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# AN ECOLOGICAL MODEL OF THE IMPACT OF SEXUAL ASSAULT ON WOMEN'S MENTAL HEALTH

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*This review examines the psychological impact of adult sexual assault through an ecological theoretical perspective to understand how factors at multiple levels of the social ecology contribute to post-assault sequelae. Using Bronfenbrenner's (1979, 1986, 1995) ecological theory of human development, we examine how individual-level factors (e.g., sociodemographics, biological/genetic factors), assault characteristics (e.g., victim-offender relationship, injury, alcohol use), microsystem factors (e.g., informal support from family and friends), meso/exosystem factors (e.g., contact with the legal, medical, and mental health systems, and rape crisis centers), macrosystem factors (e.g., societal rape myth acceptance), and chronosystem factors (e.g., sexual revictimization and history of other victimizations) affect adult sexual assault survivors' mental health outcomes (e.g., post-traumatic stress disorder, depression, suicidality, and substance use). Self-blame is conceptualized as meta-construct that stems from all levels of this ecological model. Implications for curbing and/or preventing the negative mental health effects of sexual assault are discussed.*

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**Key words:** Rape; sexual assault; mental health; PTSD; depression; ecological

THE IMPACT OF SEXUAL ASSAULT on women's mental health has been extensively studied and has been the subject of multiple prior reviews (Briere & Jordan, 2004; Chivers-Wilson, 2006; Ellis, 1983; Goodman, Koss, & Russo, 1993; Koss, 1993; Koss, Bailey, Yuan, Herrera, & Lichter, 2003; Koss et al., 1994; Kilpatrick & Acierno, 2003; Kilpatrick, Amstadter, Resnick, & Ruggiero, 2007; Resick, 1993; Rogers & Gruener, 1997). The reviews from the early 1990s are remarkably

consistent with more recent syntheses of the literature: rape is one of the most severe of all traumas, causing multiple, long-term negative outcomes. Between 17% and 65% of women with a lifetime history of sexual assault develop posttraumatic stress disorder (PTSD; Clum, Calhoun, & Kimerling, 2000; Kilpatrick et al., 1989; Kilpatrick & Resnick, 1993; Kilpatrick, Saunders, Veronen, Best, & Von, 1987; Rothbaum, Foa, Riggs, Murdock, & Walsh, 1992). Many

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### KEY POINTS OF THE RESEARCH REVIEW

- The negative mental health sequelae of sexual assault stems from multiple factors, not just characteristics of the victim. Aspects of the assault itself, post-assault disclosures and help-seeking, and sociocultural norms help shape the way in which this trauma affects women's psychological well-being.
- Women's victimization is cumulative, and the response from social world is cumulative, both of which affect how any one incident of sexual violence will affect women's mental health.
- *Self-blame* has been studied as from both individual-level and extra-individual perspective, and we conceptualize it as a meta-construct that develops from and is shaped by multiple levels in the ecological system.

(13%-51%) meet diagnostic criteria for depression (Acierno et al., 2002; Becker, Skinner, Abel, Axelrod, & Treacy, 1984; Burnam, et al., 1988; Clum et al., 2000; Dickinson, deGruy, Dickinson, & Candib, 1999; Frank & Anderson, 1987; Golding, 1996; Kilpatrick et al., 1987; Winfield, George, Swartz, & Blazer, 1990). Most sexual assault victims develop fear and/or anxiety (73%-82%; Frank & Anderson, 1987; Ullman & Siegel, 1993) and 12% to 40% experience generalized anxiety (Siegel, Golding, Stein, Burnam, & Sorenson, 1990; Winfield et al., 1990). Approximately 13% to 49% of survivors become dependent on alcohol, whereas 28% to 61% may use other illicit substances (Frank & Anderson, 1987; Ullman, 2007; Ullman & Brecklin, 2002a). It is not uncommon for victims to experience suicidal ideation (23%-44%; Frank & Stewart 1984; Frank, Turner, Stewart, Jacob, & West, 1981; Kilpatrick et al., 1985; Petrak, Doyle, Williams, Buchan, & Forster, 1997), and 2% to 19% may attempt suicide (Davidson, Hughes, George, & Blazer, 1996; Frank et al., 1981; Kilpatrick et al., 1985).

Though there is little disagreement that sexual assault is highly detrimental to women's mental health, how to conceptualize that harm has been the subject of debate. A trauma response theoretical model has been proposed as a useful conceptual framework for guiding research and intervention (Goodman et al., 1993; Herman, 1992) though concerns have been raised that the clinical diagnosis of PTSD risks pathologizing

victims (Berg, 2002; Gilfus, 1999) as well as perpetuating ethnocultural biases (Marsella, Friedman, & Spain, 1999; Wasco, 2003). Framing the impact of sexual assault solely within a PTSD framework would indeed be limiting and hence violence against women scholars have advocated for ecologically informed trauma models of rape recovery (Koss & Harvey, 1991; Neville & Heppner, 1999). Sexual assault does not occur in social and cultural isolation: we live in a rape-prone culture that propagates messages that victims are to blame for the assault, that they caused it and indeed deserve it (Buchwald, Fletcher, & Roth, 1993; Burt, 1998; Lonsway & Fitzgerald, 1994; Sandy, 1998). Victims are faced with negotiating postassault help seeking and ultimately, their pathway to recovery, within multiple hostile environments. If survivors turn to their family and friends for social support, how will they react, as they too have been inundated with these cultural messages? If victims turn to formal systems, such as the legal, medical, and mental health systems, they may face disbelief, blame, and refusals of help instead of assistance. The trauma of rape extends far beyond the actual assault, and society's response to this crime can also affect women's well-being.

