FAMILY VIOLENCE AND NURSING PRACTICE

2nd Edition
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Printed in the United States of America by Bang Printing
To Rick and Jack, with love

—Janice

With love to Christy and Brad and Nik, Grace, Sophie, Nadia, Nathan, and Leila

and for always, Reg

and in tribute to
Dorothy and Joe Bowman
and
Constance Morrow

—Jackie
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Preface

A woman enters the emergency department with facial bruises and severe abdominal pain. She is asked how her injuries occurred, and she mumbles that she fell down a flight of stairs. Her male companion glowers in the doorway of the cubicle. The nurse firmly asks him to wait outside and gently proceeds with obtaining a detailed history from the woman including assessment for family violence.

In another part of the hospital, a newly postpartum battered mother in the obstetrical unit fears going home and does not know where to go. Her nurse-midwife helps arrange her discharge directly to an abused woman shelter.

A 14-year-old daughter of a woman who has five other children is being seen in an outpatient clinic with her mother. The mother voices the concern, “I don’t want to have to ‘do time’ for what I might do to her.” Mother and daughter are counseled by the nurse who begins the process of connecting this family with resources that can help them.

These are just three illustrations of the multitude of possible practice situations where nurses are encountering family violence. Family violence is widespread and a global concern that has both immediate and lifelong health consequences. Nursing has an important role to play in the prevention, identification, treatment, and scholarly investigation of family violence.

The second edition of *Family Violence and Nursing Practice* continues to be a landmark resource that provides uniquely comprehensive, nursing-focused coverage of family violence and offers both practicing nurses and nursing students of every level a clear view of the essential theories, interventions, and issues surrounding family violence. Written by recognized nursing experts, this easy to comprehend, yet detailed, overview of family violence includes coverage of: intimate partner violence (IPV) (including abuse during pregnancy, same sex IPV, intimate partner homicide, stalking, violence against women with disabilities, and dating violence), child abuse, children witnessing violence, sexual assault (child and adult), and elder abuse. *Family Violence and Nursing Practice* includes evidence-based practice guidelines for multiple health care settings, gives in-depth attention to cultural issues and culturally relevant practice, and provides abundant displays and tables that offer quick access to essential standards for care. With this edition practice assessment forms are included along with model interventions that give practical strategies for addressing family violence, as well as appendices that provide handy forms for abuse assessment. Also included are chapters on legal and forensic issues addressing the nurse’s role and responsibilities when confronting family violence and a unique chapter on international work in family violence.

Violence is a common health problem of tremendous magnitude. Violence occurs against all family members and is an indicator of complex family needs and issues. Nursing is in an excellent position to be actively involved with other professionals by initiating, coordinating, and evaluating the multidisciplinary approach to violence families.
There is growing recognition of nursing’s contribution to the needs of those experiencing family violence. Although we recognize that nursing research and practice are and must be interdisciplinary in nature, we maintain that nursing has a unique role to play and discipline-specific knowledge to contribute. Since the first version of this text was published in 1982, thousands of nurses have become involved in a variety of ways in the care of survivors of family violence. Nurses provide direct care to survivors in shelters, homes, hospitals, and community settings. Nurses are frequently members of boards of directors at shelters and other agencies assisting survivors. Nursing research on family violence has evolved rapidly and is reported in the literature with ever greater frequency. One of the most visible outcomes is Nursing Network on Violence Against Women International (www.NNVAWI.org). This grassroots organization was a direct outgrowth of the 1985 Surgeon General’s Workshop on Violence and Public Health. Immediately following that meeting and every 2 years since, the NNVAWI has held a conference where participants exchange practice ideas, research findings, theory, and policy initiatives related to all forms of violence against women. Over time, the group has become truly international. Since the first edition of the book, forensic nursing and the International Association of Forensic Nursing (www.iafn.org) have grown in importance, with the forensic nursing role in family violence having become increasingly recognized. The American Nurses’ Association has a long-standing (1991) resolution addressing the nursing role in violence against women, as has the Emergency Nurses’ Association, the National Black Nurses’ Association, the Hispanic Nurses’ Association, the Association on Women’s Health and Obstetrical Nursing, and the College of Nurse Midwives. The American Academy of Nursing has a policy task force (Expert Panel) on violence. Nurses have increasingly contributed to health care policy addressing family violence. Exciting developments—yet much more can be done in terms of policy formation, nursing research, practice and education.

Family Violence and Nursing Practice conveys nursing interventions based on existing theories and research on families and all forms of family violence, and emphasizes the strengths and health potential of survivors and families—an approach that empowers nursing to contribute to the prevention of this worldwide health concern.

Janice Humphreys
Jacquelyn C. Campbell
This book evolved from our professional interest in research on and commitment to those who experience family violence. For the existence of this text, we owe a great many thanks:

To our many friends and colleagues who provided support and indulgence.

To our expert contributing authors who share our concern about family violence.

To our invaluable funding sources, including the National Institute of Nursing Research, the National Institute of Justice, the Centers for Disease Control and Prevention, the National Institutes of Child Health and Development, Mental Health, and Drug Abuse, and the National Center for Minority Health and Health Disparities.

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To the profession of nursing for providing an opportunity to care about the needs of other human beings.

To each other for continuing friendship, and the sharing of ideas.

Janice Humphreys
Jacquelyn C. Campbell
Introduction

Violence in the family cannot be fully understood without analysis of the broader picture of violence, in general. This chapter provides a background of the major theoretical frameworks found in the current literature and used to explain violence in our society. A concept analysis and a summary of the perspectives on violence from domain-specific theories as well as integrated theories are presented as a basis for nursing conceptualization of violence as a health problem. The chapter concludes with special considerations, including the influence of the existing structural violence in society, cultural attitudes, and social organization on behaviors.

One way to estimate the magnitude of the health concern that violence represents is to examine homicide statistics. Among established market (or industrialized) economies, the rate of homicide in the United States was 5.6 per 100,000 in 2005 (Bureau of Justice Statistics, 2007), a much higher rate than countries such as Canada (1.95), England (1.62), France (1.64), and Germany (0.98) (United Nations Office on Drugs and Crime, 2006). In the United States, males are 77% of the victims and almost 90% of the offenders. Homicide is the second leading cause of death among Americans aged 15–24, with rates in 2005 being 3.7 times higher for men compared to women, and 6.2 times higher for African Americans compared to Whites including both men and women (Bureau of Justice Statistics, 2007; Centers for Disease Control and Prevention (CDC), 2008). Further, the rate of violent victimization other than homicide was 23.3 per 1,000 persons older than 12 years in 2006 (U.S. Department of Justice, 2007).

If nursing identifies prevention of health problems as a major area of concern, an examination of causes of violence is mandated. When we understand more about the complex causal picture of violence, we can work to prevent the problem by eliminating or reducing those causal or risk factors. To approach the research literature on the causes of violence, we must begin with an examination of the concepts involved.
Theoretical Background

CONCEPT ANALYSIS

Concepts that initially appear to be relatively simple and are used frequently in common language should be carefully scrutinized before the field, based on this concept, can be understood. This process is known as concept analysis (Walker & Avant, 1995). When violence literature is studied, there is striking disagreement among authors about definitions of even the most frequently used terms and, more importantly, their attached values and connotations. Is aggression always bad? Can violence and aggression be used to achieve moral human aspirations or should nonviolence always be the method? An abbreviated concept analysis is presented of the two most important ideas in understanding this field—aggression and violence.

Aggression

Aggression is defined as “any offensive action, attach or procedure and overt or suppressed hostility, either innate or resulting from continued frustration and directed outward or against oneself.” The root is Latin from the word *aggressio*, which means attack (Webster’s, 1996). From these beginnings, there is a variety of definitions used in the literature and in common usage. The synonyms listed for the adjective form, aggressive, reflect two different perspectives. Synonyms include hostile, belligerent, assailant, pugnacious, vicious, contentious; the second group includes self-assertive, forceful, bold, enterprising, energetic, and zealous. The disparate synonyms reflect the ambivalence about aggression in American society. Connotations of aggression as negative or positive are also grounded in the sex-role stereotypes held about male and female behavior. The most commonly held perspectives allow for healthy expressions of aggression as drives for accomplishment and mastery.

Yet this meaning of aggression has typically applied only to men. Aggressive men are often described as bold, forceful, enterprising, energetic, zealous, and/or self-assertive. For women, aggression is usually not viewed as positively because, even today, aggression in women violates gender norms. These norms are the standards for appropriate male and female behavior within a society. When a woman acts in an aggressive manner, her behavior is often judged as hostile, belligerent, or contentious because it does not reflect assumptions about female nature as kind and nurturing. These opposing interpretations of the term aggression suggest that perceptions of this concept are grounded in the social context of the behavior. Views of aggressive behavior are derived from how males and females are expected to act in society.

Over the past 30 years, there has been a shift from regarding aggression as innate or as a basic personality characteristic to studying aggression as a behavior that is a deliberate attempt to harm others, regardless of gender. Anderson and Carnegay (2004) cite a frequently used definition of aggression as being “a behavior directed toward another individual and carried out with the intent to harm” (p. 170). Scholars now include psychological injury as one of the possible results of aggression. Nursing literature also has addressed aggression, distinguishing assertiveness from aggression. Herman (1979) describes aggression as getting what is wanted at the expense of others. Aggressive behavior is seen as dominating, deprecating, humiliating, and embarrassing to others, whereas “assertion is the direct, honest, and appropriate expression of one’s thoughts, feelings,
Theories of Aggression and Family Violence

opinions and beliefs . . . without infringing on the right of others” (Herman, 1979). This distinction seems useful and is accepted as a basic premise of this book. Aggression, therefore, is seen as destructive in intent either physically or psychologically and as infringing on the rights of others.

Violence

Aggression can be seen on a continuum with violence at the extreme end, encompassing destructive results as well as aggressive intent. Webster defines violence as the “exertion of any physical force so as to injure or abuse.” The word originates from the Latin violare, to violate or dishonor. Consistent with the official definition and its Latin root, common associations with violence are much more negative than those associated with aggression. Yet much violence is socially tolerated as in police violence, war, and self-defense. The appropriateness of violence depends on the agent, the circumstances, the status of the victim, and the degree of harm inflicted. Some authors have insisted that violence is a reflection of conflicting groups and interests in any society. Yet entire cultures, such as the Semai in Malaysia, are totally nonviolent wherein any kind of violence is absolutely disallowed (Robarchek & Robarchek, 1998).

American culture officially condemns violence, but it is covertly sanctioned in many ways. Violent characters are glorified on television, in books, and in music; threats to hurt and kill each other are made in jest as a constant part of common language. In addition, violent video games, such as Mortal Kombat and Grand Theft Auto, encourage the use of violence through an interactive and engrossing medium in which the player must be the aggressor. The teaching of U.S. history is hinged on the different wars in which the country has engaged. In addition, American society is undecided whether hitting a child is legitimate punishment. In fact, corporal punishment of children in the home is legal in the United States, even though it has been outlawed in 24 countries around the world (Global Initiative, 2006). This societal ambivalence toward violence is reflected in the rates of violent crime and in violence in families.

THEORETICAL FRAMEWORKS EXPLAINING VIOLENCE

The complexity of etiology of violence is reflected in the many theories as to its causes (see Table 1.1). The theoretical frameworks that attempt to illuminate the causative factors of violence can be divided in a variety of ways. For the purposes of this chapter, the two major groupings are “domain-specific” and “integrated” theories. Domain-specific theories refer to those in the areas of biology, psychology, and sociology that focus on one aspect of violence causation. Integrative theories incorporate several of the aforementioned domains in their presentation of the theoretical basis of violent behaviors.

