleborn child, each twin, each supertwin, and each twin and supertwin family is unique. For this reason, your guidance of multiples deserves careful consideration. Most children attending preschool programs are singletons. Some singleton preschoolers may be siblings to multiples or have cousins or neighbors who are twins or supertwins. For the majority of singletons, however, preschool is their first direct interaction with

a multiple-birth child. In contrast, for twins and supertwins, relationships and daily interactions with same-age siblings or other children are normal.

Twins

A twin is defined as two children born to one mother from a single pregnancy. Twins most often arouse curiosity. Some people are amazed and some just fascinated by them (Hay and Preedy 2006; Segal 2005b; Smilansky 1992; Stewart 2000). Twins have traits and special characteristics that define their unique relationship. As a social phenomenon, they create an identifiable category. People react to them and their twinness in both positive and negative ways (Stewart 2003).

A few definitions answer the most basic questions and help you frame positive descriptions. What are twins? What are multiples? What is a singleborn child, and what are supertwins?

Twins can share the same biological makeup or be as dissimilar as any two singleborn siblings. A multiple-birth child, multiple-birth children, and multiples are members of a group of two (twins) or more (supertwins). They shared the same prenatal environment. Multiple-birth children also typically are conceived at the same time, are born on the same day, and share biological makeup. A singleborn child is one child born to one woman from one pregnancy and one birth. When the term *singleborn* is used in connection with the word *multiples*, it generally refers to the fact that the singleborn does not have a twin or supertwin sibling. *Singleborn children* and *singleborn child* are terms used throughout this book.

Twin Type and Multiple Type

Twin type is a term used to explain the various known classifications of twins and supertwins. The term *multiple type* may also be used to explain the classifications. Twin type is a categorization that provides a more accurate reference to the identity of twins and supertwins. Knowing the type of twin, or twin type, is thought to be beneficial to parents because it increases their insight about the development of their children.

Twin type is a topic area of confusion as well as of interest to families of twins and supertwins. Numerous factors determine twin type, but

Related Terms

singleborn
A singleborn child may have siblings, each of which has a different birth date. A singleborn child is sometimes referred to as a *singleton child* or a *singleton*.

multiples
A multiple-birth child, multiple-birth children, and multiples are a group of two (twins) or more (supertwins) children who typically are conceived at the same time, are born at the same time, and share biological makeup. A co-multiple is a child who is paired in a twin, triplet, quadruplet, quintuplet, sextuplet, septuplet, or octuplet set.

twins
Twins are two children born to one woman from a single pregnancy. They typically are conceived at the same time, are born on the same day, and share biological makeup. *Co-twin* is the term used to identify the child who is paired. The term *twin pair* is another phrase referring to twins. Twin pair is the primary usage in this book.

supertwins
Supertwins are multiple births of three or more, including triplets, quadruplets, quintuplets, sextuplets, septuplets, and octuplets, born to one woman from a single pregnancy on the same day. Supertwins are also referred to as higher-order multiples and triplets/+. *Co-supertwin* is the term used to identify a child who is part of the supertwin group that consists of triplets, quadruplets, quintuplets, or more. The term *co-multiple* can also be used to refer to supertwins and twins.

only two classifications have become commonly used as social definitions of multiples: identical twins and fraternal twins. The terms are usually used with reference to the physical appearances of twins, although doing this is not technically correct. The two classifications continue to be used

even though they do not accurately describe twins. As a group, twins are much more variable than those two types suggest. Genetic research has clarified and established more accurate descriptive terms.

The use of the term *twin type* to describe multiples downplays the tendency to reduce twins to one of two kinds (Koch 1966). Use of the concept of twin type widens the range of detailed and useful information you can gather. For example, you can ask parents, "Do you know your children's twin type? Can you tell me their twin type?"

According to Malmstrom (Malmstrom and Poland 1999), the use of the term *zygosity* may discourage common misconceptions about twins. *Zygosity* is another term used to identify twin type. Zygosity indicates whether the twins developed from one zygote or more (Guilherme et al. 2008). A zygote is the single cell formed at the moment of conception from the fusion of sperm and an ovum (Berger 2005). Learning about the zygosity of twinning is helpful because it reveals genetic information about the multiples. For example, testing to determine zygosity can explain the significantly different health conditions of twins and provides multiples and their families answers to common questions. Zygosity may explain dissimilarities in growth among multiples. Zygosity may also contribute to the formation of multiples' identities (Noble 2003).

DIZYGOTIC TWINS

Except among Asian Americans, the majority of twins are what have been commonly referred to as *fraternal*. The precise term to use is *dizygotic*. Dizygotic (DZ) twins represent about 70 percent of twins (Hankins and Saade 2005). Dizygotic twins are the product of two ova fertilized by two sperm. Of dizygotic twins, 25 percent are brothers, 25 percent sisters, and 50 percent are boy-and-girl twin pairs. Some twins are obviously dizygotic—notably different in height, size, and eye and hair color. Yet families of boy-and-girl twins surprisingly and repeatedly hear, "Oh, look at the identical twins!" Dizygotic twins can be as alike or different as any two singleborn siblings (Berger 2005).