The purpose of this review is to examine the psychological impact of adult sexual assault through an ecological theoretical perspective to understand how factors at multiple levels of the social ecology contribute to the deleterious mental health effects that have been so consistently reported in the literature. The utility of an ecological framework is that it can suggest multiple strategies, at multiple levels of analysis, for alleviating the psychological harm caused by sexual assault. We will begin with a brief discussion of the different ecological theories that have been utilized in violence against women research. Since Koss and Harvey (1991) and Neville and Heppner (1999) first called for more ecologically informed research on psychological sequelae and recovery, numerous studies have been conducted on the relationships between extraindividual level factors and mental health outcomes. Our review will synthesize this developing literature to identify positive, negative, and still inconclusive findings regarding the relationships between individual, assault, and ecological factors and survivors' psychological distress.

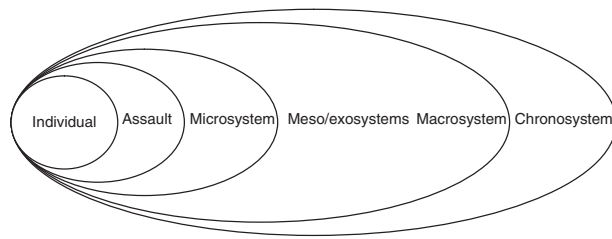
## ECOLOGICAL THEORIES IN VIOLENCE AGAINST WOMEN RESEARCH

There are multiple ecological theories evolving in the social sciences, and it is beyond the scope of this article to explore each one (see McLaren & Hawe, 2005 for a review). In violence against women scholarship, two specific approaches have been drawn on to inform research, prevention, and treatment. First, from community psychology, Kelly's (1966, 1968, 1971) ecological theory posits that the functions of individuals and community organizations are interdependent and that individuals have differential patterns of experiences given different ecological settings. Ecological settings consist of person constructs, which are individual characteristics such as race/ethnicity, gender, and beliefs and attitudes; events, which refer to the specific problem(s) that prompts an individual to need assistance and/or seek help, and instigates a community help-system network to respond; and environments, which include structural features of a community (e.g., resources), functional features (e.g., service delivery processes), as well as the attitudes and values of the community as a whole (Kelly, Ryan, Altman, & Stelzner, 2000). Koss and Harvey (1991) and Harvey (1996) adapted these ideas to propose an ecological model of rape recovery, and Campbell and colleagues have used this model in empirical research to evaluate how the legal, medical, and mental health systems respond to victims' needs and how those system experiences affect victims' psychological, physical, and sexual health outcomes (Campbell, 1998; Campbell et al., 1999; Campbell et al., 2001; Campbell, Sefl, & Ahrens, 2004).

Second, from developmental psychology, Bronfenbrenner's (1979, 1986, 1995) ecological theory of human development has similar conceptual foundations in its premise that human development occurs through constantly evolving interactions between individuals and their multiple, interconnected environmental contexts. Bronfenbrenner's model subdivides environmental influences into multiple levels reflecting the relative size, immediacy of interaction, and degree of formality/informality of the environmental setting. The individual level comprises

bio-psycho-social characteristics of the person; the microsystem focuses on direct interpersonal interactions between individuals and members of their immediate environment such as families, friends, and peers; the mesosystem reflects interconnections and linkages between individuals and between individuals and systems; the exosystem includes organizations and social systems (e.g., legal, medical, and mental health); the macrosystem includes societal norms, expectations, and beliefs that form the broader social environment; and the chronosystem encompasses the changes that occur over time between persons and their multiple environments. Bronfenbrenner's conceptualization shaped the theoretical models created by Heise (1998) and White and Kowalski (1998) to explain the underlying causes of violence against women and risk factors for perpetration. Similarly, Grauerholz's (2000) model of sexual revictimization examines how personal, interpersonal, and sociocultural factors contribute to child sexual abuse survivors' increased risk for subsequent sexual victimization later in life. Both the Centers for Disease Control and Prevention (CDC; 2004) and the World Health Organization (WHO; Jewkes, Sen, & Garcia-Moreno, 2002; Krug, Mercy, Dahlberg, & Zwi, 2002.) have adapted this approach to develop multilevel models for the prevention of gender-based violence.

As noted previously, Neville and Heppner (1999) also extended Bronfenbrenner's model to explain how sexual assault affects women's well-being and recovery processes, which they termed CIEMSAR: culturally inclusive ecological model of sexual assault recovery. The fundamental premise of their model is that sexual assault survivors' mental health is shaped by many factors, not just the assault itself or preexisting individual characteristics. With each disclosure and interaction with the social world, victims are given explicit and implicit messages about how they are to make sense of this crime and apportion blame. We too have chosen to adapt Bronfenbrenner's model. To set the stage for our empirical review, we will describe Neville and Heppner's model in detail, highlighting similarities and differences to the model we developed from our analysis of the literature (Figure 1).



**FIGURE 1: An Ecological Model of the Impact of Sexual Assault on Women's Mental Health**

First, at the individual level of analysis, characteristics of the victim could certainly influence the recovery process. Heppner and Neville's model examined age, race/ethnicity, and social class as sociodemographic correlates of postassault psychological distress; to that base, our model includes additional demographic features recently examined in the literature such as education, marital status, employment status, and income. Heppner and Neville noted race/ethnicity can be conceptualized at multiple levels of the social ecology, but that most research on postassault sequelae has not conceptualized race/ethnicity from a sociocultural perspective. In other words, racial differences have been examined without a full exploration of cultural identity. We concur with this analysis and followed the convention established by Heppner and Neville to discuss race/ethnicity at both the individual level of analysis and the macro-level of analysis depending on the way in which this construct was conceptualized in the particular study. Also at the individual level, our model considers the role of personality characteristics, preexisting mental health conditions, and biological/genetic factors in victims' postassault distress, which were not examined in Heppner and Neville's model. Finally, victims' coping processes are also influential in recovery although it is unclear at which level of analysis this construct best fits (e.g., coping by mobilizing social support reflects an interaction of individual and microsystem processes). We follow Heppner and Neville's precedent and place this construct at the individual level, as it reflects the choices and propensities of the survivors, but explore it "last" in the individual processes as a way of symbolizing its interconnections to the higher levels in the model (i.e., microsystems).