This review of theoretical frameworks cannot be considered exhaustive. It indicates the problems with determining causality of problems of violence and points out some of the inconsistencies, gaps, and difficulties in the traditional theoretical field. It also serves to underpin the theoretical information concerned with specific aspects of violence in the family. Note there are multiple explanations for violent behavior, and various theories are not mutually exclusive.
<table>
<thead>
<tr>
<th>Theory</th>
<th>Level of Research Support</th>
<th>Strengths</th>
<th>Limitations</th>
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<tbody>
<tr>
<td><strong>DOMAIN-SPECIFIC THEORIES</strong></td>
<td></td>
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<tr>
<td>Biological perspective</td>
<td></td>
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<tr>
<td>Neurotransmitters (NE, 5-HT, dopamine), enzymes (MOA), specific genes</td>
<td>Limited but growing</td>
<td>Examines neurochemical relationships as foundational to behavior manifestations</td>
<td>Preliminary research thus far limited to associations, not causal relationships. Not able to account entirely for behaviors</td>
</tr>
<tr>
<td>Sex hormones (testosterone) and hormone-binding globulin</td>
<td>Limited with mixed results</td>
<td>Strong evidence for link between anabolic androgenic steroid use and violence</td>
<td>Inconclusive evidence regarding naturally occurring hormones and hormone-binding globulins</td>
</tr>
<tr>
<td>Brain areas</td>
<td>Moderate overall</td>
<td>Good evidence for link between abnormalities in prefrontal, medial temporal, and amygdala regions and aggression</td>
<td>Limited in identifying underlying causes of abnormalities</td>
</tr>
<tr>
<td>Alcohol and drugs</td>
<td>Weak for psychopharmacological basis</td>
<td>Research supports influence of executive functioning and personality on relationship between alcohol and aggression</td>
<td>Insufficient as stand-alone theory/cause</td>
</tr>
<tr>
<td></td>
<td>Moderate as supplement to other theories</td>
<td>Link between stimulant drugs and aggression has been demonstrated</td>
<td>Relationship may be confounded by social factors—research is unclear</td>
</tr>
<tr>
<td>Psychological perspective</td>
<td></td>
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<tr>
<td>Frustration–aggression</td>
<td>Weak</td>
<td>Could be considered relevant to family violence, as individual goals may be thwarted by others in family</td>
<td>Lacks specifics regarding stimuli of aggression and personality influences</td>
</tr>
<tr>
<td>Cognitive (cognitive neoassociation, script, and social information processing)</td>
<td>Moderate</td>
<td>Incorporates biological foundations. Has been applied to both violent victimization and perpetration</td>
<td>Limited ethnic diversity and small sample sizes limit generalizability to population</td>
</tr>
<tr>
<td><strong>Sociocultural perspective</strong></td>
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<tr>
<td>Structural violence</td>
<td>Limited to moderate</td>
<td>Encompasses societal structures that allow inequities; allows for influence of society on individual behaviors</td>
<td>Very broad, difficult to explain all behaviors</td>
</tr>
<tr>
<td>Intrafamilial resource</td>
<td>Limited to moderate</td>
<td>Specifically addresses sociological underpinnings of family violence</td>
<td>Focuses primarily on who holds resource power, not other factors present in families</td>
</tr>
<tr>
<td>Cultural consistency</td>
<td>Limited to moderate</td>
<td>Several aspects of culture seen as influential on individual behavior; helps in understanding violence causation within cultures</td>
<td>Does not account for individual characteristics (biological, psychological, etc.) of aggressors</td>
</tr>
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<table>
<thead>
<tr>
<th><strong>INTEGRATED THEORIES</strong></th>
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<tbody>
<tr>
<td>Social cognitive</td>
<td>Moderate to strong</td>
<td>Incorporates biological, psychological and sociological factors to causation of violence</td>
</tr>
<tr>
<td>General aggression model</td>
<td>Limited due to relative newness of theory</td>
<td>Allows violence to be related to several motives. May be good for developing multisystem interventions</td>
</tr>
<tr>
<td>Ecological</td>
<td>Strong</td>
<td>Use of nested “systems” accounts for complexity of violent behaviors</td>
</tr>
<tr>
<td>Adolescent-limited (AL) versus life-course persistent (LCP)</td>
<td>Strong</td>
<td>Unique in that it has been applied in several longitudinal studies</td>
</tr>
</tbody>
</table>
Domain-Specific Theories

The Biological Perspective

Early theories on violence in the 1960s and 1970s favored the evolutionary and instinctivist basis, purporting that aggression is normal and serves to preserve species through the favoring of genes that promoted strength (Lorenz, 1966). Dominance and subordination was seen as inevitable (Ardrey, 1966). However, these theories have long fallen out of favor and offer little to the field. Instead, theories that emphasize the neurochemical underpinnings of violent behavior have taken precedence when examining the role of biology in violence. It should be noted that while biologic factors play a significant role in the development of aggressive behaviors, scientists exploring this singular dimension of violence do not purport that biology explains all aspects of violent behavior. Experts in this field recognize that biology and genetics must be considered in tandem with environmental and learning factors (Bernet, Vnencaj-Jones, Farahany, & Montgomery, 2007; Reif et al., 2007).

Violence, as defined earlier in the chapter, is aggression that has harm as the outcome (e.g., death). The environmental and psychological roots of aggressive behavior have been studied for centuries, but it is only in the past 40 years that scientists have systematically explored biological links to aggressive behavior (see Table 1.2). Recent studies using both animal and human models suggest a role of enzymatic and neurotransmitter systems as inhibitors and facilitators of aggressive behavior (Alia-Klein et al., 2008; Francesco Ferrari, Palanza, Parmigiani, de Almeida, & Miczek, 2005; Mejia, Ervin, Baker, & Pialmout, 2002; Nelson & Trainor, 2007). Evidence also points to androgens such as testosterone and their binding globulins as having a role in aggressive behavior (Aluja & Garcia, 2007; Brooks & Reddon, 1996). In addition, some recent studies have worked on isolating specific candidate genes linked to increased aggressiveness (Burt & Mikolajewski, 2008; Guo, Roettger, & Shih, 2007).

NEUROTRANSMITTERS, ENZYMES, AND ASSOCIATED GENES. During recent decades, the roles that monoamine neurotransmitters of norepinephrine (NE), serotonin (5-HT), and dopamine and the enzyme monoamine oxidase A play in aggressive and violent behaviors has been the subject of several recent studies. Abnormal serotonin levels have demonstrated association with impulsive and aggressive behaviors. Most often, 5-HT$_{1A}$ and 5-HT$_{2A}$ levels in the brain were inversely correlated with aggressive acts, including self-aggression, such that low extracellular levels were associated with increased aggression (Meyer et al., 2008; Ryding, Lindström, & Träskman-Bendz, 2008; Witte et al., 2009). Researchers have also shown that the major metabolite of serotonin, 5-hydroxyindolacetic acid (5-HIAA), is reduced in the cerebrospinal fluid (CSF) of subjects with a history of aggression (Dolan, Anderson, & Deakin, 2001).

The brain’s dopaminergic system appears to play a role in aggressive behavior. Animal studies suggest that an increase in brain dopamine activity creates a state in which animals are more prepared to respond impulsively and aggressively to stimuli in the environment (Blackburn, Pfau, & Phillips, 1992). Linked to both the dopaminergic and serotoninergic findings, preliminary evidence supports a genetic disturbance in neurotransmitter function that might predispose individuals to aggressive behaviors (Alia-Klein et al., 2008; Reif et al., 2007). Interruption of and lowering of the normal activity of monoamine oxidase A (MAO-A), the enzyme responsible for metabolizing monoamine neurotransmitters, has been linked to violent behaviors in both humans and animals.
Theories of Aggression and Family Violence

TABLE 1.2 Biological Factors and Irregularities Related to Increased Aggression

<table>
<thead>
<tr>
<th>Biological Factor</th>
<th>Purpose as Applicable to Aggression (Not Exhaustive)</th>
<th>Irregularities Associated With Increased Aggression or Violence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neurotransmitter</strong></td>
<td>Norepinephrine (NE) Integral for attentiveness, emotions, learning Also can be released in blood to cause increase in heart rate and contraction of blood vessels</td>
<td>Elevated levels in the brain</td>
</tr>
<tr>
<td></td>
<td>Serotonin (5-HT) Contributes to regulation of mood, pain, sleep</td>
<td>Low extracellular 5-HT1A and 5-HT2A in brain Low 5-HIAA (metabolite) in CSF</td>
</tr>
<tr>
<td></td>
<td>Dopamine Modulates mood</td>
<td>Increased dopaminergic activity Genetic disruption of dopamine D2 receptor (DRD2) or dopamine transporter (DAT1)</td>
</tr>
<tr>
<td><strong>Enzyme</strong></td>
<td>Monoamine oxidase A Metabolizes brain neurotransmitters NE, 5-HT, dopamine</td>
<td>Deficient levels or gene mutations</td>
</tr>
<tr>
<td><strong>Sex hormone</strong></td>
<td>Anabolic androgenic steroid (AAS) Externally supplemented; used as &quot;performance-enhancing&quot; drug</td>
<td>Lifetime and past year use</td>
</tr>
<tr>
<td></td>
<td>Testosterone (naturally occurring) Steroid hormone for development of male reproductive system and maintenance of secondary sex characteristics. Also effects memory and attention</td>
<td>Elevated levels (although research findings are inconsistent)</td>
</tr>
<tr>
<td></td>
<td>Sex hormone-binding globulin (SHGB) Glycoprotein active in regulating distribution of sex hormones between free and protein-bound states</td>
<td>Elevated levels (suggested to have mediating role between testosterone and aggression)</td>
</tr>
</tbody>
</table>

(Alia-Klein et al., 2008; Mejia et al., 2002). In addition, variations in the dopamine D2 receptor (DRD2) and the dopamine transporter (DAT1) genotypes have been linked to violent delinquency in young adults (Guo et al., 2007).

Even with the growing body of research in this area, however, the findings are still preliminary. The studies have been conducted on limited samples, and most have looked only at associations. The exact role of the neurotransmitters on regulating aggression is still not entirely clear and subject to further study.

**SEX HORMONES.** In human beings, androgens (male hormones naturally produced in the body) have often been associated with the regulation of aggressive behavior, although the nature of the role remains unclear. Testosterone, including anabolic androgenic steroid (AAS) use, has been studied extensively in relationship to human assertiveness, dominance, and aggression. A clear link has been made between AAS use (both past year and lifetime use) and increased aggression among adolescents (Beaver, Vaughn, Delisi, & Wright, 2008; Ricci, Schwartzter, & Melloni Jr., 2009; Schwartzter, Ricci, & Melloni Jr., 2009). One interesting finding in recent research on naturally occurring testosterone has been that the relationship between testosterone and violence is not limited to men, but was found to be higher in women (Cashdan, 1995; von der Ahlen, Lindman, Sarkola,
Theoretical Background

Makisalo, & Eriksson, 2002). Another is that the level of sex hormone-binding globulin (SHGB) is more associated with increased aggressiveness among a sample of inmates than their serum testosterone (Aluja & Garcia, 2007).

However, increased levels of naturally occurring testosterone are not always predictive of increased aggression. Archer (2006) reviewed the literature available on testosterone and violence, and determined there were conflicting results. Boys going through puberty experienced a surge in systemic testosterone levels, yet they do not necessarily demonstrate more violent behaviors. In addition, in reviewing the extant literature, Archer concludes that there is a great deal of variation in the relationship between testosterone and aggression. It is most pronounced in samples consisting of offenders and young adults, although these can be confounded.

**BRAIN AREAS AND LESIONS.** Brain imaging and neurological studies have converged on the conclusion that certain areas of the brain are more closely linked to aggression and violence than others. Functional and structural deficits in the prefrontal cortex, medial temporal lobe, and the amygdala have been consistently linked to antisocial and aggressive acts (Bufkin & Luttrell, 2005; Raine, 2002). Damage to these areas affects a person’s ability to make decisions, comprehend consequences of their actions, accurately interpret social cues, and regulate negative emotions. Brain imaging research, however, is unable to determine the underlying cause of the structural and functional brain abnormalities identified, and it is unclear when in a person’s life difficulties first occur.

With this in mind, however, the study of patients who suffer brain injuries can provide important evidence to the neurobiology of aggressive behavior. Older studies found that a history of head trauma was significantly more common in male batterers than in nonviolent men (Rosenbaum et al., 1994). In one meta-analysis of traumatic brain injury (TBI) and violence, persons with histories of TBIs were 66% more likely to be at risk for violence than the non-TBI controls (fixed-estimate odds ratio = 1.66, 95% CI 1.12–2.31) (Fazel, Philipson, Gardiner, Merritt, & Grann, 2009). However, there is indication that it may not be the matter of having a TBI history, but the extent of that TBI. A recent study (Turkstra, Jones, & Toler, 2003) used a sample of convicted domestic violence perpetrators and noncriminal controls, matched for race, age, and socioeconomic status. The actual frequency of TBI was not significantly different, although the causes for TBI in the convicted offenders were more likely interpersonal in nature and the TBIs were more severe than the controls. The offenders also reported significantly more problems with aggression and anger than their nonviolent controls.