Parenting books about multiples, as well as some research articles, use shortcuts to identify twin pairs and to communicate zygosity. Parents enrolling their twins and supertwins in preschool programs may also use a variety of acronyms. The acronym list expands with extensions such as *SS* for same sex and *f* or *m* for female and male. The acronym *DZSSf* refers to dizygotic (nonidentical), same-sex twins who are girls (Tinglof 2007).

MONOZYGOTIC TWINS

Approximately one-third of all twins have identical genes. These children are commonly referred to as *identical twins* or, more precisely, *monozygotic (MZ) twins*. Monozygotic refers to one fertilized egg, or ovum, that splits very early in its development, creating two zygotes. Half of the cluster of cells separates days after conception, early in the first week of embryonic growth (Berger 2005; Gromada and Hurlburt 2001; Steinman and Verni 2007); and the two zygotes then develop into two separate embryos. Some refer to monozygotic twins as true twins (Noble 2003). Monozygotic twins usually look similar and are the same gender. Nonetheless, rare occurrences of monozygotic twins who are of different sexes, a boy and girl, have been noted (Hall 2003; Segal 1999).

The fact that monozygotic twins are genetically identical should not diminish recognition or acknowledgment of their differences. Research proposes that monozygotic twins are highly similar rather than identical. Their similar but not identical status has practical implications for you when you are trying to understand the dynamics of their development. The birth weight, appearance, and health of MZ twins are affected by their genetics, prenatal environment, and variations in the fertilization process. Each of these influence every developing baby in specific ways.

The term *spectrum of differences* is used to describe genetically identical but biologically different monozygotic twins (Wright 1997). Although monozygotic twins may be genetically identical, they may look and behave differently. Some MZ twins are more alike than others. You, as the teacher, need to be continuously attentive to the differences as well as the similarities among twins. Some MZ twins may look alike, yet they may have different preferences, personalities, and learning styles because their genetic material has not been expressed in identical ways (Franklin 2009). "For instance," Rachel Franklin explains, "one may have a mole the other does not have, because as the skin developed, the genetic material was copied differently into the cellular structure of part of one's skin than it was in the other" (2009). One MZ twin may enjoy fruit; the other, fresh vegetables. One may prefer all bright colors and the other may respond only to primary hues.

Monozygotic multiples may or may not have the same interests; they are just as likely to have dissimilar interests. For example, Brycen's responsive active movements became evident when he was a toddler. His very similar-looking twin brother, Noah, also enjoyed tricycles, sand play,

and climbing, but he was much more excited about the smaller objects he could manipulate in the sensory activity area.

Monozygotic twins occur naturally across all populations worldwide in about one out of every 250 births; in the United States, they constitute about 30 percent of the twins (Hankins and Saade 2005; Segal 2005b). This means MZ twinning occurs randomly across populations and ethnic groups in a constant birthrate of about 4 per 1,000 (Moskwinski 2002). This frequency has been understood to mean that the frequency of MZ twinning is not related to a genetic influence. The exception is among Asian Americans (Segal 1999). Although twin births among the Asian populations, including Asian Americans, are lower than among other populations, their twin births are more frequently monozygotic. In other populations DZ twinning is higher.

Not Exactly Identical

"Identical twins are not identical in every way and, in fact, show differences in virtually every trait that has ever been studied," even when they look very much alike phenotypically, explains Nancy L. Segal, director of the Twin Studies Center at California State University, Fullerton (1999, 9). *Phenotype* refers to appearance. *Genotype* refers to genetic makeup, including features and characteristics that may or may not express themselves phenotypically. Segal proposes that knowledge of twin type is important for individuals providing care for twins. The information may prevent others from misidentifying the multiples and minimizing the identity of DZ twins. Dizygotic twins may not resemble one another, yet their lives are connected extraordinarily because they are twins.

Newer Classifications to Consider

Many contributing factors affect development among genetically identical twins. As research continues, simple classification of twins as this or that type of twin will be replaced by more complete and possibly more complicated categories.

Regardless of the new acronyms and advancing research, most people remain loyal to the binary classification of twins as identical or nonidentical or fraternal. Terms used to describe twinning and supertwinning continue to be modified, and as this occurs, the dated classifications may be replaced. Current terms and definitions are introduced, replaced, and often overlapped to explain the types of twinning. It is best for you as an educator to stay aware of emerging research findings that will provide

newer definitions. Be prepared to acknowledge a variety of labels and definitions about multiples in your conversations with the families of the twins and supertwins enrolled in your program.

A fitting example is the term *third-type twinning*. This concept has been used to account for the differences between the two children in a twin pair, especially when the pair do not apparently fit into the more common MZ twin or DZ twin classifications. You may hear parents refer to a third-type twin as half identical. Third-type twinning is also termed *third-phase-of-egg twinning* and *polar-body twinning*. It is theorized that third-type twinning results from an ovum splitting prior to fertilization by two sperm, resulting in the inheritance of identical genes from the mother but not from the father (Bryan 1992). Third-type twinning has been studied extensively by Charles Boklage, a father of DZ twins and a geneticist at East Carolina University. Boklage asserts that twinning, both MZ and DZ types, is the outcome of cellular events. He questions the two-ova origin that has been established as the explanation of DZ twins conceived naturally (Malmstrom and Poland 1999; Segal 1999).