Second, characteristics of the assault itself affect women's psychological well-being. Heppner and Neville examined how the victim—offender relationship and the severity of injury differentially affect victims' distress. In addition to those factors, our model explores the roles of threats to kill the victim, weapon use, assault force or violence, and substance use at the time of the assault in relation to victims' postassault psychological sequelae, which has been a growing area of inquiry in recent years.

Third, at the microsystem level, our model explores the impact of disclosures to informal sources of support (e.g., family and friends) on victims' postassault psychological distress. Neville and Heppner conceptualized social support as the mesosystem level, but we have elected to reframe this construct as a microsystem process (when that support is specifically from family, friends, or peers). Bronfenbrenner (1979) defined the microsystem as the face-to-face interactions and interrelations between individuals and others in their immediate setting; because the provision of (or denial of) social support occurs through direct interactions with family, friends, or peers, we conceptualized this as a microsystem process. Since Neville and Heppner's model was developed, research on social support has flourished, and we can now refine the model in light of this new empirical knowledge base.

Fourth, although Bronfenbrenner's original model separates mesosystems (i.e., processes that contribute to linkages between systems and/or other individuals in the ecological environment) from exosystems (i.e., formal systems with which individuals may or may not have contact), our analysis of the extant literature on postassault sequelae suggests that empirically based distinctions between these levels are not yet warranted, which is consistent with Neville and Heppner's model. For example, victims may seek assistance from a rape crisis center (RCC), which could be conceptualized as a formal help resource (i.e., exosystem) and in the process of helping the survivors, RCC staff may help establish connections with other formal systems (such as the legal or medical systems) and/or work with survivors to help them access more informal supports in their lives (i.e., mesosystems). Therefore, we

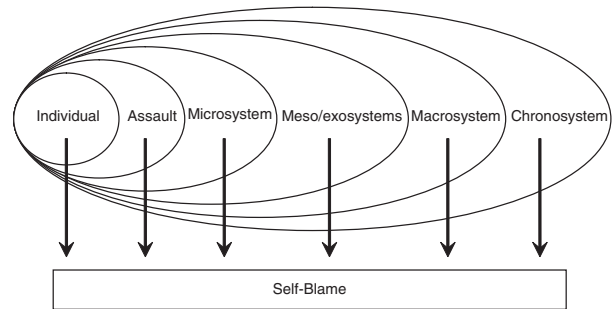


distinguish our combined meso/exosystem level from the prior microsystem level by whether the interactions take place between informal supports (microsystem) versus formalized supports (meso/exosystem).

Fifth, as noted previously, race/ethnicity can be conceptualized at the macrolevel of analysis when explored from a sociocultural perspective to understand the cultural identity and its role in rape recovery. Victims' postassault distress is also influenced by the rape-prone culture in which we live, which remains highly acceptant of rape myths and stereotypes that women are to blame for their own victimization (Rozee & Koss, 2001).

Sixth, the chronosystem was not included in Neville and Heppner's original model, but we have incorporated it to reflect Bronfenbrenner's idea that person-environment interactions are reciprocal and change over time. There are normative transitional events (e.g., school changes) and nonnormative events (e.g., sexual assault) that shape how individuals interact with their environments and how their environments respond to them. The chronosystem examines the cumulative effects of multiple sequences of developmental transitions over the life course. Therefore, a history of sexual assault and other victimizations across the lifespan would influence the recovery process at each victimization (if more than one is experienced). Neville and Heppner conceptualized sexual revictimization as an individual-level variable, but we view it as an historical lifespan factor that shapes how other levels in the model affect a recent victimization.

Finally, Neville and Heppner conceptualized self-blame as a macro-level phenomenon, informed by Ward's (1995) analysis that women internalize societal rape myths, which leads to negative self-appraisals. We concur that societal rape myths contribute to internalized self-blame, but since the development of Neville and Heppner's original model, multiple empirical studies have established that survivors encounter a great deal of victim-blaming in their interactions with both formal and informal systems (e.g., Filipas & Ullman, 2006). In addition, some victims, particularly racial/ethnic minorities, are more likely to be subjected



**FIGURE 2: Self-Blame as a Meta-Construct that Stems from All Levels in the Ecological Model**

to victim-blaming treatment (e.g., Campbell et al., 2001). Survivors of certain types of assault, such as acquaintance/date rape and those who have been sexually revictimized, are also more susceptible to being blamed for the assault (e.g., Arata, 1999; Filipas & Ullman, 2006). In view of these findings, we argue that self-blame transcends any one level of the model, as it stems from individual, assault, micro-, meso/exo-, macro- and chronosystem level processes. Therefore, we conceptualize self-blame as a meta-construct that results from interactions across all levels of the social ecology (Figure 2).