**ROLE OF ALCOHOL AND DRUGS.** There has also been extensive research on the role of substances such as alcohol and drugs on the neural mechanisms for aggression (Giancola, 2002). It is important to note, however, that the effects of alcohol alone on an individual’s behavior are not a stand-alone theory. The general population and researchers have long associated substance abuse with violence, but the relationships are extremely complex. Violent crime and alcohol are associated in research, but as first pointed out by Moyer (1987), neither are most criminals alcoholics nor the majority of alcoholics violent criminals. Laboratory experiments have shown increased aggression with alcohol ingestion, but there is variability in the studies, and not all subjects react the same. Research has not substantiated a “direct cause paradigm,” the theory that alcohol directly causes aggression. Rather, alcohol detrimentally affects certain psychological and physiological processes that then may lead to the expression of aggressive behavior (Giancola, 2002).
Previous research examined the cognitive effects of alcohol on inhibitions and instigation perceptions. Cognitive models of violence postulate that aggressive behavior is determined by the relative balance of a combination of both instigative (e.g., threats, insults) and inhibitory (e.g., anxiety, norms of reciprocity) cues present in hostile interpersonal situations. The instigative cues increase the probability of an aggressive act, whereas inhibitory cues decrease the probability of an aggressive act (Giancola, 2002).

“Blaming the booze” for decreasing inhibitions and allowing misperceptions of situations may oversimplify the relationship. Researchers recently found that the effect of cognitive expectations on actions following alcohol ingestion was negated when baseline temperament was incorporated into the model, such that those with more aggressive baseline personalities were more likely to be aggressive when alcohol was introduced (Giancola, Godlaski, & Parrott, 2005). Other recent studies have examined the role of “general” trait anger and dispositional aggressivity in the interplay between alcohol and aggressive behavior and had similar results (Giancola, Saucier, & Gussler-Burkhardt, 2003; Giancola, 2004a; Parrott & Zeichner, 2002). Behavioral anger was the strongest risk factor for alcohol-related aggression (Giancola et al., 2003).

In addition, men with higher scores in both behavioral and cognitive anger had an increase in aggression when ingesting alcohol, while women with only high behavioral anger scores showed a higher level of aggression in the same study. Similarly, using a sample of social drinkers, researchers found that a person with a difficult temperament, regardless of gender, was more likely to be aggressive. Yet, with the introduction of alcohol, only the men with difficult temperaments showed an increase in aggression over their baseline (Giancola, 2004a).

The extent to which this relationship between alcohol and increased aggression is affected by executive functioning (EF) of an individual’s brain has been subject of recent research. EF is considered a “higher-order cognitive construct involved in the planning, initiation, and regulation of goal-oriented behaviors,” and this includes a person’s ability to maintain attention, problem solve, reason abstractly, and organize information contained in the working memory and utilize it appropriately (Giancola, 2007). It may also play a role in temperament regulation. EF activities have been linked to the prefrontal cortex in the brain, an area also strongly influenced by levels of serotonin, dopamine, and MAO-A, which have been previously discussed.

EF has been examined as a moderator of the relationship between alcohol and aggression, similarly to the role of difficult temperament. Men with higher EF demonstrated lower aggressive behavior, whether or not they had ingested alcohol, and only those men with lower EF scores showed an increase in aggression with the ingestion of alcohol (Giancola, 2004b). Of the women in the same study, simply the belief that they had ingested alcohol (regardless of alcohol or placebo group) suppressed aggressive actions, but this did not hold true for men. Giancola, Parrott, and Roth (2006) re-examined the positive relationship between difficult temperament and alcohol-related aggression by assessing the role of EF. They found that, among men, EF mediated this relationship by reducing the effect of difficult temperament on alcohol-related aggression by 20%.

Whether alcohol has an effect on serotonin, and how this is related to aggression, has just begun to be studied in humans and only to a limited extent. Heinz et al. (2000) found that there may be a genetic susceptibility of certain individuals to neurotoxic effects of chronic alcohol that result in decreased 5-HT transporter availability. A decrease in 5-HTT functioning effects the normal serotonin levels in the brain, and may be related to increased aggression (see previous section on neurotransmitters). When examining acute
alcohol consumption, McCloskey, Berman, Echevarria, and Coccaro (2009) found that higher levels of 5-HT lowered aggression, while acute alcohol consumption increased aggressive acts. However, the two occurred independently of one another, and no overlapping influence was discovered.

The extent to which offender and victim alcohol consumption impacts the violence suggests that, while offender drinking is associated with increased negative outcomes, victim drinking does not play as significant a role. Using the data from the National Violence Against Women Survey (NVAWS), Thompson and Kingree (2006) examined the reports of 1,756 women who reported experiencing physical assault by their partners. Women with partners who had been drinking were more likely to be injured than those whose partners had not been drinking.

However, a woman’s alcohol consumption was not significantly related to outcomes (Thompson & Kingree, 2006). Although a review of studies among college students found links between both offender and victim alcohol ingestion and the likelihood of sexual assault (Abbey, 2002), recent work has found stronger support for the connection between offender drinking and sexual assault than victim ingestion. Brecklin and Ullman (2002) recently analyzed the data from 859 female sexual assault victims identified through the National Violence against Women Survey. The analysis showed that offender behavior (e.g., drinking and aggression), not victim behavior, is an important determinant of sexual assault outcomes for women (Brecklin & Ullman, 2002). Offenders who were drinking were 80% more likely to complete the rape, and high levels of offender aggression increased the risk of victim injury by nearly nine times (OR 8.91, \( p < 0.001 \)) and medical care outcomes by 3.5 times (OR 3.52, \( p < 0.05 \)) in multivariate analysis, controlling for demographic, drinking, and assault characteristics (Brecklin & Ullman, 2002).

The literature on illicit drug use and crime often find strong associations between illicit drug use and both violent and property offending (Martin & Bryant, 2001). Goldstein’s (1985) conceptual framework for the relationship of drugs and violence identified three factors through which they may be linked; these include the specific drugs’ psychopharmacological effects, the user’s economic needs, and the violence associated with the distribution and control of illicit drugs (Goldstein, 1985). These factors do not take into account, however, the effect of experiencing child sexual, emotional, and physical abuse as a precursor to drug use in adulthood, which has been demonstrated in several studies (Kennedy, 2008; Miller, 2002).

Research on substance abuse and violence has shown that stimulant drugs such as crack cocaine are the strongest predictors of violence (Fals-Stewart, Golden, & Schumacher, 2003); this is not true with opiates such as heroin (Moore et al., 2008). As with alcohol, effects of drugs on violent behavior appear to be associated with social, individual, and situational factors rather than neurophysiological causes for the majority of drugs. The majority of studies have found little evidence of a psychopharmacological basis for an illicit drug-violence association (Martin & Bryant, 2001). Potential exceptions are stimulants such as cocaine and amphetamines. In studies completed with primates, stump-tail macaques (monkeys) were given amphetamines. After receiving the drug, it was noted that the monkeys’ aggressive behaviors increased significantly. Although more research has been done on linking human amphetamine use and violence using longitudinal data (Fals-Stewart et al., 2003), the support of a direct causal link between the two remains weak. Investigators are challenged to disentangle the relationships among alcohol, illicit drug use, and violence. Often the studies fail to distinguish between the many different substances used by the individuals and the combined effects of multiple drugs on aggression (Martin & Bryant, 2001).
LIMITATIONS OF THE BIOLOGICAL PERSPECTIVE. All human beings experience anger and may behave aggressively with enough provocation such that sorting out the interactions of psychological and environmental factors with basic genetics and physiology is extremely complex. As the empirical evidence suggests, there is considerable credence to the position that neurobiologic systems do influence aggressive behavior. However, a direct causal link is difficult to establish with the existing evidence.

In addition, the majority of research examining the relationship between neurobiology and aggression has been conducted with men, although there are an increasing number of studies that are examining both men and women. Unfortunately, the majority of the research also has been conducted with limited sample sizes, and therefore generalizability, to broader populations is restricted. Neurophysiologists still lack evidence that explains the complete difference between males and females in their aggressive or non-aggressive behavior when responding to stimuli, as testosterone only partially explains the difference.

The Psychological Perspective

Also considered domain-specific theories are the theories generated from the field of psychology. These explanations of violence vary greatly. A few psychologists echo Freud’s theories that aggression is a basic instinct or drive (Freud, 1932). Others de-emphasize or refute that view and identify other psychological traits that characterize the violent person. Psychoanalytic frameworks, whose basic premise is that some basic need has been thwarted in the violent individual, usually by some form of faulty child rearing (Warren & Hindelang, 1979) have not been substantiated empirically and therefore will not be addressed here. The following psychological theories will be addressed below: frustration–aggression theory, cognitive neoassociation theory, script theory, and social information processing theory. The first two will only be mentioned in a cursory manner, as their influence in the field of violence has greatly decreased in recent years.

FRUSTRATION–AGGRESSION THEORY. This theory was first proposed by Dollard, Doob, Miller, Mowrer, and Sears (1939). They postulated that if an obstacle to achieving a desired goal is presented, this results in frustration, which in turn is the cause of all aggression. This theory is based on the belief that aggression is innate to humans. One could imagine that this concept of aggression resulting from frustration is relevant to family violence, where conflict often arises when an individual’s goals may be thwarted by another individual within the family unit or by the family as an organism in itself. However, it lacks specifics regarding which frustrating events will result in aggression, why some people respond to frustration by withdrawing, and what determined differing aspects of aggression (i.e., physical, emotional, etc.) (Gelles & Straus, 1979) and has not been supported by evidence.

COGNITIVE THEORIES. Three interrelated theories use cognition and response as the basis for violent behaviors. According to the Cognitive neoassociation theory, stress related to noxious stimuli triggers memories, emotions and behaviors lead to fight (anger) or flight (fear) responses. Thoughts, affect, and behavior are linked in memory and are triggered by unpleasant and stressful conditions or feelings (Berkowitz, 1990). Whether the ultimate response to a given trigger is fight or flight depends on prior conditioning, genetic predisposition, and an appraisal of the best course of action for the situation. Aggressiveness and the associated thoughts, emotions, and behaviors are linked inextricably
in memory. Berkowitz suggests that a wide range of stressors such as physical pain, excessive heat, economic uncertainty, and political unrest can all lead to an increase in aggressive behaviors in humans (Berkowitz, 1998).

Closely related to this is the Script theory that suggests that as humans develop, they learn certain scripts for given situations, which both explain and guide behavior (Abelson, 1981; Shanck & Abelson, 1977). Scripts are both learned by observation and reinforced by conditioning. Thus, society's response to an individual's use of a particular script will influence if and how that script is used in the future. Huesmann (1998) stated that “more aggressive people are presumed to have encoded a larger number of aggressive scripts” (p. 87). The longer scripts persist as a response, the more refined and resistant to modification they become. Huesmann also postulates that negative emotional arousal (such as feeling angry) will “prime” individuals to retrieve more aggressive scripts and result in the individual retrieving the most well-learned scripts, and evaluating the scripts less carefully.

The Social information processing (SIP) theory blends the two aforementioned cognitive theories, holding that human behavior, including aggression, is influenced by several domains but is mediated by cognitive processes (Dodge & Coie, 1987; Milner, 2000). Behavior is modeled within a hierarchical system, with biological and neurochemical processes at the lowest level, while higher-order information retrieval and cognitive processing are required for more complex behaviors. SIP theory postulates that human behaviors include the following four steps: behavioral cues are recognized and interpreted, scripts are retrieved (and enacted), the script is evaluated, and the environmental response is evaluated.

SIP has been used explain the link between early experience or witnessing of violence and later aggressive behavior in several studies. An examination of incarcerated juveniles found that both violent victimization and exposure to severe violence resulted in more approval of aggression as an effective approach, more hostile perceptions of others' behaviors, and more aggressive behaviors (Shahinfar, Kupersmidt, & Matza, 2001). A study of elementary school children found that both violent victimization and witnessing violence was associated with aggressive behavior and mediated through social information processing rather than emotional factors (Schwartz & Proctor, 2000).

Other research has explored how SIP may influence a parent's likelihood to physically abuse their children. Cognitive schemas, such as empathetic perspective-taking, internal locus of control, and accurate developmental expectations, put parents at less risk for physical abuse, beyond certain contextual variables, such as stress and anger expression (Rodriguez & Richardson, 2007). In particular, external locus of control was highly predictive of potentiality to abuse, overreaction in discipline, and demonstration of physical aggression toward the child. In another study comparing mothers who had been identified as neglectful to those who were not, the neglectful mothers were less able to interpret their infant's signals accurately and were less likely to identify when the child was in distress (Hildyard & Wolfe, 2007). These studies, however, used limited sample sizes and were not all ethnically diverse, which indicates the need for further research in this area with larger, more diverse sample sizes.

**The Sociocultural Perspective**

Another domain in which researchers have developed theories explaining the basis of violent behavior is the social–cultural domain. The sociocultural theories of violence generally consider some of the biological and psychological aspects of causation, but their
The basic proposition is that social structure and conditions are more important (West, 1979). For several decades, they have vehemently rejected the notion that aggression is an instinct or a drive and postulate that most violent offenders do not generally act destructively (Chatterton, 1976). Except for these areas of agreement, there is a great variation in approaches. There are theorists who emphasize any one of the following aspects: the structural violence inherent in our society, cultural attitudes fostering violence, and the role of resources.