The birth of a twin pair in 2007 grabbed the attention of researchers. The researchers reported that the boy-and-girl twin pair could be referred to as "semi-identical," although that may be a simplistic explanation for their genetic inheritance. The researchers suspected that the twins inherited identical genetics from their mother and only half of their father's DNA, which they claimed accounts for the physical characteristics of the twins. One of the twins was born anatomically male and one was born with sexually ambiguous genitalia, possibly because of different proportions of male and female cells (Masters 2007).

Occurrences like this are rare. Nonetheless, researchers want to understand the causes. In the attempt to define the variations in twinning, another term, *sesquizygotic,* has been suggested. Sesquizygotic is similar to third-type twinning because it refers to twins who are the outcome of an egg fertilized by two separate sperm after the egg splits. These twins can be born same-sex or opposite-sex. It is further theorized that they may inherit more genetic material from their mother (Noble 2003). *Semi-identical* is a term used to define sesquizygotic twins. Still other researchers, such as biologist Michael Golubovsky, call sesquizygotic twins *half-identical* (Boklage 2006).

With research accelerating, expect additional terms and definitions. For now, the terms *DZ twins* and *MZ twins* may be the most practical, particularly as knowledge is generated by the new science of epigenetics.

Epigenetics is looking at development and contributing new and, we hope, practical knowledge—for example, development among MZ twins and especially the differences in and exceptions to their development. We may be able to determine why twins who inherited the same genes have different characteristics and, in some cases, different diseases (Begley 2009).

Epigenetics studies heritable changes and patterns of gene regulation. It is currently demonstrating how certain genes switch on or off and direct changes in development. Zygosity testing provides a clear picture of MZ twins and verifies their same inheritance. Some will look and behave similarly. Other MZ twins are quite different, or discordant, in their phenotype—that is, in their observable features and characteristics (Bio5 2009). Epigenetics will help explain the direction or path of certain DNA codes and genes that switch off. In twins, this may happen at different times or not at all, which may explain why some syndromes and diseases affect only one twin in an MZ pair (National Geographic 2009).

One last term, *lyonization,* is proposed to aid understanding of twinning. Laura Herzing and other researchers at the Institute for Cancer Research in London have proposed a process in which one of the two *X* chromosomes in each cell inactivates when they implant in the uterus. This may occur only in MZ girls, and this *X* inactivation may create the potential for the MZ girls to have differences in traits depending on whether the deactivated *X* chromosome came from their mother or their father. (Male twins are not affected because they have only one *X* and one *Y* chromosome [Segal 1999].) To further explain lyonization, Segal analyzed the Dionne quintuplets as an example. The Dionne quintuplets were born in 1934 in Canada. They were identified as identical, having the same genetic inheritance, yet only two of the five were color blind (Segal 1999). Color blindness would have been expressed only if two recessive *X*-linked chromosomes had been inherited (Berger 2005).

Twin-type classifications, such as polar body twinning, provide definitions relating to development. You may hear the word *virtual* used to identify twins. This describes a relationship rather than development. Virtual twins are unrelated children who are the same age. They are reared together in a family as siblings beginning for many during infancy. Virtual twins, as unrelated siblings reared together, can be two adopted children without genetic relatedness or one adopted child and one biological child of the adopting family. Nancy Segal suggests that these sibling pairs in many ways replay the twin relationship (Segal 2000).

Related Terms

twin type
Twin type is a category that provides a more accurate reference and avoids the two outdated labels *identical* and *fraternal*. Twin type is also referred to as *zygosity*.

zygosity
Zygosity refers to whether the twins developed from one or more zygotes. A fertilized egg is called a zygote. Learning about the origins of twinning is helpful because it reveals something about genetics. It also clarifies twin type by referring to the type of conception. Simple tests are available.

identical, or monozygotic
Identical, or monozygotic, twins develop from a single egg, or ovum, that splits after being fertilized by a single sperm. Monozygotic (MZ) twins have the same genes and therefore are more similar than fraternal, or dizygotic, twins. One-third of twins are monozygotic. Triplets can be monozygotic, meaning all three multiples developed from the same fertilized ovum.

fraternal, or dizygotic
Fraternal, or dizygotic, twins develop from two eggs (ova) and two sperm. Two-thirds of twins are dizygotic (DZ). Triplets can be nonidentical if all develop from separate eggs fertilized by separate sperm. They would be trizygotic (TZ) (Guilherme et al. 2008; Koch 1966; Luke and Eberlein 2004; Malmstrom and Poland 1999).

opposite-sex twins
Opposite-sex twins are a twin pair—a boy and a girl. This twin pair is also referred to as *unlike-sex pairs* and *boy-girl twins*. The image of opposite-sex twins influences their twin status. (More details about boy and girl twins can be found in chapter 4.)

Identifying zygosity prenatally or at the birth of multiples is preferrable, because doing so provides important medical information early in their lives (Moskwinski 2002). The medical information may help explain the apparent physical differences of an MZ twin pair, especially a significant difference in their sizes. The information may reveal the cause of the differences, perhaps the result of a problem that occurred prenatally. A developmental or physical delay of one MZ twin may justify early intervention services. The expectation for MZ twins is that they grow similarly, both developmentally and physically. Professional literature supports early testing of zygosity to prevent potentially difficult adjustments to empirical information acquired when the children are older. Family accessibility to testing has improved in the past decade.