## AN ECOLOGICAL MODEL OF THE IMPACT OF SEXUAL ASSAULT ON WOMEN'S MENTAL HEALTH

In our review, we focused on empirical studies of adult sexual assault, which is often operationalized in research as assaults that occurred at age 14 or older (Koss, Gidycz, & Wisniewski, 1987). Age 14 is also the developmental demarcation identified by Burnam et al. (1988) for significantly different postassault mental health outcomes. As such, our review does not include studies of childhood sexual abuse (only), but would include studies of victims who were sexually victimized multiple times in their lives, provided that one of the assaults clearly occurred in adulthood (as defined above). Studies that assessed lifetime sexual victimization, but did not distinguish whether there was an assault sustained during adulthood (as defined above) were not included in this review (though we note that the substantive findings from these studies do not differ from those that met our

**TABLE 1: Key Findings: The Impact of Multilevel Ecological Factors on Sexual Assault Victim's Psychological Sequelae**

<i>Ecological Level</i>	<i>Major Findings</i>
Individual level factors (victim and assault characteristics)	Mixed findings on the impact of sociodemographic variables (i.e., age, race, income, education, employment), assault characteristics (i.e., victim—offender relationship, injury, alcohol use), and biological factors (i.e., cortisol levels) on postassault well-being. Personality traits such as neuroticism predicts PTSD among sexual assault survivors. Poorer preassault mental health predicts multiple negative outcomes, such as depression and anxiety. Avoidance coping strategies predicts multiple negative outcomes such as longer recovery time, depression, and PTSD. Perceived life threat during assault and perceived dangerousness of assailant predicts negative outcomes such as depression, anxiety, and PTSD symptomatology.
Microsystem factors	Positive social reactions and support from informal providers (e.g., family, friend, significant others) predicts less mental distress postassault. Negative social reactions from informal support providers predicts multiple negative outcomes such as depression, anxiety, and posttraumatic stress.
Meso/exosystem factors	Legal System: secondary victimization (i.e., victim-blaming, minimal help) predicts higher symptomatology such as PTSD and depression. SANEs, rape crisis centers, and other community mental health programs help mitigate the negative effects of other medical systems (e.g., E.R) and predict less mental health distress post assault.
Macrosystem factors	The rape-prone culture, institutionalized racism, cultural differences in responding to rape, and acceptance of rape myths create a difficult sociocultural context for sexual assault survivors to recover.
Chronosystem factors	Cumulative trauma and revictimization over the lifetime predicts negative outcomes such as depression, anxiety, and PTSD.
Self-blame: Multilevel meta construct	Self-blame is associated with PTSD and depression at the individual level. At the micro and meso/exo levels, receiving blame exacerbates self-blame and is associated with PTSD symptomatology. At the macro level, internalized sociocultural beliefs affects victim's self-blame. At the chronosystem, victims of cumulative trauma have been found to have greater self-blame and higher levels of trauma.

inclusion criteria). Similarly, studies of criminal victimization were not reviewed unless subgroup analyses were available that separated victims of sexual assault from victims of other types of crimes. Because sexual assault is one form of intimate partner violence (Campbell & Soeken, 1999; Cole, Logan, & Shannon, 2005; Eby, Campbell, Sullivan, & Davidson, 1995), we searched the domestic violence/intimate partner violence literature as well to ensure that studies of intimate partner sexual assault were also included. Because our goal was to develop a model of mental health impact (not physical or sexual health impact), to be included in this review, a study must have empirically examined a link between at least one of the factors in the ecological model described above and a psychological health outcome such as PTSD, depression, fear/anxiety, general psychological distress, suicidality, and/or substance use (see Table 1).

### **Individual-Level Factors**

1. Sociodemographic variables: Several sociodemographic variables have been studied in relation to

postassault sequelae. Most studies have not found racial/ethnic differences in postassault distress; specifically, no difference has been found for PTSD (e.g., Campbell et al., 1999; Elliott, Mok, & Briere, 2004; Ullman & Brecklin, 2002a; Ullman, Filipas, Townsend, & Starzynski, 2006), depression (Elliott et al., 2004; Frank & Stewart, 1984; McFarlane et al., 2005; Wyatt, 1992), fear/anxiety (McFarlane et al., 2005; Wyatt, 1992), or general distress (Kilpatrick, Veronen, & Best, 1984). Studies of lifetime victimization have reported that Hispanic and non-Hispanic women do not differ in depression, substance use/dependence, phobia, panic, or obsessive-compulsive disorder (Burnam et al., 1988), and White and non-White women do not differ in suicidal ideation/attempts (Ullman & Brecklin, 2002b). However, one study with a small number of African American participants found that African American women were more likely than White women to be anxious after sexual assault (Burge, 1988), and a second study of intimate partner sexual assault victims identified that Hispanic women had significantly higher levels of PTSD than African American and White women (McFarlane et al., 2005). Ruch and Chandler (1983) defined trauma as the general effect of the assault on victims' lives, and under that definition, they found that White women were more traumatized than racial/ethnic minority survivors.

With respect to victims' age, several studies have found that older survivors experience increased depression and general trauma (Frank & Stewart,

1984; Ruch & Chandler, 1983; Ruch & Leon, 1983); however, younger age has been found to predict PTSD and depression (Elliott et al., 2004) and older victims have been found to have fewer PTSD symptoms when assaulted by relatives (Ullman et al., 2006). Several studies found no effect of age on distress (Bownes, O'Gorman, & Sayers, 1991; Campbell et al., 1999; Kilpatrick et al., 1984; Kramer & Green, 1991; Ullman & Filipas, 2001b).

In the examination of income level, marital status, and employment status with postrape distress, most studies that attempted to relate these variables with specific postrape diagnoses have not found an association (e.g., Bownes et al., 1991; Campbell et al., 1999; Mackey, et al., 1992; Ullman & Brecklin, 2002a; Ullman & Filipas, 2001b). However, when these variables are studied in relation to more general indices of trauma or stress, associations have been found. One study found that victims who were "economically stressed" were less likely to report that they were "recovered" from the assault months or years afterwards (Burgess & Holmstrom, 1978), a single study found that being married was related to increased trauma (Ruch & Chandler, 1983), and a similar study identified that being unemployed was related to postassault trauma two weeks after assault (Ruch & Leon, 1983). Furthermore, Ullman and Brecklin's (2002b) study of lifetime victimization indicated that those who were employed or married experienced less suicidal ideation, but no difference was found for suicide attempts.