**STRUCTURAL VIOLENCE THEORY.** The theory of structural violence contends that there are certain mechanisms in place in a society that incur violence upon certain individuals and give way to the endorsement of violence between individuals. First put forth by Galtung (1969) and (1996), structural violence is embedded within a society, much less overt than direct violence between individuals, but much more influential. Of particular note is the vertical violence that takes place through the structure of society through political, legal, economic, or other mechanisms, which promotes unequal access to various basic needs as well as those needed for advancement. This structural violence can lead to interpersonal violence, which has direct impact on the health of those individuals as well as the health of the larger society. Structural violence theorists would point out issues in the United States such as health disparities, poor urban schooling, homicide rates, and several other areas which could be seen as indications of structural violence. In addition, globally, conflict between ethnicities such as those that occurred and are occurring in the Rwandan genocide, the conflict in Darfur, the Sri Lankan civil war, the conflict in Bosnia, and several others could also be considered results of structural violence.

One illustration where structural violence can play a part in interpersonal violence is that of poverty. Berkowitz (1998), in his review of literature, noted that poverty, or a more complex variable of economic deprivation, was a good predictor of aggressive behavior in adolescents (Berkowitz, 1998). Anderson and Anderson’s (1998) model testing found that socioeconomic status was positively related to violent crime independent of other factors. Jewkes’ (2002) review of the relationship between intimate partner violence (IPV) and poverty found that there is a strong positive correlation between poverty and rates of violence, and that this relationship may be mediated through stress or a crisis in male role identity. The analysis of risk factors for intimate partner femicide of Campbell et al. (2003) found that the male partner’s unemployment significantly increased the risk of lethal violence among battered women.

**INTRAFAMILIAL RESOURCE THEORY.** The resource theory is one of the only theories that specifically applies to family violence, and for that reason, we include it for discussion. Originally described by Goode (1971), this theory rests on the assumption that systems, including familial systems, rely on some extent of violence or a threat of violence. The theory posits that persons with the most resources hold the most power and therefore can command a certain level of force over the others. These resources can be economic, material, social, personal, or familial among others, but the person with the most resources often does not feel the need to use force. Rather, when other resources are constrained or limited, violence becomes a resource used to gain control or additional force. Violence is also used by someone who lacks sufficient resources to hold the most power.

This could be construed as being related to structural violence, although it is most often applied to the familial level. Tang (1999), in her study on Hong Kong Chinese couples,
found that couples who had an egalitarian distribution of power demonstrated less interpersonal violence than those couples with unequal marital power in either direction (Tang, 1999). Similar results were found in a nationally representative sample of Korean couples (Kim & Emery, 2003) and among Filipino couples (Ansara & Hindin, 2009).

**CULTURAL CONSISTENCY THEORY.** Elements of a culture tend to be interdependent. Knowledge of the interdependent factors within a culture and their relationship to violence can ultimately provide a framework of cultural norms. This knowledge not only provides a greater understanding of what leads to abuse, but it can also help influence the development of cultures that are free of violence (Levinson, 1989).

The cultural consistency theory explains that even cultural norms that are not directly related to violence can have an effect on violence that occurs within the culture. For example, according to Carroll’s seminal work, Mexican American boys may be so afraid of their father’s punishment that there is little communication between the two. Because of the poor communication, the boys unwittingly act in such a way that they offend their fathers and are punished severely (Carroll, 1980). Family structure that contains stress and physical abuse models violence, which is then acted out by the next generation. In the cultural consistency theory, the norms of this family behavior reflect the values of the society as a whole. The norms are tied to the structure of the systemic aspects of the culture, and in this way, violence tends to be consistent with the norms and values of the society (Carroll, 1980). This explanation, thus, helps in understanding the causation of violence within a culture. Cultural consistency theory explains why societies that are known for warfare are also associated with high rates of individual violence.

According to the cultural spillover hypothesis of the cultural consistency framework, the more a society tends to use physical force toward socially approved ends, the greater the likelihood that this legitimization of force will be generalized to other areas of life (Baron, Straus, & Jaffee, 1988). Examples of the use of force in a society are in maintaining order in schools, controlling crime, or dominating international events for the country’s self-interest. Evidence exists that in states where there is a strong emphasis on physical punishment of children, strict or corporal punishment in schools, and high levels of incarceration, there is more, rather than less, interpersonal violence (Baron et al., 1988).

**Integrated Theories**

**Social Cognitive Theory**

Social cognitive theory incorporates biological, psychological, and sociological factors of causation of violence, although it emphasizes the sociological aspects more than the others. Bandura is the originator and best-known proponent of the social cognitive theory as an explanation for aggression. He calls the theory psychological because it grows out of the school of behavioral psychology, yet it obviously contains aspects of several different frameworks. Bandura originally named the theory “social learning theory” (Bandura, 1973). He reformulated the theory, however, to include more cognitive processes to account for observational learning and renamed the theory accordingly (Bandura, 1986).

Individuals begin life, according to this theory, with a blank slate, and violence is learned. Bandura defines aggression as “behavior that results in personal injury and in destruction of property” including that the injury “may be psychological.” He also notes
that the behavior must be labeled as aggressive by society, this labeling determined by the action's intensity, the intentions attributed to the performer by others, and the characteristics of the labeler. Bandura believes that aggressive behavior may be considered adaptive or destructive depending on the situation in which it is used. He acknowledges the role of biological subcortical structures in producing destructive behavior, but believes that the social situation is most important in determining the frequency, form, circumstances, and target of the action.

Bandura postulates that rather than arising from instinct or frustration, aversive experiences result in emotional arousal, which an individual perceives as fear, anger, sorrow, or even euphoria, depending on prior learning, cognitive interpretation, and other people's reactions to the same experience. Moreover, "frustration or anger arousal is a facilitative but not a necessary condition for aggression" (Bandura, 1973). Bandura concludes that the majority of events that stimulate aggression (such as insults, status threats, or unjust treatment) do so through learned experience. As an illustration, not all people who have experienced divorce, parental rejection, poverty, mental illness, or brain damage ever become violent. He perceives the motivation for aggression as reinforcement based, not biologically determined.

The acquisition of aggressive behavior can be learned through modeling or observational learning or by direct experience or practice. Performance is determined by both internal (biological and cognitive) and external instigators (Bandura, 1973; Bandura, 1979). Bandura showed this through experiments with children. He notes also that observation of other's behavior also provides clues as to whether an action will be rewarded or punished when it occurs. If a child sees a parent or peer gain status, dominance, resources, or power using violence, he or she will be more likely to use it (Bandura, 1973). It has often been noticed that violent men are more likely to have been abused as children, and these ideas also help to explain why some peer groups (such as gangs) and subcultures are known for violence (Bandura, 1973). Bandura (1973) found that the parents of aggressive boys from middle class homes, although they neither abused their children nor displayed antisocial violence, "repeatedly modeled and reinforced combative attitudes and behavior.”

Bandura later explains that behavior learned from models is reinforced if the imitative actions are perceived as useful to the person (Bandura, 1979). If aggression is successful and dominance is achieved by it, then the aggression is reinforced (Laborit, 1978). A year-long study of school children showed that children who demonstrated aggression-encouraging cognitions in the fall and perceived more support in the environment for these cognitions were more likely to demonstrate aggressive behavior through the school year (Egan, Monson, & Perry, 1998).

Various applications of the full social–cognitive model have been tested as explanations of aggression and have generally been supported. A test of applying the social–cognitive model to men who physical abuse their intimate partners found support for the model (Copenhaver, 2000). These men did not have fewer coping skills than nonviolent men, but the abusive men tended to interpret ambiguous situations negatively and thus respond with violence. Empirical evidence supports the theoretical propositions that aggressive behavior is learned, at least in many cases, and growing research seeks to explain the mediating and moderating variables through which this may occur.

**GENERAL AGGRESSION MODEL.** Synthesizing elements from the above models, as well as several others, Anderson and Bushman (2002) proposed the General Aggression Model (GAM). Previously, aggressive acts had been classified into dichotomous pairs:
either hostile or instrumental, impulsive or premeditated, proactive or reactive. However, these pairings did not permit understanding of the interplay between cognition and decision-making processes. In addition, the pairings had potential to be confounded by other pairings. For instance, an act of instrumental aggression (being aggressive to obtain something beyond the “rewards” of the aggressive act) could not be entirely independent of impulsivity or premeditation (Anderson & Carnagey, 2004). Therefore, Anderson and colleagues (2002, 2004) developed GAM as a more integrated theory blending social cognition and development, where situational, individual, and biological variables are considered in the larger schema of violent acts. In this model, inputs from the person (traits, sex, beliefs, attitudes, values, and scripts) and the situation (aggressive cues, provocation, frustration, discomfort, drugs, and incentives) both influence the person’s internal state (affect, cognition, and arousal) and thereby determine the outcomes (appraisal and decision processes that lead to either thoughtful or impulsive action).

This model’s strengths lie in several areas (Anderson & Bushman, 2002). It has streamlined several domain-specific theories into a more parsimonious one. It also allows violence to be related to several motives, rather than the isolated dichotomies discussed in the preceding paragraph. The authors also believe that this model can serve as the basis for creating multisystem violence interventions, targeting chronic aggression instead of focusing on only one type of behavior. However, the newness of the theory precludes the existence of a body of research testing the components of the theory.

**ECOLOGICAL THEORY.** One of the most integrated theories concerning violence in societies as well as in families is the Ecological theory, first proposed by Bronfenbrenner (1977). He proposed that a person’s behavior and development resulted from interactions among several systems: microsystems, mesosystems, exosystems, and macrosystems. This model, as applied to violence, attends to the interactions among the system levels. The microsystem pertains to individual factors (biology, history of witnessing or experiencing abuse, general demographics such as age, sex, education, mental health status, and substance use). The mesosystem refers to the interactions between the individuals and their close relationships (such as with partners, peers, and families). The exosystem refers to the community contexts for the individual (such as schools, places of work, neighborhoods), while macrosystems are considered the societal structures (norms and beliefs about violence, masculinity factors, gender roles, racism, etc.) (see Figure 1.1). The goal behind applying this model to examining violence and aggression among individuals is to identify multilevel prevention strategies.

The ecological approach has been widely applied in violence research, particularly in the areas of adolescent violence, violence against women, revictimization experiences of female partners, and to some extent, elder abuse. Strong family functioning has been shown to be an important influence in decreasing youth violence, just as community violence has been a strong influence on increased individual violence (Brook, Brook, & Whiteman, 2007; Gorman-Smith, Henry, & Tolan, 2004; Tolan, Gorman-Smith, & Henry, 2003a). Among high-poverty African American youth, exposure to violence in the community strongly predicted individual violent behavior so much so that violence exposure even limited the effect of healthy parenting processes on violent behavior (Spano, Vazsonyi, & Bolland, 2009). At the same time, high levels of collective efficacy within a community (exosystem) have a protective effect against the occurrence of violent victimization and homicide (Sampson, Raudenbush, & Earls, 1997). In a longitudinal study of urban youth, strong community structures (exosystem) positively influenced parenting
practices (mesosystem), which in turn meant the youth were less likely to be involved in gangs (mesosystem) (Tolan, Gorman-Smith, & Henry, 2003b). Not entirely surprisingly, gang membership (mesosystem) positively influenced violent behaviors of the youth (microsystem). In a similar study of male youths in inner city Chicago, researchers found that family types characterized by strong interpersonal relationships and effective parenting had a direct negative effect on youth violence as well as an indirect effect mediated through decreased gang membership and peer violence (Henry, Tolan, & Gorman-Smith, 2001).

The role of the community can play a substantial role in violence revictimization as well. Child abuse (microsystem) has identified as a risk factor for intimate partner abuse (mesosystem) in adult life (see subsequent chapters). High community cohesiveness has been shown to significantly decrease the effect of childhood emotional abuse on whether an individual experiences physical IPV as an adult (Obasaju, Palin, Jacobs, Anderson, & Kaslow, 2009; Sampson et al., 1997). At the same time, neighborhood disorder, poverty, and structural inequality expressed by racism has an additive effect on the same relationship (Cunradi, Caetano, Clark, & Schafer, 2000; Sampson, Morenoff, & Raudenbush, 2005).