TESTING TO BE SURE

The social definition of twins, especially the two outdated references *identical* and *fraternal*, does not explain twin types. For this reason, experts recommend accurate determination of twin type, including genetic analysis (Segal 1999). Some believe that both MZ and DZ twins and supertwins have the right to know their twin type and that testing should be done at birth. Knowledge of zygosity is important for parents because it can influence how they care for their multiples and opens up a greater understanding of the children's development. When parents have accurate knowledge, they may be more likely to celebrate their twins' differences and similarities. Accurate identification of twin type may also clarify parents' expectations and help parents appreciate each of their multiples' characteristics and behaviors. Knowing the true zygosity eliminates guesses and allows parents to answer questions from others. Such information encourages families to enjoy the special interests of each multiple and appreciate the aptitude one may have for music and the other for the structure details of building (Malmstrom and Poland 1999). Accurate information about zygosity should be provided by health professionals when it is requested. The information may be reassuring to families (Bamforth and Machin 2004).

Chorionicity is the term used to explain twin type according to the form of placentation (the number of placentas and amniotic fluid cavities) (Guilherme et al. 2008). The chorion, the outer layer of the placenta, acts as a protective sac. Monochorionic twins develop from the same amniotic sac. Monochorionic twins are always monozygotic (Franklin 2005). Dichorionic twins develop when there are two separate amniotic (inner)

sacs. The twins can be monozygotic or dizygotic. A common misconception is that only dizygotic twins have separate placentas. Dizygotic twins may have fused placentas, and many MZ twins have separate placentas (Agnew, Klein, and Ganon 2005; Noble 2003).

If it is not determined prenatally, accurate twin-type or zygosity identification can be ascertained through DNA analysis performed at specialized laboratories. The DNA sequence is usually the same for MZ twins. Zygosity can now be determined through a blood specimen or by simply swabbing the inside of the cheek to gather cells for laboratory analysis of DNA (Moskwinski 2002).

Pat Preedy and David Hay's work with multiples and their families offers interesting insight into identifying zygosity. When they asked adult twins whether they were MZ or DZ pairs, most twins' responses agreed with what formal genetic tests revealed. This was not the case, however, when the researchers asked parents about the zygosity of their multiples. A questionnaire used to collect responses from the parents included inquiries about the twins' physical features and asked whether the parents were able to distinguish their twins physically. The form also asked whether the parents thought other people could tell their twins apart. Preedy and Hay employed a statistical analysis to project the identity of the twins included in the study. They determined that parents usually say their twins are dizygotic. Preedy and Hay suspect that parents view minor differences as indications that their twins are dizygotic. The researchers also believed that some parents emphasize individuality and want to think of their twins as DZ pairs or accentuate their children's similarities to emphasize the specialness of twinship (Twins and Multiples 2006). I would add a third explanation, one without underlying motivation, which is that parents simply see, feel, and know the differences of their twins, even when the children look very much alike.

Hay documented similar results in a 1990 study that reported differences between parents and teachers in identifying the zygosity of young twins. The Australian study concluded that teachers thought more of the twins were very alike, while the parents considered them to be nonidentical.

MIRROR-IMAGE TWINS

Mirror-image twins, or mirror twins, have similar but opposite physical features. The physical characteristics may include such features as opposite-handedness and hair that whorls in reverse or opposite directions.

The prevalence of left-handedness among MZ twins may be explained by mirror imaging. Among MZ pairs, about one-third include a left-handed twin. This occurrence is twice as frequent as among non-twins. Determination of mirror-twin type can be accomplished only by observation. Mirror-image twins occur in about 23 to 25 percent of MZ twin sets, most often because the ovum splits seven or more days later than usual (Malmstrom and Poland 1999; Moskwinski 2002).

TWIN TO TWIN TRANSFUSION SYNDROME

Twin to Twin Transfusion Syndrome (TTTS) is a condition that occurs when both babies share a single placenta, causing unequal nourishment. One twin takes blood from the other baby's system through the shared vessels. The ultrasounds may reveal growth-size differences and potential heart failure. This occurs in 5 to 15 percent of twin pregnancies, is possible only in MZ twin types, and is a result of monochorionic twins sharing the same outer sac (the chorion). This condition may be related to the vanishing twin syndrome (see below). Treatments for TTTS are progressing (Franklin 2005).

VANISHING TWIN SYNDROME

Vanishing twin and *vanishing twin syndrome* are terms for spontaneous fetal reductions, meaning that one or more of the multiple fetuses fails to survive the pregnancy. This occurs because one of the gestational sacs does not develop and is absorbed into the uterus or disintegrates. The chance that the remaining twin will survive is high, although the incidence of cerebral palsy increases for the surviving twin. Elizabeth Bryan has written that a surviving twin may experience a feeling of loss (1992). Today the syndrome is more appropriately referred to as *spontaneous fetal reduction*. Early ultrasound screening within weeks of conception has shown that as many as one-third of pregnancies begin as a multiple (Gromada and Hurlburt 2001; Noble 2003). The prevalence of this condition doubles among same-sex twins (Noble 2003).