The relationship between education and postassault distress is also unclear. Two studies reported that less education is related to PTSD (Burge, 1988; Ullman & Brecklin, 2002a): one identified that higher education predicted lowered levels of PTSD (Ullman & Filipas, 2001b), and one found that a lack of a college education was related to suicide attempts (Ullman & Brecklin, 2002b). However, an equivalent number of studies have found no effect of education on posttraumatic stress (Campbell et al., 1999; Ullman et al., 2006) or depression (Frank & Stewart, 1984). Studies of lifetime victimization have found that depression, substance abuse, phobia, panic disorder, obsessive-compulsive disorder, and suicidal ideation do not differ based on level of educational attainment (Burnam et al., 1988; Ullman & Brecklin, 2002b).

2. **Personality factors:** Few studies have been conducted on the relationship between personality factors and postassault psychological distress. Researchers commonly conceptualize personality using the Five-Factor Model, which consists of five dimensions: openness, conscientiousness, extraversion, agreeableness, and neuroticism. Cox, MacPherson, Enns, and McWilliams (2004) reported that neuroticism (including traits such as anxiety, impulsiveness, hostility, and depression; John & Srivastava, 1999) was found to predict PTSD, and that the self-criticism, an additional personality variable, also predicted PTSD.
3. **Preexisting mental health conditions:** Several studies have identified that preexisting mental health conditions are positively related to postassault mental health sequelae. Victims who had attempted

suicide preassault experienced significantly more postassault depression and anxiety (Frank et al., 1981), and preexisting mental health diagnosis and substance abuse problems were positively associated with postassault trauma (Frank & Anderson, 1987; Ruch & Chandler, 1983; Ruch & Leon, 1983). Preassault depression and suicidal history significantly predicted depression levels 4 months postassault (Atkeson et al., 1982). Anxiety attacks and obsessive-compulsive symptoms also predicted depression at eight and 12 months. Psychiatric treatment history before the sexual assault predicted depression at a year postassault (Atkeson et al., 1982). Conversely, several studies have not found that prerape psychopathology predicts postrape distress (Bownes et al., 1991; Frank et al., 1981; Frank & Stewart, 1984; Kilpatrick et al., 1984). However, these studies examined psychiatric history generally (e.g., visits to psychiatrist, psychiatric hospitalization), suggesting that although prerape psychiatric history overall may not be associated with postrape symptomatology, more specific mental health variables (e.g., diagnoses) may be associated with postassault distress.

4. **Genetic and biological factors:** To date, no studies have examined genetic factors as predictors of postrape distress, but several biological factors have been examined in a limited body of work. Normally, in reaction to stress, the body reacts by releasing hormones such as cortisol (Chivers-Wilson, 2006). However, traumatic events such as sexual assault seem to alter cortisol response, possibly contributing to PTSD (Yehuda, 2006). Among adult rape victims, cortisol levels immediately after the assault have been alternately identified both as a positive correlate of PTSD (Resnick, Yehuda, & Acierno, 1997) and unrelated to PTSD (Resnick, Yehuda, Pitman, & Foy, 1995). Some have theorized that sexual assault survivors who develop PTSD may have abnormally low cortisol levels due to a history of sexual victimization (Resnick et al., 1997), which may function to maintain the stress response, contributing to PTSD (Shalev & Sahar, 1998). MHPG (3-Methoxy-4-Hydroxyphenylglycol); a metabolite of norepinephrine (a stress hormone) has also been found to contribute to PTSD (Yehuda, Resnick, Schmeidler, Yang, & Pitman, 1998). Survivors of sexual assault without PTSD showed associations between MHPG and cortisol, suggesting that these responses are coordinated in an adaptive response to trauma (Yehuda et al., 1998).
5. **Coping responses:** Finally, victims' coping responses affect their postassault psychological health. As noted previously, coping is a "transitional" construct that includes both individual-level and situational factors (Roth & Cohen, 1986). Survivors may use approach strategies (i.e., emotional or cognitive activity toward the threat) and/or avoidance strategies (i.e., emotional or cognitive activity oriented away from the threat) for any given situation and at any given point in time during their recovery process. Survivors may use a consistent coping orientation over time to deal with stress, but this orientation may change depending on the availability of resources (e.g., personal resources and/or



support in the environment). For example, Ullman and colleagues have found that rape survivors who receive negative social support are more likely to use avoidance coping and have increased PTSD symptomatology (Ullman, 1996c; Ullman, Townsend, Filipas & Starzynski, 2007). Therefore, coping can be explained as an underlying orientation toward stress that can be influenced by time, situation/context, and environmental support.

The empirical research on sexual assault survivors' coping distinguishes between maladaptive or adaptive recovery strategies. Maladaptive approaches involve some level of avoidance, such as staying at home, withdrawal, disengagement, and substance abuse, which are associated with longer recovery time and higher levels of depression, anxiety, fear, and PTSD (Burgess & Holmstrom, 1979; Gutner, Rizvi, Monson, & Resick, 2006; Frazier & Burnett, 1994; Frazier, Mortensen & Steward, 2005; Meyer & Taylor, 1986; Santello & Leitenberg, 1993; Ullman, et al., 2007). Adaptive strategies, such as expressing emotions, seeking social support, and reducing stress, have been found to be related to faster recovery and less depression, anxiety, fear, and PTSD (Burgess & Holmstrom, 1979; Frazier & Burnett, 1994; Frazier, et al., 2005; Gutner et al., 2006; Meyer & Taylor, 1986; Valentiner, Foa, Riggs & Gershuny, 1996). However, several studies have found mixed findings regarding coping and post-assault distress. For example, Valentiner et al. (1996) reported that seeking social support was not associated with PTSD severity, and instead, the actual type of support received by survivors predicted adjustment. Furthermore, Ullman (1996a, 1996b, 1996c) found that approach strategies such as joining a support group and going to a therapist were actually related to more distress. It has also been suggested that avoidance can be beneficial for recovery. Frazier and Burnett (1994) found that avoidance strategies such as keeping busy and suppressing negative thoughts were related to less distress. This finding is also consistent with Roth and Cohen's (1986) theory that the use of avoidance immediately after a stressful life event may be helpful to adjustment. These mixed findings suggest that perhaps coping strategies should be examined in relation to the context in which they are used (i.e., microsystem influences).