The ecological theory has also been applied to elder abuse, in an effort to better understand the risk and protective factors related to this kind of family violence. Parra-Cardona, Meyer, Schiamberg, and Post (2007) present the theory framed in a culturally relevant manner for Latino families with elders at risk for abuse. Risk factors at the microsystem level of the elder included being female, having a high level of dependency, having mental health issues, being foreign-born, and limited English proficiency. Other risk factors within families included a discrepancy in cultural identities and lack of recognition of those differences. Systemically, risk factors included lack of connection with resources, health care barriers, anti-immigration barriers, and traditional gender roles. Schiamberg and Gans (2000) applied another overarching system in their model of elder abuse, and that is the chronosystem—how change and continuity over time influence the relationship in question (Schiamberg & Gans, 2000). This is perhaps of particular importance when thinking of elder abuse because the elder’s status (physical and mental)

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may worsen over time, and attitudes toward the elderly can change, thereby increasing caregiver strain and increasing the risk for abuse.

**ADOLESCENT-LIMITED VERSUS LIFE-COURSE PERSISTENT MODEL.** The last integrated theory that will be discussed in this chapter is that of the adolescent-limited versus life-persistent model of antisocial (and violent) behaviors (Moffitt, 1993). According to Moffitt, there is a larger group of youth who engage in antisocial behaviors in adolescence, but that these behaviors are limited to this period of development. These behaviors are more often internally focused, such as withdrawing from interactions and isolating oneself from others, although they can be externally expressed through violence as well. Conversely, there is a small group of individuals who exhibit continued antisocial behaviors throughout their lifetimes, and the majority of these antisocial behaviors are externally directed (i.e., violence and aggression). For those who exhibit life-course persistent antisocial tendencies, their interpersonal problems work together with their environments throughout their development, and this culminates in a personality that is pathological.

According to this theory, persons who are in the life-course persistent group have lower cognitive functioning (Raine et al., 2005), insufficient parental guidance, temperament and behavior problems as children than those in the adolescent-limited group (Moffitt & Caspi, 2001). A longitudinal study over 20 years used a large sample of young, male criminal offenders to examine the cognitive functioning portion of the theory, finding that it held for Whites and Latinos, but not for African Americans (Donnellan, Ge, & Wenk, 2000). Those with life-course persistent behavioral problems also have more difficulty in partnerships as young adults and report more IPV (both victimization and perpetration) than their adolescent-limited counterparts. Those at least risk for such violence in partnerships are those who experience no antisocial behaviors throughout their childhoods (Woodward, Fergusson, & Horwood, 2002).

This theory is becoming more widely applied in recent years. Scientists are more closely examining these groupings in terms of the influence of genetics (Burt & Mikolajewski, 2008). In addition, it is one of the only theories that has been examined through several longitudinal studies, all of which lend support to lower social functioning and more dysfunctional personal relationships over time for those in the life-course persistent group (Bergman & Andershed, 2009; Huesmann, Dubow, & Boxer, 2009).

**SPECIAL CONSIDERATIONS**

Certain considerations must be made when reflecting on the pervasiveness in so many societies of violence on a macro level of society as well as a micro level of the interpersonal and family. These have been alluded to in some of the theories discussed above, but they are important to make special note of here.

**Cultural Positioning**

In this discussion, culture refers to homogeneous nations, political subdivisions within nations, ethnic groups, or small-scale societies (Levinson, 1989). The culture of an individual is one’s “social heredity.” The role of culture in relationship to violence must be understood. The problem of understanding culture as a causative influence is a complex
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one, however, because there is likely to be a multiplicity of mingled antecedents associated with violence.

For instance, there are many different cultures in the United States. All of the theories presented may at least partially explain the effect of culture on violence, yet studies of differences among ethnic groups within the United States indicate the complexity of the influences. In order to be useful, variables that are implicated in abuse must have explanatory power both within and between cultures. It is also important to not assume that members of ethnic groups can be characterized similarly in terms of characteristics that are related to abuse.

One of the variables that have been shown important to consider is the level of acculturation of the family or couple into the United States in conjunction with socioeconomic status. An extensive review of literature on acculturation and violence among minority adolescents found several investigations demonstrating that increased acculturation is associated with an increase in youth violence among Latinos and Asian Pacific Islanders, while ethnic group identity and involvement in culture-of-origin activities were found to be protective (Smokowski, David-Ferdon, & Stroupe, 2009). By the same token, however, low acculturation was a risk factor for increased victimization, except in the realm of dating violence for Latino youth. In their study of Chinese, Cambodian, Laotian/Mien, and Vietnamese adolescents and the influence of acculturation on violence, Le and Stockdale found enough differences between the groups to warrant further cross-cultural comparisons before definitive conclusions could be made (Le & Stockdale, 2008).

To this end, an interactional approach is needed to understand the effect of cultural differences on ethnic groups (Gelfand & Fandetti, 1986; Sorenson, 1996). Assessment should be made of the ethnic groups for (1) language, generation of the immigrant, cultural homogeneity of the neighborhood, degrees of activity in traditional religions, socioeconomic status, attitudes about violence and (2) the interaction of these factors with the institutions of work, school, social services, medical services, and community. Ethnic identity and levels of oppression have also been found to be important variables in relationship to violence, but there has yet to be sufficient study to specify their exact roles and the interactions of these variables with other factors. Several studies have shown that socioeconomic status accounts for differences in prevalence in husband to wife abuse U.S. ethnic groups, and when socioeconomic class is controlled for, the differences in violence between ethnicities often disappears (Dearwater et al., 1998; DeMaris, 1990; Lockhart, 1987; Schafer, Caetano, & Clark, 1998; Torres, 1991; Walton-Moss, Manganello, Frye, & Campbell, 2005).

Furthermore, the extent to which violence is “accepted” in a society is also related to how it is positioned. For instance, if aggression is seen as a normative behavior in a culture, attitudes concerning the use of violence are more relaxed. An excellent example of this is in the United States, one of the most violent of market economies. The United States has a long history of violence used as a means to achieve socially approved ends. American culture reflects at least a covert acceptance of violence in the media, in attitudinal surveys, and in choice of heroes. In the 1990s, Senator Moynihan suggested that aggression and other deviant behavior have become so pervasive in American society that rather than address the behaviors, the boundaries of deviancy have been refined so that previously stigmatized behavior is now considered normal (Moynihan, 1993). Farrell (2000) notes that there is a tendency toward excess in American culture, including excessive violence (what he terms “berserk” behavior) that is encouraged through the spectrum of entertainment and news media, which has now become the norm in and the selling point of the reality television shows of the 2000s. Successful interventions must take this context
into consideration when developing programs and planning for sustainable change in individuals as well as society.

**Meaning of Violence Cross-Culturally**

The meaning of the term *violence* within a culture varies through time as well as from culture to culture. Historically in the United States, the *Journal of Marriage and the Family* first mentioned “family violence” after 1970, and not until after 1973 were there references to “wife abuse” in *The New York Times*. The first official declaration of violence as a health problem was by former Surgeon General Dr. C. Everett Koop in 1985 (DHHS, 1986). Behaviors generally understood as abuse in one culture may be considered legitimate in another. Torres’ (1991) comparison of Mexican Americans and Anglo-Americans demonstrated differences in behaviors that were considered abusive. Although there was no difference in the severity and frequency of violence between the two groups, Mexican Americans labeled their experience of being hit as abuse less frequently. Whether the differences were related to ethnicity or to sociocultural factors such as religion, education, and economic factors that are characteristic of each group, it is apparent that abuse occurs within a context that influences interpretation (Counts, Brown, & Campbell, 1999; Torres, 1991).

The absence of reports of abuse in a culture does not mean it does not exist. An unstated assumption in much of the anthropological literature is that if the persons interviewed or observed did not know, acknowledge, or admit there was abuse, it was not classified as abuse (Korbin, 1991). If abuse is a function of a person’s perception of being victimized, the culture’s beliefs and norms become important in understanding the influence of culture on recognition of violence as well as the culture’s definition of violence. Because of different cultures’ perceptions of what constitutes abuse and the complexity of different cultural systems, it may not be possible to attain a universal definition of family violence that is culturally specific (Korbin, 1991).

Yet, certain societies are totally nonviolent both interpersonally and in warfare, according to many different anthropologists and other reporters. The existence of such cultures provides powerful evidence that cultural forces and learning are at least as important as biology in explaining the occurrence of violence. The characteristics of such societies assist in identifying possible primary prevention approaches. Nonviolent societies tend to be more egalitarian than hierarchical in sex roles and ethnic groups’ arrangements, treat children with kindness and without corporal punishment, value cooperation over competition, and are not tied to violence and control of women (Counts et al., 1999; Levinson, 1989; Paddock, 1975; Whiting, 1965).

With this in mind, violence and abuse cannot be understood outside of cultural context. The complexity of violence is magnified by varied cultural systems. For instance, complicating factors within the United States are that members of the various cultures and ethnic groups differ in their level of acculturation and oppression. There will be important differences between one person’s beliefs and those of persons from other cultures or ethnic groups. Yet, membership in a culture or ethnic group cannot forecast the person’s perception or reaction to violence. The influence of spiritual, moral, somatic, psychological, and metaphysical as well as the economic, kinship, and territoriality issues need to be taken into account to discern the individual and family’s views of violence and abuse. Only then can nurses and other health practitioners structure their approaches to ethnic groups for perception and management of the problem (Flaskerud, 1984).
Social Organization

Social organization is defined in sociology as the pattern of relationships between and among individuals and social groups and how the individuals are related to each other and the whole group (Straus, 1974). Proponents of the influence of social organization on family violence posit that violence can be found in the structure of the society, and it affects how the family members relate to each other. One of the aspects of social organization is gender relationships and gender inequalities.

Gender Inequality

Traditionally patriarchal societies have viewed violence toward wives as a male prerogative, stemming from the idea that a woman is the property of men (Dobash & Dobash, 1998; Heise, Ellisberg, & Gottemoeller, 1999). There is inconsistent evidence about any direct correlation between the status of women and violence against women cross-culturally (Counts et al., 1999). Issues that complicate research in this realm are (1) the many spheres and indicators of women’s status (Whiting, 1965), (2) failure to measure women’s status at the cultural or ethnic group level rather than in individual couples, and (3) the possibility of a curvilinear relationship between violence and women’s status (Campbell, 1999, 2001). In other words, in cultures where women are totally subjugated, women may not be beaten often because there are other societal mechanisms in place that keep women’s status low. In societies where there is equality between males and females, wife beating is limited. It is where women’s status is changing rapidly or disputed that domestic violence is highly prevalent. In Bangladesh, for instance, microfinance programs targeting women’s economic empowerment have shown that initial involvement of the women is associated with an increase in partner violence, perhaps from the challenging of very traditional gender norms, but longitudinal involvement beyond 5 years demonstrates a dramatic reduction in violence (Kabeer, 2001; Schuler, Hashemi, Riley, & Akhter, 1996). In the Philippines, both male- and female-dominated household decision-making patterns were associated with increased risk for IPV, while joint decision making was protective (Hindin & Adair, 2002).

As previously mentioned, the concept of women’s status is complex and cannot be described by only one factor. Status may differ between the public and private spheres of culture, as well as among dimensions of power, prestige, and rewards, which are indicators of status in the United States. Cross-cultural indicators related to women’s status that have been associated with wife beating are matrilocality, virtue as honor, male sexual jealousy, strong association of women with nature, cultural sanctions allowing wife beating, other violence against women, female entrapment in marriage (divorce restrictions), male control of production, and male domestic decision making (Counts et al., 1999; Levinson, 1989).

The effect of gender inequality can also be seen culturally in the maltreatment of female children. Female infants and small children are more likely to be malnourished and receive inadequate medical care than their brothers in societies where there is male gender preference (Heise et al., 1999; Korbin, 1991). In India and the People’s Republic of China, amniocentesis has been used for sex determination and then followed by abortion of female fetuses. Understanding these complex relationships and the underlying motivations is important to prevention of violence.
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SUMMARY

Studying the interactions among biological, social, environmental and psychological factors in the expression of aggression is the most promising approach in violence research. The causes of violence are multifactorial and somewhat elusive, and therefore, the theories that provide the best framework for understanding are those that take several levels of human interaction into account. No one theory has surfaced as the absolute explanation, although the integrated theories hold a great deal of promise. As nurses, we must be aware of the multifaceted roots of violent behavior. Interventions for our clients who have either been victimized or who are perpetrating violence must be developed with an understanding of this, and we must continually be aware of our own experiences and perceptions of violence, in order to serve our clients in a therapeutic and effective manner.