Twin-Type Summary

- Most twins look different because dizygotic (DZ) twinning is more common.
- Monozygotic (MZ) twins are about one-third of the total twin population.
- Dizygotic (DZ) twins are about two-thirds of the total twin population.
- Mirror twins occur in about 23 to 25 percent of MZ twin pairs.
- Parents are most likely to learn the zygosity of their infants before their infants are born.
- Experts recommend completing twin-type identification.

Supertwins

Supertwins are three or more children born to one woman from a single pregnancy. They are referred to as *higher-order multiples (HOM),* having been born as a set of multiples numbering more than two (Gromada and Hurlburt 2001). A supertwin combination may be three (triplets), four (quadruplets), five (quintuplets), six (sextuplets), seven (septuplets), or eight (octuplets).

Anecdotal information provided by families of supertwins and by supertwins themselves offers important insight into their special development and experiences. Record keeping about supertwins was inconsistent before 1974. The reported statistics tended to group multiples together without distinguishing the type of higher-order multiple. This created difficulties in distinguishing numbers in each supertwin category. Information about quintuplets and quadruplets, for example, was often rolled into statistics about triplets (Multiple Births Canada/Naissances multiples Canada 2009).

The birth of supertwins is popularly considered quite a fantastic event. This super phenomenon attracts attention and commonly brings the family into an immediate spotlight. Striking evidence about being in the spotlight is reported in the anecdotes from families of supertwins, showing that support and guidance is essential for them.

Related Terms

conjoined
Conjoined twins are born physically attached in some way. They used to be referred to as *Siamese twins*.

mirror image
Mirror-image twinning occurs in approximately 23 to 25 percent of monozygotic twins. Each mirror-image twin has similar features on the sides opposite from its occurrence on the other twin—a mirror image of one another (Malmstrom and Poland 1999; Moskwinski 2002).

Twin to Twin Transfusion Syndrome (TTTS)
Twin to Twin Transfusion Syndrome (TTTS) is a condition that occurs when both babies share one placenta, causing unequal nourishment. This occurs in 5 to 15 percent of twin pregnancies and is possible only in MZ twin types (Franklin 2005).

vanishing twin syndrome
Vanishing twin syndrome is spontaneous fetal reduction, meaning that one or more of the twin fetuses fails to develop and does not survive. Early screening during the first three months has shown that as many as one-third of pregnancies begin as multiple pregnancies (Gromada and Hurlburt 2001; Noble 2003).

virtual twins
Virtual twins are unrelated children who are the same age and from infancy are reared together in a family as siblings. Unrelated siblings reared together can be two adopted children without genetic relatedness or one adopted child and one biological child of the adopting family. Nancy Segal suggests that these sibling pairs in many ways replay the twin relationship (Segal 2000).

Although information and evidence-based research about supertwins may be limited, their lack does not give us license to construct generalizations about them. For example, some information about twins does not apply directly to triplets, quadruplets, or quintuplets. You may need to use the information that is available about twins cautiously when dealing with supertwins simply because data on supertwins and the resources supporting them are negligible. Use the twin data sparingly and welcome research findings that are specific to triplets, quadruplets, quintuplets, and larger groups.

Supertwin Zygosity

When you are considering the information that is available about supertwins, you may also want to review their zygosity. Supertwins may be one of various combinations of twin types. They can be a mix of MZ and DZ twinning, or they may be just one of these types. The term *polyzygotic* (PZ) is used to explain the numerous twinning patterns of supertwins. The majority of triplets, quadruplets, and quintuplets are polyzygotic (Segal 2006).

Monozygotic (MZ) supertwins are rare. Triplets more commonly result from three separate eggs, referred to as a *trizygotic (TZ) group* (Noble 2003), making triplets similar to twins, the majority of whom develop from separately fertilized ova.

Triplets may include a set of MZ twins and one non-monozygotic triplet. You may hear the third triplet referred to as the fraternal triplet or the singleton or the singleborn one. The third triplet is not a singleborn child. The triplet combination—MZ twins and a third triplet—would have developed from two ova fertilized by two sperm, after which one of the fertilized ova split to form the MZ twins. If three ova had been fertilized by three different sperm, this would result in a trizygotic set of triplets (Noble 2003). Identifying zygosity reveals if the triplets resulted from one fertilized ovum, resulting in MZ triplets.

The most common combination of quadruplets is quadrazygotic (QZ), which results from the fertilization of four ova. A set of four girls was born in February 2000 in South Carolina, naturally conceived and monozygotic (Segal 2006). Rare examples of monozygotic quintuplets exist. (The famous Dionne quintuplets, who were born in 1934, will be discussed in chapter 2.)