### ***Assault-Related Factors***

Numerous studies have investigated how characteristics of the assault itself affects victims' postassault distress. With respect to victim—offender relationship, most studies have found that experiencing rape perpetrated by a stranger is not associated with differential levels of postrape symptomatology (e.g., Arata & Burkhart, 1996; Campbell et al., 1999; Frank, Turner & Stewart, 1980; Kilpatrick et al., 1984;

Kramer & Green, 1991; Mackey et al., 1992; Riggs, Kilpatrick, & Resnick, 1992; Ullman & Filipas, 2001b), but some studies have reported that surviving stranger rape was associated with increased PTSD (Bownes et al., 1991; Ullman et al., 2006), depression (Ellis, Atkeson, & Calhoun 1981) and general trauma (Ruch & Chandler, 1983). Ellis and colleagues (1981) reported that stranger rapes tended to be more violent and invasive than nonstranger rapes, and suggested that this may contribute to findings of increased postrape symptomatology. Sexual assault by a partner has been found to be a significant predictor of PTSD (Temple, Weston, Rodriguez, & Marshall, 2007; Ullman et al., 2006), although when compared to other types of assailants, there was no difference in depression (Koss, Dinero, Seibel, & Cox, 1988; Riggs et al., 1992) or anxiety (Koss et al., 1988). Some have suggested that the perceived dangerousness of the assailant (rather than simpler stranger/nonstranger distinction) may be related to the severity of PTSD symptoms (Cascardi, Riggs, Hearst-Ikeda, & Foa, 1996).

Many studies report that injury incurred as a result of sexual assault is related to postassault PTSD, depression, and anxiety (e.g., Bownes et al., 1991; Sales, Baum, & Shore, 1984), but many have not found a relationship between psychological distress and injury (Campbell et al., 1999; Kilpatrick et al., 1984; Ullman & Filipas, 2001b). One study identified that threats to kill the victim did not affect postrape depression or anxiety (Frank, et al., 1980), but Sales et al. (1984) reported that threats to kill predicted depression and anxiety immediately after the assault. Most examinations of postrape distress have not found an effect for weapon use (Campbell et al., 1999; Frank et al., 1980; Kilpatrick et al., 1984; Sales et al., 1984) although one study identified that victims with PTSD had experienced more weapon use than those without PTSD (Bownes et al., 1991). However, this sample differed from those that found no weapon effect in that all victims had reported the rape to the police. Although most attempts to associate assault force or violence with postassault distress have found that these variables are positively related (Bownes et al., 1991; Sales et al., 1984; Ullman & Siegel, 1993), others have found

that violence/force does not predict postassault depression and anxiety (Atkeson et al., 1982) or general postassault distress (Kilpatrick et al., 1984).

A limited number of studies have assessed the relationship of victim substance use before or during sexual assault to postassault distress. These studies have not found an association between substance abuse and posttraumatic symptoms (Arata & Burkhart, 1996; Campbell et al., 1999; Resnick et al., 1997; Schwartz & Leggett, 1999). The relatively high level of perpetrator violence and relatively low level of victim resistance that are common among substance-facilitated rapes (Ullman, Karabatsos, & Koss, 1999) could contribute to postassault symptomatology; therefore, the mental health outcomes of substance-facilitated rapes should be further examined.

### ***Microsystem Factors***

Although several studies have investigated sexual assault survivors' disclosure processes (Ahrens, 2006; Ahrens, Campbell, Ternier-Thames, Wasco, & Sefl, 2007; Fisher, Daigle, Cullen, & Turner, 2003; Golding, Siegel, Sorenson, Burnam, & Stein, 1989; Ullman & Brecklin, 2003) and the positive and negative social reactions they receive from both formal and informal support providers (Ahrens et al., 2007; Golding et al., 1989; Sudderth, 1998; Ullman, 2000), fewer studies have actually examined how these social reactions affect mental health outcomes such as depression and PTSD. Overall, this literature suggests that social support from family, friends, and intimate partners facilitates sexual assault survivors' recovery. The availability of family and friends, living with family, and feeling close to family members are related to better adjustment (Burgess & Holmstrom, 1979; Kramer & Green, 1991; Ruch & Chandler, 1983; Ruch & Leon, 1983; Sales et al., 1984). Positive social reactions from family and friends are related to less psychological distress (Campbell, Ahrens, Sefl, Wasco, & Barnes, 2001; Coker et al., 2002), and similarly, in studies that did not differentiate between informal and formal sources of support, positive social support was also related to lower symptomatology (Atkeson et al.,

1982; Thompson et al., 2000). Negative social reactions from family, friends, and peers have consistently been found to be related to increased anxiety, depression, and PTSD (Borja, Callahan, & Long, 2006; Campbell et al., 2001; Davis, Brickman, & Baker, 1991; Moss, Frank, & Anderson, 1990). Studies that have measured both informal and formal sources of support together substantiate this effect (Ullman, 1996a, 1996b, 1996c; Ullman & Filipas, 2001a; Ullman, Townsend, Filipas, & Starzynski, 2007).