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INTRODUCTION

The effects of family violence are far-reaching, resulting in physical, emotional, mental, social, and spiritual deficits in women and children who experience it. Intimate partner violence (IPV) also impacts families, communities, and society as a whole. The acute, repetitive acts of violence, stress, and injury, coupled with the ongoing, chronic stress states that are associated with IPV and other forms of abuse adversely affect women’s physiologic balance and well-being, which in turn influence short- and long-term health. These declines in health are likely a result of changes in biopsychophysiological function further supporting nursing’s conceptualization of the holistic definition of health. Research over the past decade in women who experience IPV and other forms of trauma shows that the experience of IPV and, in many cases, childhood sexual abuse alters neuroendocrine and immune function, and that posttraumatic stress disorder symptomatology exerts an additional effect (Gill, Vythilingam, & Page, 2008; Woods, Page, Hall, & Alexander, 2008a; Woods, Page, & Alexander, 2003; Woods, Page, O’Campo, Pugh, Ford, & Campbell, 2005a; Woods, Wineman, Page, Hall, Alexander, & Campbell, 2005b).

In this chapter, the physical and mental health consequences of family violence in women are outlined first. Next, there is a section devoted to a brief discussion of the stress response, as well as several theories that may explain the mechanisms of altered functioning of the neuroendocrine and inflammatory/immune systems in persons who have experienced violence and trauma. Lastly, empirical findings related to neuroendocrine and inflammatory/immune activities in abused women and children and their contributions to declines in health are presented.

Family Violence as Trauma and Health Consequences

Epidemiological surveys have shown that one in three American women will experience physical, emotional, or sexual abuse by a family member or intimate partner at some point during their lifetime (The Commonwealth Fund, 1999; Tjaden & Thoennes, 2000).
Intimate partner violence (IPV), also known as domestic violence and spousal abuse, takes a variety of forms, including physical violence, emotional abuse, sexual violence, threats of violence, and risk of homicide (Parker, McFarlane, Soeken, Silva, & Reel, 1999; Woods et al., 2005b). A woman involved in an ongoing intimately abusive relationship is subject to acute and chronic threats, injuries, and harm, which result from the frequent and/or intense intentional violent acts. Although persons exposed to repeated trauma have some opportunity to anticipate and develop strategies for managing the trauma and stress associated with it, they also face periods of prolonged fear, uncertainty, and hyperarousal (Connor, Davidson, & Lee, 2003; McFarlane & Yehuda, 1996).

Effects of IPV and Other Forms of Family Violence for Women

Women exposed to violence and trauma experience a wide range of long-term health problems, as do men (Breiding, Black, & Ryan, 2008), although the prevalence of IPV and IPV-related injury is significantly less for men, and effects have been studied less often. IPV is a significant risk factor for psychological and emotional health problems for women, including depression (Dienemann, Boyle, Baker, Resnick, Weiderhorn, & Campbell, 2000), substance abuse (Curry, 1998; Walton-Moss, Morrison, Yeo, et al., 2003), and post-traumatic stress disorder (PTSD) (Bennice, Resick, Mechanic, & Astin, 2003; Woods, Hall, Campbell, & Angott, 2008b). Following a meta-analysis of 11 studies, Golding (1999) reported a prevalence rate of almost 64% for PTSD in women in a violent intimate relationship. Rates of PTSD are as high as 92% in women seeking help at crisis shelters and domestic violence agencies (Woods et al., 2008b). There is also evidence that PTSD is often comorbid with other mental health problems. Women with PTSD often have comorbid depression (Breslau, Kessler, Chilcoat, Schultz, Davis, & Andreski, 1998; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; O’Campo et al., 2006). PTSD symptoms also have been found to increase the risk for illicit drug and alcohol abuse in women experiencing IPV, with each symptom cluster of PTSD uniquely contributing to this risk (Sullivan & Holt, 2008).

Women who are abused by their male partner suffer acute physical injuries as well as negative effects on their long-term physical health (see Figure 2.1) (Campbell, 2002; Coker, Davis, Arias, Desai, Sanderson, & Brandt, 2002; Garcia-Moreno, Watts, Jansen, Ellisberg, & Heise, 2003; Woods et al., 2008b). Women who experience intimate abuse rate their health as lower than nonabused women (Lown & Vega, 2001; Wittenberg et al., 2007). Women experiencing IPV have stress-related health problems, including neuromuscular pain, headaches, seizures, sleep problems, hypertension, and increased susceptibility to viral and bacterial infections (Campbell et al., 2002; Coker et al., 2002; Garcia-Moreno et al., 2003; Woods et al., 2008b). IPV increases the risk of contracting a sexually transmitted disease (Silverman, Decker, Saggurti, Balaiah, & Raj, 2008; Alvarez, Pavao, Mack, Chow, Baumrind, & Kimerling, 2009) and significantly increases the risk of cervical cancer by 2.7 times (Coker, Hopenhayn, DeSimone, Bush, & Clifford, 2009). Gastrointestinal problems are also associated with experiences of IPV. For example, 71% of women with IPV have at least one functional gastrointestinal disease (FGID), and in two-thirds of these women, the onset of FGID symptoms occurred simultaneously or soon after the beginning of an IPV relationship (Perona et al., 2005).

Even when women leave the violent relationship, their health is at risk. Women who have been out of an abusive relationship an average of 20 months or longer continue
to experience chronic pain, including back and neck pain, headaches, pelvic pain, and swollen and painful joints (Woods & Wineman, 2004; Wuest, Merritt-Gray, Ford-Gilboe, Lent, Varcoe, & Campbell, 2008). In a sample of abused women, PTSD symptom severity mediated the symptoms of chronic pain (Wuest et al., 2009). Empirical evidence has consistently shown that trauma-exposed women with PTSD, with or without accompanying depression, have significantly more self-reported physical and mental health complaints, physician-diagnosed illnesses, and chronic health problems compared with women who have not been exposed to trauma (Calhoun, Wiley, Dennis, & Beckham, 2009; Laffaye, Kennedy, & Stein, 2003). Researchers tracking health care costs of battered women over an 11-year period found that women who experienced ongoing physical violence from a male partner spent 42% more on health care than nonabused women (Bonomi, Anderson, Rivara, & Thompson, 2009). In addition, women experiencing emotional abuse, but no physical violence, by a male intimate partner had annual health care costs that were 33% higher than nonabused women.

Research has also shown a relationship between different types of maltreatment experienced as a child and long-term physical health problems (Dube, Felitti, Dong, Giles, & Anda, 2003; Felitti et al., 1998; Frances, Caldji, Champagne, Plotsky, & Meaney, 1999; Goodwin & Stein, 2004). Women abused as children, but not as adults, had significantly more physical health symptoms compared with women who never experienced abuse (McCauley et al., 1997). In addition, adults (male and female) abused as children have different biological responses to stressors, which are linked to vulnerability to depression and anxiety symptoms when they get older (Lupien, McEwen, Gunnar, & Heim, 2009). Adding to the evidence, women who have experienced childhood abuse or have witnessed IPV between their parents are more likely to experience IPV as adults through complex interactions with PTSD, substance abuse, and risk behaviors (Dube, Anda, Felitti, Edwards, & Williamson, 2002; Fargo, 2009). Therefore, trauma leads to long-term vulnerabilities that underlie health declines in adulthood; however, a better understanding of how to prevent these declines is required.

The evidence that health consequences of intimate partner and other forms of family violence for women are long-lasting is strong and persuasive. The physiological effects of trauma and the relation to health declines may be explained through four main theoretical frameworks. These frameworks illustrate how the physiological effects of chronic stress result in excessive demands on the body, which can result in long-term health declines.
THE STRESS RESPONSE

It is important to understand the dynamic interplay between the physiologic, immunologic, and psychological responses to stress, particularly in persons experiencing the repeated acute and ongoing chronic stress situations associated with family violence. These biological changes can underlie risk for psychological and physical health declines; however, a full understanding of these complex processes is lacking, in part because of the paucity of prospective studies. There may also be adaptations that contribute to a more resilient response to IPV and child abuse; but again, factors that promote resilience are not well understood. Several theories have been posited to explain the alterations in neuroendocrine and inflammatory/immune activity in persons who have experienced trauma: allostasis, psychoneuroimmunology, risky early family environment, and psychobiological resilience. A brief description of the stress response and the four potential frameworks is described in the following section.

Autonomic and Neuroendocrine Systems

During an acute stress or threat situation, the body has a physiologic “fight-or-flight” response, which activates the hypothalamic–pituitary–adrenal (HPA) axis and the sympathetic nervous system (SNS). These activations result in the release of the glucocorticoid cortisol and the catecholamines epinephrine and norepinephrine; the release and interactions of these mediators are well orchestrated and are adaptive as a short-term response to stress (McEwen & Wingfield, 2003). Glucocorticoids help to promote survival by mobilizing and replenishing energy stores and reducing nonessential activity in other body systems, including the immune system (McEwen & Seeman, 1999). Cortisol also turns off the acute stress response via a negative feedback loop on all components of the HPA axis. In the short-term, the acute stress response is protective; however, repeated and prolonged stress states can result in serious physical and psychiatric health declines (see Figure 2.2). Repeated or prolonged stress results in upregulation of the HPA axis, in part, through central and peripheral increases in the numbers and sensitivity of glucocorticoid receptors (Stam, 2007). In chronically stressed animals, this process results in a reduction in the volume of the hippocampus, a neuronal structure required for the processing of new information and memory recall.

Immune System

The HPA axis and their mediators have an interrelated, integrative role with inflammatory and immune activities (Black, 1995; McEwen, 1998; McEwen & Stellar, 1993; van der Kolk & Saporta, 1993), which may be disrupted following exposure to extreme or chronic stress like intimate partner and family violence (see Figure 2.3). Cortisol’s role in the inflammatory/immune response is one of immunosuppression. Cortisol exerts its immunosuppressive effects by inhibiting lymphocyte function and cytokine production, T-cell proliferation, killer cell and macrophage activity, and depressing immunoglobulin synthesis through activation of glucocorticoid receptors that reduce the NFK-b inflammatory pathway (Chrousos, 1995; Raison and Miller, 2003). Persistent low cortisol levels
in chronically stressed or traumatized persons may cause tissue damage, suppress cellular immunity, and increase vulnerability for chronic pain syndromes, cardiovascular pathology, and onset of autoimmune disorder (Heim, Ehlert, & Hellhammer, 2000; Heim, Ehlert, Hanker, & Hellhammer, 1998; McEwen, 1998). Low cortisol levels may also result in an inability to contain the acute stress response (Yehuda, 2000).

Cytokines are proteins that facilitate communication and link the immune, nervous, and neuroendocrine systems (Coe & Laudenslager, 2007; Rabin, 1999). The HPA axis and immune system exert well-described, bidirectional effects. While IL-6 and TNF-α stimulate the HPA axis to produce cortisol, cortisol, in turn, suppresses the production and activity of inflammatory cytokines and immune cells including macrophages, thereby protecting against excessive proinflammatory consequences (Kunz-Ebrecht, Mohamed-Ali, Feldman, Kirschbaum, & Steptoe, 2003; Raison & Miller, 2003; Fries et al., 2005). Cortisol also serves to restrain excessive cytokine and inflammatory immune cell activity (Kunz-Ebrecht et al., 2003; Raison & Miller, 2003). Yet, IL-6 can interact with all components of the HPA axis and directly stimulate production of cortisol (Artz, Pereda, Castro, Pagotto, Renner, & Stalla, 1999). Therefore, glucocorticoids and inflammatory cytokines are synergistic, in that they function to protect the individual from the pathological consequences of each other (Chrousos, 1995).

Not only may cytokines contribute to risk for medical conditions, but an excess of inflammatory cytokines results in “sickness behavior,” which includes symptoms of malaise, fatigue, reduced appetite, and altered sleep patterns (Elenkov, Iezzoni, Daly, Harris, & Chrousos, 2005). In support of this, administration of virus antigens to humans increased levels of proinflammatory cytokines (IL-1b and IL-6), and these elevations were also positively correlated with symptoms of “sickness behavior” (Vollmer-Conna et al., 2004). In addition, depressive symptoms and major depression are a known side effect of immune cytokines in patients undergoing treatment for cancer (Maes, Capuron, et al., 2001b; Capuron, Ravaud, Miller, & Dantzer, 2004) or hepatitis C (Maes, Bonaccorso, et al., 2001a; Beratis et al., 2005; Wichers, Kenis, Koek, Robaeys, Nicolson, & Maes, 2007).
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There is a consistent association between long-term exposure to stress and altered immune function (Herbert & Cohen, 1993; Kang & Fox, 2001). Segerstrom and Miller (2004), in a meta-analysis of psychoneuroimmunology research, reported that chronic stress and the severity of stressors were key factors in moderating both the nature and intensity of alterations in immune function. Moreover, while prolonged stress can suppress some immune activities, it also appears to induce a chronic, systemic state of inflammation (Kiecolt-Glaser, Preacher, MacCallum, Atkinson, Malarkey, & Glaser, 2003) as evidenced by increased circulating concentrations of the inflammatory biomarkers C-reactive protein (CRP) and IL-6 and an increased immune response to placed antigens and wound recovery (Christian, Graham, Padgett, Glaser, & Kiecolt-Glaser, 2006). Repeated and sustained activation of the stress response along with altered immune function and chronic, low-grade, systemic inflammation, without any time for rest and recovery, increases the risk for physical health problems including hypertension, cardiovascular disease, metabolic syndrome, altered immune function, and diabetes (Black, 2006; Lundberg, 2005).