Related Terms

higher-order multiples
Higher-order multiples (HOM) are children who are part of a triplet, quadruplet, quintuplet, sextuplet, septuplet, or octuplet set born to one woman from a single pregnancy. Higher-order, multiple-birth children typically are conceived at the same time, are born at the same time, and share certain biological makeup. References to them include multiples, supertwins, and triplets/+.

triplets
Triplets are the three children born to one woman from a single pregnancy. They typically are conceived at the same time, are born on the same day, and share biological makeup dependent on their zygosity.

triplets/+
The U.S. Department of Health and Human Services uses *triplets/+* to refer to triplets and higher-order multiple births in reporting vital statistics. Quintuplets, sextuplets, and higher-order multiple births are not reported separately or differentiated in the national data set (Martin et al. 2009).

quadruplets
Quadruplets are the four children born to one woman from a single pregnancy. They typically are conceived at the same time, are born on the same day, and share biological makeup dependent on their zygosity.

quintuplets
Quintuplets are the five children born to one woman from a single pregnancy. They typically are conceived at the same time, are born on the same day, and share biological makeup dependent on their zygosity.

sextuplets
Sextuplets are the six children born to one woman from a single pregnancy. They typically are conceived at the same time, are born on the same day, and share biological makeup dependent on their zygosity.

septuplets
Septuplets are the seven children born to one woman from a single pregnancy. They typically are conceived at the same time, are born on the same day, and share biological makeup dependent on their zygosity.

octuplets
Octuplets are the eight children born to one woman from a single pregnancy. They typically are conceived at the same time, are born on the same day, and share biological makeup dependent on their zygosity.

Increasing Numbers of Multiples

The population of multiples has increased steadily for almost thirty years. In the United States, the twin birthrate increased 70 percent from 1980 to 2004. This escalating trend may have halted, because the 2006 twin birthrate has remained essentially unchanged for two consecutive years (Martin et al. 2009).

By 2006 the twinning rate was slightly more than 32 twins born per 1,000 births. This compared with approximately 19 births per 1,000 in 1980 (Martin et al. 2009). Twins represent almost 3 percent of the total population. Triplets/+ (triplets, quadruplets, and quintuplets) represent about 0.1 percent to 0.15 percent of the total population. Twins account for 94 percent of all multiples born (Beachamp and Brooks 2003).

Twin Births in the United States			
Year	Twin Births (Individual Children)	Twin Birthrate	All Births
2006	137,085	32.1 per 1,000	4,265,555
1980	68,339	18.9 per 1,000	3,612,258
Statistics record live births and explain the uneven number recorded for twins (Martin et al. 2009, 7).			

The dramatic increase in the twin birthrate has been accompanied by a soaring birthrate of triplets. Since 1980 the number of triplet births in the United States has grown tenfold. Other countries, including Australia, England, France, Belgium, Holland, and Israel, have reported similar increasing rates of triplet births (Feldman and Eidelman 2005).

The triplet birth population has been the most rapidly growing segment of multiple births. In 2006, 143,625 multiples were born. This included 137,085 twins, 6,118 triplets, 355 quadruplets, and 67 quintuplets and other higher-multiple births, or supertwins. The triplet/+ births (triplets and other higher-order multiples), which had soared for years, peaked in 1999 and decreased 5 percent in 2006 (Feldman and Eidelman 2005; Mothers of Supertwins 2009). The decline has been attributed to the guidelines published by the American Society of Reproductive Medicine in the later 1990s, which recommended limiting the number of embryos transferred through assisted reproductive treatment (Martin et al. 2009).

Some Communities' High Triplet Birthrates

In 2005 the state of New Jersey reported a high number of triplet births, thought to be the result of more women in some New Jersey communities delaying parenthood and more couples successfully completing fertility treatment. Naperville, a community of 100,000 in Illinois, also boasts sets of triplets: twenty-one sets of triplets lived in the town in 1997, all but two of the sets younger than eight years (TWINS 1997). The states of Nebraska and New Jersey reported double the national levels of triplets/+ birthrates from 1995 through 1997 (Martin and Park 1999).

Delaying childbirth and using fertility treatment significantly increases the chances of becoming parents of triplets (Nussbaum 2009).

Supertwin Births in the United States			
Year	Triplet Births	Quadruplet Birthrate	Quintuplets Plus Births
2006	6,118	355	67
2003	7,110	468	85
1999	6,742	512	67
Statistics are recorded for live births and explain the uneven number recorded for twins (Martin et al. 2009, 7).			

Social Changes Increase Multiple Population

Social changes have effectively increased the population of twins and supertwins. Natural twinning results from many factors, including a woman's heredity, age, hormone levels, nutrition, emotional state, ethnicity, race, and environment (University of Viriginia Health System 2004). Another social change, healthier populations, contributes to the increase of multiple-birth children.

Today many women wait until an older age to have children and are more likely than younger mothers to give birth to twins. Twins born to older mothers are more likely to be dizygotic. When women choose to delay having children, they decrease their capacity to conceive. This trend has led more women to seek treatment after they find their reproductive ability has declined. Ironically, women's hormones also change with age in a way that can increase the number of ova released, making the rate of twinning higher for women in their mid to late thirties. This trend and the extraordinary use of fertility-enhancing treatments are two of the primary factors in the increasing number of multiples born over the previous thirty years (Guilherme et al. 2008). Adding to these two social changes, the survival rate of multiples and premature infants has increased because of improved medical care.