Interestingly, it appears that negative social reactions have a stronger detrimental effect on survivors' mental health than positive social reactions for bolstering well-being (Borja et al., 2006; Campbell et al., 2001; Fowler & Hill, 2004; Ruch & Leon, 1983). It may be that negative social reactions are more salient for survivors' recovery because survivors are more likely to first disclose to family and friends (Ahrens et al., 2007; Filipas & Ullman, 2001; Starzynski, Ullman, Filipas, & Townsend, 2005), and they likely expect sympathetic reactions from these people. If survivors receive unexpected negative reactions from family and friends, it may be particularly upsetting. However, the direction of causality between psychological distress and social support is unresolved. For example, Starzynski et al. (2005) found that increased levels of distress symptoms predicted seeking social support from both informal and formal support providers. In addition, what happens in one instance of seeking support has implications for further help seeking and distress. Ahrens et al. (2007) revealed that when initial disclosures were negative, victims refrained from further disclosures and were less likely to seek further help, which was associated with higher self-reported distress. These findings emphasize the need for longitudinal studies of victims' recovery process to examine the temporal relationships between social support and postassault psychological sequelae.

### ***Meso/Exosystem Factors***

Sexual assault victims have extensive postassault needs and may turn to multiple formal social systems for assistance: approximately 26% to 40% of victims report the assault to the

police and pursue prosecution through the criminal justice system, 27% to 40% seek medical care and medical forensic examinations, and 16% to 60% obtain mental health services (Campbell et al., 2001; Ullman, 1996a, 1996b, 2007; Ullman & Filipas, 2001a). If victims are able to receive the services they need and are treated in an empathic, supportive manner, then social systems can help facilitate recovery. Conversely, if victims do not receive needed services and are treated insensitively, then these systems can magnify victims' feelings of powerlessness, shame, and guilt. Postassault help-seeking from formal social systems can become a "second rape," that is, a secondary victimization to the initial trauma. These experiences of secondary victimization can have a negative impact on victims' psychological well-being (Campbell et al., 1999; Campbell et al., 2001; Campbell & Raja, 1999, 2005).

1. The legal system: Throughout their contact with legal system, victims are asked to recount the assault many times. During this questioning, they are often asked victim-blaming questions about what they were wearing, their prior sexual history, and whether they responded sexually to the assault (Campbell, 2005, 2006; Campbell & Raja, 2005). In self-report characterizations of their psychological health, rape survivors indicate that as a result of their contact with legal system personnel, they felt bad about themselves (87%), guilty/self-blaming (73%), depressed (71%), violated (89%), distrustful of others (53%), and reluctant to seek further help (80%; Campbell, 2005; Campbell & Raja, 2005). The harm of secondary victimization is also evident on objective measures of PTSD symptomatology. In a series of studies on victim/police contact, Campbell and colleagues found that low legal action (i.e., case did not progress/was dropped) and high secondary victimization were associated with increased PTSD symptomatology (Campbell et al., 2001; Campbell & Raja, 2005). In tests of complex interactions, Campbell et al. (1999) identified that the victims of nonstranger rape whose cases were not prosecuted and who were subjected to high levels of secondary victimization had the highest PTSD of all—worse than those who chose not to report to the legal system at all.
2. The medical system: Sexual assault victims may also seek help from the medical system for injury detection and care, medical forensic examination, screening and treatment for sexually transmitted infections (STIs), pregnancy testing, and emergency contraception. Although most victims are not physically injured to the point of needing emergency care (Ledray, 1996), traditionally, police, rape crisis centers, and social service agencies have advised victims to seek treatment in hospital emergency departments (EDs) for a medical forensic exam (Martin, 2005). During this medical care, doctors and nurses ask victims similar questions as do legal personnel regarding their prior sexual history, sexual response during the assault, manner of dress, and what they did to "cause" the assault. Medical professionals may view these questions as necessary and appropriate, but rape survivors find them upsetting (Campbell & Raja, 2005). Comparative studies suggest that victims encounter significantly fewer victim-blaming questions and statements from medical system personnel relative to legal professionals (Campbell, 2005, 2006; Campbell et al., 1999; Campbell et al., 2001; Campbell & Raja, 2005), but this still has a demonstrable negative impact on victims' mental health. Campbell (2005) found that as a result of their contact with ED doctors and nurses, most rape survivors stated that they felt bad about themselves (81%), guilty (74%), depressed (88%), violated (94%), distrustful of others (74%), and reluctant to seek further help (80%; see also Campbell & Raja, 2005). Victims who do not receive basic medical services rate their experiences with the medical system as more hurtful, which has been associated with higher PTSD levels (Campbell et al., 2001; Campbell & Raja, 2005). Specifically, nonstranger rape victims who received minimal medical services but encountered high secondary victimization had significantly higher levels of PTSD symptoms than victims who did not seek medical services at all (Campbell et al., 1999).
3. The mental health system: Few studies have examined if and how sexual assault victims benefit from community-based mental health system services.<sup>1</sup> In general, victims tend to rate their experiences with mental health professionals positively and characterize their help as useful and supportive (Campbell et al., 2001; Ullman, 1996a, 1996b). Whether positive satisfaction results in demonstrable mental health benefit is largely unknown although Campbell et al. (1999) found that community-based mental health services were particularly helpful for victims who had had negative experiences with the legal and/or medical systems. Victims who encountered substantial difficulty obtaining needed services and experienced high secondary victimization from the legal and medical systems had high PTSD symptomatology; but among this high-risk group of survivors, those who had been able to obtain mental health services had significantly lower PTSD, suggesting that there may have been some benefit from receiving such services. In this same sample, however, 25% of women who received postassault mental health services rated this contact as hurtful and 19% characterized it as severely hurtful (Campbell et al., 2001).
4. The advocacy community: Sexual assault victims may also seek help from rape crisis centers (RCCs) or domestic violence shelter programs. One of the key roles RCC staff fulfill is to help victims negotiate their contact with the legal and medical systems (i.e., mesosystemic processes). Sexual assault survivors



who have the assistance of an RCC advocate during their contact with the legal and medical systems are significantly less likely to experience secondary victimization and also report significant less emotional distress after their system contact (Campbell, 2006). RCCs also provide direct services (i.e., exosystemic processes) to survivors, such as individual and group counseling (Campbell & Martin, 2001). Wasco et al. (2004) and Howard et al. (2003) compared self-reported PTSD symptoms pre- and postcounseling among victims receiving RCC counseling services and found significant reductions in distress levels and self-blame over time and increases in social support, self efficacy, and sense of control. Because these studies did not examine the content of services or include comparison groups, it is unclear whether these observed improvements are attributable to the services provided.