Neuronal Response

The perception of stress results in activation of brain areas that both initiate the stress response as well as moderate it so that it is not excessive. Chronic activation of these areas, which often occurs in persons who have experienced violence and trauma, can change the function, structure, and communication pathways (Bremner, 2006). In women experiencing IPV and PTSD, there is increased activation of the bilateral anterior insula in anticipation of negative images (Simmons, Paulus, Thorp, Matthews, Norman, & Stein, 2008). The anterior insula is a component of the amygdala, which is responsible for initi-

FIGURE 2.3 Biological alterations in PTSD.
ating the stress response when an individual perceives fear. In a meta-analysis of studies in adults abused as children, researchers Woon and Hedges (2008) found a significant reduction in the volume of the hippocampus, a structure needed to form and recall memories, and an initiator and regulator of the stress response. In both men and women, more trauma experiences resulted in greater amygdala re-activity and less responsive suppression of the amygdala by the medial prefrontal cortex, the structure responsible for modulating responses to the environment (Ganzel, Kim, Glover, & Temple, 2008).

**Framework of Allostasis**

Allostasis is the active process of adapting to change and maintaining homeostasis through interactions among the autonomic, neuroendocrine, and immune systems (McEwen, 1998). Stress begins in the brain and affects the brain as well as the rest of the body through the initiation of the stress response. Stress, within the allostatic framework, is described by McEwen and Wingfield (2003) as “events that are threatening to an individual and which elicit physiological and behavioral responses as part of allostasis in addition to that imposed by the normal cycle [of daily activity]” (p. 4). Additionally, responses often experienced by persons during times of acute stress, including anxiety, worry, and increased vigilance, may intensify the release and actions of physiological mediators (McEwen & Wingfield, 2003).

Allostatic load refers to the cumulative wear and tear on the body as it tries to adapt to adverse and repeated psychosocial and physical stressors and includes interpersonal relationships, lifestyle, and environmental factors (McEwen, 2000a). There are several ways in which allostatic load may accumulate (McEwen, 2000b; Stewart, 2006), including repeated surges of the physiologic mediators due to frequent stress or violence, or repeated stress over prolonged periods of time. Allostatic load can occur if the stress response continues to respond to stressors and is no longer sufficiently shutting down the stress response. Lastly, load may result if others systems need to compensate due to an insufficient initial allostatic response. Allostatic load can be sustained for a limited time; however, chronic stress can lead to excess exposure to autonomic, neuroendocrine, and immune mediators resulting in changes in the chemistry, structure, and function of the body over time (McEwen, 2000a). These changes put persons at risk for health declines. Allostasis has been proposed and/or used as a guiding framework for research with women experiencing intimate partner violence (Woods, 2008b) and female war veterans (Groer & Burns, 2009), as it provides a comprehensive physiological explanation of the chronic stress of trauma and violence and links these to observed health declines.

**Psychoneuroimmunology**

A second possible and related framework that links psychological well-being and distress with neuroendocrine and immune system activity and health is the psychoneuroimmunological model (PNI). The basic concepts of the PNI model are that physical and psychological stress and trauma result in activation of the SNS and increased release of catecholamines, decreased cortisol levels over time, and alterations in immune activity including proinflammatory cytokine production (Coe & Laudenslager, 2007; Figley et al., 2009). Both the allostasis/allostatic load framework and the PNI model include mechanisms for cumulative wear and tear of lifetime trauma and prolonged or chronic stress situations. However, the PNI model emphasizes immune competence and the link between proinflammatory cytokines and inflammatory/immune activities and behavioral...
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influences and their relationships with PTSD, depression, and other psychological and physical health problems. Coe and Laudenslager (2007), in an analysis of two decades of research published in *Brain, Behavior, and Immunity*, concluded that studies using a PNI framework have extended knowledge about inflammation and inflammation physiology, and the many types of psychological, behavioral, and environmental factors that can affect immune function and health. The PNI model has been proposed and used to guide research and interventions in several populations, including those exposed to chronic violence (Figley, Hall, Nash, & Temoshok, 2009; Laudenslager et al., 1998) and persons with HIV, cancer, and pain (Carlson, Speca, Faris, & Patel, 2007; Maier, 2003; McCain et al., 2003).

Risky Early Family Environment

A third potential framework to explain alterations in stress systems and their relationships with physical and mental health outcomes in adulthood is the risky early family environment. Building on, in part, the framework of allostasis, Taylor, Lerner, Sage, Lehman, and Seeman (2004) have posited a theoretical perspective that exposure to risky early environments “creates a cascade of risks that exacerbate or lead to vulnerabilities” (p. 1368). This cascade of risk may result in disturbances in the neuroendocrine response to stress which may lead to a broad array of physical and psychological outcomes. Anda et al. (2006) stated that extreme and repetitive childhood stressors are often kept secret and that the accompanying changes resulting from frequent acute stress responses is not always visible. However, both the chronic trauma and repeated stress responses have detrimental effects on the developing neural networks and the neuroendocrine systems of children. Repetti, Taylor, and Seeman (2002), in an integrative biobehavioral literature review, noted that the repeated stress of a risky early environment may result in chronic activation of the HPA axis and sympathetic nervous system in children. This can lead to increased cardiovascular reactivity with possible long-term effects in adulthood including hypertension and cardiovascular disease.

Emotional regulation, including recognizing emotions of self and others, managing emotional states, and difficulties with social relationships can also be challenging for those exposed to early risky environments, further contributing to increased vulnerability (Repetti et al., 2002). Adult children from risky family environments have been found to have little amygdala activation when observing fearful/angry faces and increased activation when labeling the emotional character of those faces compared to adult children from nonrisky environments who showed the expected patterns of amygdala reactivity (Taylor, Eisenberg, Saxbe, Lehman, & Lieberman, 2006a). Taylor and associates speculated that children who experience a risky early family environment may not be able to detect threats or have the emotional regulation skills to cope with threats.

Psychobiological Resilience

A fourth potential framework for explaining responses to violence and trauma is psychobiological resilience. Although most people are exposed to at least one trauma during their lives, the majority do not develop posttraumatic stress disorder or depression or a stress-related physical health condition (Kessler et al., 1995; Breslau et al., 1998; Kimmerling, 2004). One possible explanation for this is resilience, a common, yet less understood contributor to physical and mental health. Resilience was first identified as an anomaly based on exceptional coping in studies of children raised under severely adverse circum-
stances who, despite their environment, excelled in education, health, and interpersonal relationships (Rutter, 1979). More recently, epidemiological studies (Breslau & Kessler, 2001; Kessler et al., 1995) and research of survivors of the World Trade Center Attack (Bonanno, Galea, Buccarelli, & Vlahov, 2007) and the Oklahoma City Bombing (North, Pfefferbaum, Tivis, Kawasaki, Reddy, & Spitznagel, 2004) have confirmed that resilience is a common response to trauma and has been termed as “ordinary magic” (Masten, 2001). Bonanno and Mancini (2009) state that resilience is “the maintenance of relatively stable levels of psychological and physical functioning” (p. 371). This conceptualization shifts the focus from individual limitations to individual strengths, competencies, and capacities and is a critical step to understanding how resilience can be fostered in those exposed to trauma.

There are multiple psychosocial factors associated with resilience. These include positive emotions and optimism, humor, cognitive flexibility, cognitive explanatory style and reappraisal, acceptance, religion/spirituality, altruism, social support, role models, coping style, exercise, capacity to recover from negative events, and stress inoculation (Southwick, Vythilingam, & Charney, 2005). Psychological factors are dependent on physiologic and genetic factors to mitigate stress, and include genetic predisposition and epigenetic and neural mechanisms, which mediate adaptive changes in the neural circuits that involve neurotransmitter and molecular pathways (Feder, Nestler, & Charney, 2009). These changes shape the functioning of the neural circuits that regulate fear, emotion reactivity, reward, and social behavior, which together are thought to mediate resilience and successful coping with stress.

NEUROENDOCRINE AND IMMUNE CHANGES IN WOMEN EXPOSED TO VIOLENCE

Research examining physiologic and immunologic changes in women experiencing the acute and chronic stress of intimate partner violence is in its infancy. In this section, known empirical findings related to altered neuroendocrine and immune activity, risky early environments, and epigenetic changes in women and children experiencing intimate partner and family violence are highlighted. Findings in other samples of trauma-exposed individuals are also discussed. The physical health problems associated with such changes are discussed.

Alterations in Neuroendocrine Activity in Women Experiencing IPV

Cortisol is the most studied biological measure in persons with PTSD. One of the first findings in PTSD research was a reduction in the level of cortisol, which was counterintuitive as these patients were known to exhibit chronically high stress levels. Decreased cortisol levels have been associated with chronic PTSD in persons who have experienced a broad array of trauma, in both women and men, from children to Holocaust survivors and the children of Holocaust survivors, when compared to those with similar trauma experiences, those with no PTSD, and healthy comparison groups (Gill, Vythilingam, & Page, 2008; Goenjian, Yehuda, Pynoos, Steinberg, Tashjian, Yang et al., 1996; Olff, Guzelcan, de Vries, Assies, & Gersons, 2006; Yehuda, Bierer, Schmeidler, Aferiat, Breslau, & Dolan, 2000; Yehuda, Schmeidler, Wainberg, Binder-Brynes, & Duvdevani, 1998; Yehuda,
Kahana, Binder-Brynes, Southwick, Mason, & Giller, 1995). In a recent meta-analysis, cortisol was found to be lower only in studies that used serum or plasma, samples of persons with chronic PTSD and primarily women, and those with high levels of depression (Meewisse, Reitsma, de Vries, Gerson, & Olff, 2007). Research has also shown an association between depression and comorbid PTSD (PTSD + MDD), with higher salivary cortisol levels in PTSD + MDD, but not in PTSD – MDD compared to control groups (Young & Breslau, 2004). However, lower levels of plasma cortisol have been observed in PTSD + MDD in community samples of men and women (Vythilingam et al., in press), and in PTSD + MDD compared to healthy control groups and to depressed groups (Oquendo et al., 2003).

Altered cortisol patterns have been reported in women who are experiencing intimate partner violence. Inslicht et al. (2006) found that women survivors of IPV with lifetime PTSD (n = 29) had significantly higher cortisol levels at four time points throughout the day compared to women exposed to IPV without PTSD even after controlling for age, depression, and abuse characteristics. Higher evening cortisol levels have also been reported in crisis sheltered abused women compared to nonabused women (Pico-Alfonso, García-Linares, Celda-Navarro, Herbert, & Martinez, 2004). However, these investigators did not find an association between cortisol levels and PTSD symptoms.

In contrast, approximately half of 116 battered women in a cross-sectional study of women seeking help for IPV, with most reporting moderate to severe PTSD symptoms, exhibited altered levels of diurnal cortisol, and an altered cortisol pattern, including blunted, flat, or reversed diurnal patterns (Woods et al., 2003). In a follow-up study, almost 65% of 142 women, primarily from crisis shelters, and who were demonstrating high levels of PTSD symptomatology, had altered diurnal cortisol patterns; approximately 55% of the women exhibited a blunt or flat diurnal pattern (Woods et al., 2008a).

Studies that have examined the function of the HPA axis through responses to administration of stimulators have generally demonstrated “supersensitivity.” Excessive suppression of cortisol and adrenocorticotropic (ACTH) in response to dexamethasone has been reported in samples of combat veterans, women who were abused as children, and in women who experienced domestic violence (Griffin, Resick, & Yehuda, 2005; Newport, Heim, Bonsall, Miller, & Nemeroff, 2004; Stein, Yehuda, Keverola, & Hanna, 1997; Yehuda, Boisoneau, Lowy, Giller, 1995; Yehuda, Boisoneau, Mason, & Giller, 1993). Hydrocortisone easily crosses the blood–brain barrier and acts on both glucocorticoid and mineralocorticoid receptors in the hippocampus and hypothalamus. One study with combat veterans with PTSD has shown a graded “central” sensitivity to glucocorticoids (Yehuda, Yang, Buchsbaum, & Golier, 2006). In addition, preliminary evidence supports distinct differences in glucocorticoid sensitivity between patients with PTSD + MDD and PTSD – MDD. Compared to PTSD + MDD, those with PTSD – MDD had greater suppression of plasma cortisol following a standard dexamethasone suppression test (DST) (Kudler, Davidson, Meador, Lipper, & Ely, 1987) and a low-dose DST (Golier Schmeidler, Legge, & Yehuda, 2006; Griffin et al., 2005). Cortisol and ACTH response to the dexamethasone/corticotrophin-releasing hormone test was also significantly different between individuals with PTSD + MDD and PTSD – MDD (de Kloet et al., 2008).