Statistical reports vary, and data for twinning and supertwinning fluctuate. The date of a report, the region or country reporting, and the purpose of the research influence the outcomes. Science quickly changes what was previously thought to be fact. Research findings are quickly changing what is known about multiples, especially supertwins and the statistics related to them. The concept of supertwins became more evident when the triplet/+ birthrate escalated by more than 400 percent between 1980 and 1990. (The birthrate refers to the number of triplets, quadruplets, and quintuplets and other HOM who were born per 100,000 live births.) In 1998 the supertwin birthrate topped out at 193.5 per 100,000 births (Martin et al. 2007). Seventy-five percent of supertwins are born to mothers using assisted reproductive technology (ART). Three-fourths of all triplets and almost all quadruplets and other higher-order multiples (Luke and Eberlein 2004) or supertwins are the products of ART. As the number in the set of multiples increases, the number of girls increases, because female embryos commonly survive stressful pregnancies more often than male embryos (Berger 2005; Noble 2003).

The infertility treatments numbered among the options of ART have expanded. The variety of techniques includes ovulation-stimulating drugs, IVF, and gamete or zygote transfer (Luke and Eberlein 2004; Pearlman and Ganon 2000). The multiples resulting from ART have been termed *iatrogenic multiples* (Sutcliffe and Derom 2006). Researchers advise that studies are needed to determine the outcome of multiples resulting from spontaneous conception and from ART (Sutcliffe and Derom 2006).

Twin birthrates have been highest for women between thirty-five and thirty-nine years of age. A woman's high parity, which means having given birth one or more previous times, increases her odds of giving birth to multiples. Besides age, education seems to affect the multiples birthrate. The triplet birthrate in 1989 was two-thirds more common among college-educated women than among women of similar age who had less than a high school education. Researchers attributed this prevalence to the increasing use of fertility-stimulating drugs among this population (Family Planning Perspectives 1995).

Statistics show differences in twinning by geographical region and ethnicity of the mothers. African American women are more likely to have naturally occurring twins than other ethnic groups. Native American and Asian American woman have twins the least often. Asians commonly give birth to twins the least often. Location and even state of

residence seem to influence the incidence of supertwins. As discussed earlier, triplets were delivered in Illinois and New Jersey at about twice the national rate; quadruplets and other higher-order multiples were born there at almost double the national pace. There were 1,932 sets of triplets born from 1998 to 2002. New Jersey had the nation's highest number of fertility clinics during this period, with at least twenty of the four hundred facilities located throughout the U.S. The state claimed that its population had the necessary incomes to pay for such costly services as ART (Nussbaum 2009).

Projections show that the numbers of twins and supertwins will continue to expand, although not at the record rate experienced in the previous two decades. Technical advances influence social attitudes as well as individual decisions about family planning. Economic change is another social factor that may affect the use of ART.

Twinship and Supertwinship

Twins, triplets, quadruplets, quintuplets, and other higher-order multiples interact with their birth partners in complex relationships. Their relationships are unfamiliar to the majority of individuals. Given this, professionals should be cautious about making unexamined assumptions. The relationship begins prenatally for twins and supertwins, as researchers have documented with improved imaging techniques, which permit observation of the early interactions of twins even before birth.

Twinship is considered one of the closest human relationships possible. Twinship is both single and dual existence, simultaneously; it is intimate; it is viewed with fascination; and it stimulates curiosity from some and envy or excitement from others (Segal 2005b). Although reactions and descriptions vary, the words *special* and *unique* appear consistently. Twinship identifies the social relationship between two children who were born on the same day to the same parents. The relationship is one that is normal to the pair in a world in which singleborn children are the usual reference point.

Multiplehood is a term describing the relationship among siblings who are born as supertwins. *Multiplehood* offers an alternative to describing sets of multiples other than twins, and it highlights the differences between the most familiar relationship—that which exists

between singleborn siblings—and that of multiple-born siblings. The word encompasses the scope of these unique relationships.

Multiples Are Noticed

Multiples are noticed, receive attention, and are singled out because of their special relationships with same-age siblings. Parents of twins and supertwins know the drill. When you go out in public, especially when the children are babies, you become the center of attention. Authors, psychologists, sociologists, and researchers document the uniqueness of twins. An increasing number of researchers are collecting similar data about supertwins. These data will provide insight about the special aspects of these relationships, including multiples' distinct experiences as a group and as individuals. For example, at the Osaka City University in Japan, Yoshie Yokoyama has been leading research about the growth and development of triplets and their motor development. Ruth Feldman of Bar Ilan University in Israel, and Arthur Eidelman, MD, of Hebrew University in Israel, research the risks of triplet births and the affect on cognitive development of triplets. Feldman and Eidelman also explored triplets' mother-infant interactions.

Twins and supertwins may be in a class of their own. They encounter both positive and negative reactions to their twinness and supertwinness. People also react to the uniqueness of their relationship. In her child development textbook, Louise Bates Ames notes that twins as a pair are unique (1970). Twins and supertwins raise questions about the formation of friendship. (The topics of friendship and peers will be discussed in chapter 4 and as a special issue in chapter 7.)