In summary, even though the empirical evidence is limited, and the direction of neuroendocrine changes is not consistent, it is clear that women who have been abused by an intimate partner, particularly those who also experienced PTSD and/or depression, have altered HPA axis activity. Findings of a blunted or flat diurnal cortisol pattern are particularly important in light of the results from Sephton, Sapolsky, Kraemer, and Spiegel
(2000) and Abercrombie, Giese-Davis, Sephton, Epel, Turner-Cobb, and Spiegel (2004) who reported that a relatively flat or abnormal diurnal cortisol variation was predictive of early mortality in women with metastatic breast cancer. Moreover, a relatively flat diurnal cortisol pattern was associated with both low circulating counts of natural killer (NK) cells and suppressed NK activity in women with metastatic breast cancer (Sephton et al., 2000). These results underscore the importance of evaluating cortisol at multiple time points and of determining the role of altered circadian patterns to health of women. Accordingly, additional research is needed in women abused by intimate partners to determine the role of PTSD and depression, HPA axis functioning, and the associated implications for physical and psychological health.

Altered Inflammatory/Immune Activity

In a review of empirical literature, Gill, Woods, and Page (2009) suggested that excessive activity of the inflammatory/immune response is associated with chronic PTSD. This excessive activity may contribute to the early and increased morbidity often seen in persons who have experienced trauma and PTSD symptoms, including women and children experiencing family violence.

Empirical evidence has shown alterations in both immune cell enumeration and efficacy in some persons with PTSD. Abused women experiencing PTSD have a significantly higher number of leukocytes and absolute lymphocyte subset counts than comparison women and controlling for smoking and body mass index (Woods et al., 2003). Yet, despite having higher levels of circulating lymphocytes compared to nonabused women, the cytotoxic potential of the T and NK (natural killer) cells in abused women was decreased, indicating reduced functional efficacy of these immune cells (Woods et al., 2005b). In a recent study, participants with PTSD had more memory T cells, but fewer naïve T cells that would be used to fight off new antigens, and also less regulatory T cells that would regulate the immune response to an antigen (Sommershof et al., 2009). This finding extends those of Altemus, Dhabhar, and Yang’s. (2006), which consistently showed an excessive response to placed antigens in abused women, indicating an insufficiently regulated immune response. These findings also suggest that abused women with PTSD may have compromised immune responsiveness.

Women who have experienced trauma, including interpersonal violence as an adult or child, and are suffering from PTSD symptoms, have been found to have higher levels of stimulated proinflammatory cytokines IL-6 and TNF-α production compared to both trauma and nontrauma control groups (Gill et al., 2008). In the same study, those with comorbid MDD had higher stimulated IL-6 levels compared to those women with PTSD alone (Gill et al., 2008). In addition, PTSD was a mediator of the relationship between IFN-γ and IPV. Women currently experiencing IPV have been found to have high mean levels of IL-6 (Woods, Hall, Foster, & Page, 2009), values that were consistent with those found in patients with mild congestive heart failure (Tsutamoto et al., 1998) and women 2 to 3 decades older who were participating in the Framingham Offspring Study (Loucks, Sullivan, D’Agostino, Larson, Berkman, & Benjamin, 2006). Women experiencing IPV have also been found to have higher levels of stimulated proinflammatory cytokine interferon-γ (IFN-γ) compared to nonabused women (Woods et al., 2005a). High levels of inflammatory cytokines are a biological predictor of symptoms of metabolic syndrome in young adults, which resulted in increased risk
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for coronary artery disease (Jacobs et al., 2009) and also symptoms of pain following surgery (Wang, Hamza, Wu, & Dionne, 2009).

The role of inflammation in the development of serious health problems has also come under study. C-reactive protein (CRP) is a protein biomarker of the inflammatory process, and as such, is widely recognized as a clinically useful marker for chronic inflammation. Inflammation occurs locally, through recruitment and activation of immune cells, and systemically, via increased secretion of C-reactive protein (CRP) and other complement components (Janeway, 2005). These higher levels of inflammation damage the vascular endothelium, a prerequisite for plaque and clot formation (Andersen & Pedersen, 2008), which could result in unstable angina, myocardial infarction, ischemic arrhythmias, sudden cardiac death, or stroke (Gokce, Keaney, Hunter, Watkins, Menzoian, & Vita, 2002). Chronic inflammation is also an independent risk factor for cardiovascular disease, cancer, hypertension, diabetes, and autoimmune disease. Growing empirical evidence has suggested that depression, history of childhood maltreatment, and cumulative exposure to stress are associated with chronic inflammation (Danese, Moffitt, Pariante, Ambler, Poulton, & Caspi, 2008; Kling et al., 2007; Taylor, Lehman, Kiefe, & Seeman, 2006b) and may explain findings of subsequent cardiac mortality in adults experiencing childhood maltreatment (Felitti et al., 1998).

Little research has examined CRP levels in abused women. One exception is a study with 152 women currently experiencing intimate abuse and an average age of approximately 34 years. Almost 40% of the participants had CRP values over 3 mg/l; almost 16% had CRP levels over 10 (Woods et al., 2009). According to the American Heart Association, CRP values of 3 or higher put the person at high risk for cardiovascular disease. Thirty-eight percent of the women in the Framingham Offspring Study (Dhingra et al., 2007) had CRP values greater than 3, but the women in the Framingham sample were, on average, 20–30 years older than the participants in the study by Woods study. This suggests that women experiencing IPV may be experiencing chronic inflammation, which may, over more extended periods of time, contribute to early morbidity. Dhingra and colleagues also reported increased odds of having at least one common inflammatory condition, such as cancer or pulmonary disease, with rising CRP values.

These findings, taken together, indicate an association between increased inflammatory and immune activity and violence and trauma in women. Increased inflammation has been associated with cardiovascular disease, hypertension, chronic pain, and diabetes (Andersen & Pedersen, 2008; Campbell et al., 2002; Dhingra et al., 2007; Dobie, Kivlahan, Maynard, Bush, Davis, & Bradley, 2004; Jacobs et al., 2009; Kimerling, 2004; Wang et al., 2009). Thus, interventions that lower markers of inflammation may be of great benefit in reducing the health consequences for women experiencing violence. Psychological interventions, including meditation (Pace et al., 2009) and relaxation (Koh, Lee, Beyn, Chu, & Kim, 2008), lower IL-6 levels and could be of benefit. Hydrocortisone administered orally for 1 month reduced PTSD symptoms in three patients in a double-blind placebo-controlled cross-over study; however, information regarding changes in immune function was not provided (Aerni et al., 2004; de Quervain, 2006). In a prospective study, hydrocortisone reduced the risk of developing PTSD symptoms, lowered IL-6 levels, and improved health outcomes in patients undergoing a cardiac surgery (Weis et al., 2006). Novel drugs that lower IL-6 levels (Woo et al. 2005) and nonsteroidal anti-inflammatory drugs (NSAIDS) should be evaluated as putative or adjunctive treatments for PTSD.
Risky Early Family Environments

Risky early family environment is a multifaceted concept and has been measured using a variety of factors, including childhood abuse, harsh discipline, maternal rejection, chaotic or neglectful parenting, family conflict, disorganized households, and lack of nurturance and physical affection (Danese 2007; Felitti et al., 1998; Repetti et al., 2002; Taylor et al., 2006b). Risky early family environment and low socioeconomic status (SES) in childhood have been related to higher levels of anxiety and depression (Repetti et al., 2002), altered metabolic functioning (Lehman, Taylor, Kiefe, & Seeman, 2005), changes in neuroendocrine responses to stress (Anda et al., 2006; Taylor et al., 2004), and major physical health problems (Felitti et al., 1998).

Taylor and colleagues (2006b), using Year 15 CARDIA study data, reported that low childhood SES and risky early family environment were associated with increased levels of C-reactive protein in adulthood via higher body mass index and psychosocial factors such as depression and social support. Danese and associates (2007), in a longitudinal-prospective study of 972 participants, reported that exposure to maltreatment during childhood was significantly associated with increased risk of clinically relevant CRP levels 20 years later in adulthood. This relationship existed even after controlling for other risk factors such as smoking, physical activity, and diet.

Further, research has shown that the effects of early life stressors are cumulative and contribute to a wide array of physical and mental health deficits throughout the life span (Allen, Matthews, & Sherman, 1997; Danese et al., 2007; Felitti et al., 1998; McEwen, 1998; Repetti et al., 2002; Taylor et al., 2006b). Empirical evidence has shown that exposure to trauma during childhood may increase vulnerability to future stress and results in long-term neurobiological changes in the individual’s stress response (Bremner, Southwick, Johnson, Yehuda, & Charney, 1993; Heim, Newport, Bonsall, Miller, & Nemeroff, 2001; Follette, Polusny, Bechtle, & Naugle, 1996; Friedman, Jalowiec, McHugo, Wang, & McDonagh, 2007; Resnick, Yehuda, Pitman, and Foy, 1995; Yehuda & Flory, 2007) and increases the risk for PTSD onset (DeBellis, 1997; DeBellis & Putnam, 1994; Heim & Nemeroff, 2001). Moreover, adult children of Holocaust survivors with PTSD were three times more likely to develop PTSD (Yehuda et al., 1998) and to have lower cortisol levels when compared to demographically matched comparison group (Yehuda, Bierer, Schmeidler, Aferiat, Breslau, & Dolan, 2000).

There is a paucity of research that examines the relationship between risky early environments, and how those experiences may contribute to risk for neuroendocrine and immune function alterations in abused women, and contribute to risk for psychological and physical health declines. Women abused as children were found to be at six times the risk for chronic fatigue syndrome and to have a lower wakening cortisol response, which were significantly associated (Heim, Nater, Maloney, Boneva, Jones, & Reeves, 2009). An initial study found that childhood physical, emotional, and sexual abuse and childhood emotional neglect predicted higher B cell counts in abused women, suggesting that childhood maltreatment altered immune function (Woods et al., 2005b). In addition, childhood physical and emotional neglect was related to an increased CD8 (suppressor/cytotoxic) cell count. Although these immune findings need to be viewed with caution, they suggest the need for additional research to disentangle the complex pathways among the neuroendocrine and immune systems and risky early environments.
The relationship between early life stress and psychological and physical health may relate to epigenetic changes. Epigenetics refers to changes in phenotype or gene expression that are caused by environmental factors and not from changes in the underlying DNA sequence. Epigenetic changes may underlie the risk for behavioral changes and psychiatric symptoms in those who experience childhood abuse (Hohoff, 2009). In a recent study, hippocampal neurons retrieved from suicide completers with a history of childhood abuse had increased cytosine methylation of NR3C1, which is a glucocorticoid receptor, a change that would result in blunted HPA axis functioning (McGowan et al., 2009). In rats exposed to abusive caretaking during infancy, there was an increased methylation of the gene for brain-deprived neurotrophic factor (BDNF), a neurotrophin linked to regulation of mood, learning, and appetite (Roth, Lubin, Funk, & Sweatt, 2009). Therefore, there is evidence for a link between epigenetic changes and the negative consequences of trauma; however, additional studies are needed in humans to understand these complex relationships.

SUMMARY

There are long-term health consequences of violence for women and children. Several potential frameworks integrating physiological pathways and psychological responses to trauma and violence have been posited. By developing a better understanding of how IPV may alter neuroendocrine and immune functioning, and how these changes may underlie health declines, more effective treatments can be developed. Even when women and children are no longer exposed to family violence, they are at risk for long-term health declines. In addition, few individuals experience only one trauma during their lifetimes (Breslau et al., 1998). To date, there is little evidence regarding the effect of multiple traumas on the health of the individual.

Prevention of family violence is foremost. Interventions that include traditional cognitive and psychological therapy, mind–body-based interventions, and medications that ease psychological distress and reduce inflammation may assist in re-balancing the effects of chronic stress and help to offset the health risk that family violence exerts. Many interventions for women and children who have experienced violence are described in other chapters of this book. There has been little prospective research or research that combines study of both biological measures and interventions in persons experiencing chronic stress due to violence and trauma. Such research would enhance understanding of the underlying physiologic and immunologic changes that occur in persons in chronic stress situations. Further, this type of research would improve interventions. Nurses are in a key place to initiate such research as well as comprehensive interventions that will have the power to change the lifelong biological imprint that violence and trauma have on women and children.

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