Parents Provide Insight

Preschool teachers trying to understand the behaviors of supertwins may need to rely on the insights of parents for more specific information about multiple children's unique needs. The Mothers of Supertwins (MOST) has established a Families of Supertwins Bill of Rights. The fifth tenet ensures that each person in the families of triplets, quadruplets, quintuplets, and sextuplets has the right to be appreciated, respected, and loved as an individual for his or her unique personality, special gifts, and important role in the family (Mothers of Supertwins 2009). The tenets are applicable to twins in the same way that

much of the information specific to twins is applicable, with caution, to supertwins.

Parents of triplets/+ offer credible anecdotal information. In the collection of stories *Finding Our Way: Life with Triplets, Quadruplets and Quintuplets* (Lyons 2001), families provide accounts of the special needs of supertwins. One of the parents, Oonagh Hastie, notes that "when people see triplets or quadruplets or more, I think they are so shocked they don't realize they are asking prying questions. They are just interested in finding out about such a unique and special situation" (Lyons 2001, 364).

Another parent of triplets, Lucy Carley, writes, "Their camaraderie was entrenched by the time they were crawling and then hanging onto one another for support as they learned to walk" (Lyons 2001, 389).

During their professional preparation, teachers learn the value of encouraging young children to work together as a team. In keeping with this pattern, the teamwork occurring routinely among same-age siblings in a group of two, three, and more will offer you new knowledge.

Finding Our Way's stories highlight the challenges unique to supertwins and their families. Supertwin parents comment about the inaccessibility of community programs to them and their children. Library reading time and swimming lessons usually require the presence of one adult for each child. This requirement excludes many families with supertwins from benefiting from opportunities in their communities.

Ongoing guidance, possibly transformed into family education topics, is needed. Parents need help to guide their children in dealing with others who call them "quads" instead of by their names. Families with supertwins face challenges. The majority of them welcome help from family members and community volunteers to balance their own efforts to rear their multiple children. Parents of supertwins also find joy and excitement in the special moments (Lyons 2001). Bracha Mirsky tells of her three five-year-olds excitedly describing their new friend by saying, "He's a single" (Lyons 2001, 446). Words such as *unique, special, gifted, blessings,* and *different* are woven into the supertwin stories, establishing valuable insight about closeness, interaction, and relationship.

Perspectives about Twins and Supertwins

chapter two

Myth, Fiction, and Reality

Stories about twins appear throughout history in mythology, folklore, religion, art, and literature. Multiples have been welcomed by some cultures and feared by others. In legends, myths, and stories, their presence changes stories about sibling rivalry and competition, identity and individuality, bonding ties, and reverence and hostility. At the same time, descriptions of twins disclose a continuing fascination with them. This fascination remains today.

Researchers' observations add to our knowledge about multiples. While science produces knowledge about twins and supertwins today, former civilizations created stories to explain them. The arrival of more than one baby at a time violated social expectations. As a consequence, when the unexpected occurred, cultures developed fables, customs, and narratives to justify and possibly explain the arrival of multiples.

Dual Relationships

Themes embedded in cultural narratives consistently probe the dual relationship. The positive and negative themes compared twins to traditional expectations. Societies, in the past and today, maintain one individual as the standard point of reference—that is, one child born at one time in a family. The biblical story about Esau and Jacob is an example. The Old Testament story describes competition and rivalry between the twins for

a firstborn position. Firstborn status is not as much of an issue when children arrive in a family one at a time. Greek mythology describes harmonious ties between twins Castor and Pollux, the two primary stars in the constellation Gemini, which can be viewed on a clear evening. The phenomenon of Saint Elmo's fire describes two flames named for Castor and Pollux that forecast fair weather after a storm (Abbe and Gill 1980).

Travelers to Rome and Sienna observe engravings and sculptures of the brothers Romulus and Remus, twin brothers who were found by a she-wolf and raised by a flock keeper and his wife, and who founded the ancient walled city of Rome.

Numerous examples of twins appear among the divinity themes of American indigenous people. Twins rose to become the Sun and the Moon in pre-Columbian Mayan culture. The Incan civilization honored mothers of twins. Navajo and Zuni people believe that twins are divine, having been fathered by the Sun. The Mohave state that human twins come from the sky. Both Huron and Iroquois tell stories about twins who they believe founded their tribes. In contrast, a few cultures, like the Apache, feared twinning because they believed it harmed the family (Abbe and Gill 1980; Colon and Colon 2001; Stewart 2003).

The legends and myths about twins and supertwins persist in folklore, literature, and religious stories. Too often, themes and images are stereotypical. Familiar stories, especially those about rivaling brothers Esau and Jacob and Romulus and Remus, trigger a common theme of intense sibling rivalry. In real life, all twins do not experience intense rivalry. Still, this and other famously visible misinterpretations persist.

Familiar Stories, Rhymes, and Images

Twins who appear in literature may be familiar to you. William Shakespeare was surely influenced by his own children, twins Judith and Hamnet. The bard included themes of mistaken identity in his plays *The Comedy of Errors* and *Twelfth Night*. *The Comedy of Errors,* written in 1592 or 1594, describes two sets of identical and identically named twins. Shakespeare's insight into twinship describes separate and individual personalities cloaked by physical resemblance (Segal 1999; Smilansky 1992).

The 1937 Broadway hit *The Band Wagon* featured triplets. One of its musical numbers expresses the multiples doing everything alike and hating each other enough to want to be only one (Scheinfeld 1967).