### **Macrosystem Factors**

Although there has been extensive research on how individual level, microsystem and mesosystem factors impact rape survivors' well-being, the research on macrosystem factors is very limited. As noted previously, race/ethnicity can be conceptualized at multiple levels of analysis. Whereas many studies have examined racial/ethnic differences in rape recovery, fewer have examined sociocultural identity in postrape recovery. For example, Neville, Heppner, Oh, Spanierman, and Clark (2004) examined the self-esteem of African American and White college rape survivors and although they did not find any differences in the postrape symptoms, self-blame and coping experienced by these survivors, they did find differences in their cultural attributions. African American women were more likely to internalize the "Jezebel" image as to why they were sexually assaulted. Engaging in these cultural blame attributions (e.g., "African American women are not valued in this society") was related to greater self-blame attributions and in turn related to lower self-esteem among African American women. These findings are reminiscent of Wyatt's (1992) findings that African American rape survivors were more likely to feel that they are at risk for being victimized and sexually assaulted than their White counterparts. Similarly, Lefley, Scott, Llabre, and Hicks (1993) found that among Hispanic, White,

and African American rape survivors, Hispanics were more likely to be blaming and punitive toward themselves and other victims, whereas the White rape survivors were least punitive (see also Williams & Holmes, 1982). Not surprisingly, Hispanic rape survivors had the highest psychological distress and White rape survivors the least. Luo (2000) explored cultural-specific beliefs about rape among Chinese marital rape survivors and found that Chinese rape survivors had similar symptoms to those reported in the Western literature (e.g., fear, anxiety, self-blame, depression, loss of self-esteem), but her qualitative findings suggest that specific Chinese cultural beliefs such as collectivism, a strong emphasis of family honor, and a focus on female virginity have a strong negative impact on recovery.

Research on sexual assault has yet to take into account fully how the rape-prone culture in which we live not only condones male violence against women but also negatively affects the recovery of sexual assault survivors (Roze & Koss, 2001). To date, most research on social factors, such as rape myth acceptance, has been primarily conducted with participants who have not been sexually assaulted (see Lonsway & Fitzgerald, 1994 for a review). Harned's (2005) qualitative study found that victims of date/partner rape blamed themselves because their experiences did not fit the typical rape stereotype (i.e., violent stranger rape). Likewise, women often reported that they cared about the perpetrator and thus did not believe he had meant to cause them harm. Harned (2005) argued that these beliefs signify the impact of rape myths on female victims and teaches them to blame themselves for the assault while taking away the responsibility from the perpetrator's actions. Similarly, Peterson and Muehlenhard (2004) reported that sexual assault survivors who were high in rape myth acceptance were less likely to acknowledge that what had happened to them was indeed sexual assault. High rape myth acceptance appears to decrease the likelihood that victims will disclose the assault and seek support (Botta & Pingree, 1997; Moor, 2007).



### ***Chronosystem Factors***

The primary chronosystem factor that may affect victims' recovery outcomes is their prior history of victimization throughout the lifespan. Revictimization is generally defined as the experience of sexual victimization in both childhood and adulthood (Messman-Moore & Long, 2003). A recent review of the literature identified that two of every three women who reported sexual victimization had been assaulted more than once (Classen, Palesh, & Aggarwal, 2005). Many studies have found that revictimization is more strongly associated with negative psychological outcomes (e.g., depression, suicide attempts, PTSD, anxiety) than a single sexual assault alone (Arata, 2002; Classen et al., 2005; Follette, Polusny, Bechtle & Naugle, 1996; Messman-Moore, Long & Siegfried, 2000; Miner, Flitter, & Robinson, 2006). Multiple sexual assaults may have a cumulative effect, increasing the severity of psychological sequelae with each assault (Nishith, Mechanic, & Resick, 2000). These distress outcomes may increase an individual's vulnerability to additional assaults, which may in turn exacerbate the existing psychological distress (Grauerholz, 2000; Messman-Moore & Long, 2003).

In addition, sexual assault is not the only form of violence women experience in their lifetimes, as physical and emotional abuse in childhood and in adult intimate partner relationships are highly prevalent (Pimlott-Kubiak & Cortina, 2003). Even though the focus of this review is the impact of sexual assault on women's mental health, we cannot define the scope of inquiry so narrowly that it bears little resemblance to the lived experiences of survivors. Other victimizations (prior or concurrent) undoubtedly affect how survivors respond to a subsequent sexual victimization. For example, in a sample of battered women, Campbell and Soeken (1999) summed how many sexual assaults women had endured in their lifetimes (childhood sexual assault, nonintimate partner adult sexual assault, and intimate partner adult sexual assault) and found that more assaults were associated with increased levels of depression. Other researchers have substantiated that

sexual assault within intimate partner violence is associated with increased depression, PTSD, and anxiety, above that explained by physical violence alone (Bennice et al., 2003; Cole et al., 2005). Campbell, Greeson, Bybee, and Raja (2008) examined the cumulative impact of experiencing childhood sexual abuse, adult sexual assault, intimate partner violence, and sexual harassment on women's levels of PTSD symptomatology, and indeed, the women who experienced all four forms of violence at the highest levels were significantly higher on self-report distress than those who endured fewer forms at lower levels.

Although revictimization and/or other victimization experiences are often conceptualized as individual-level factors that affect survivors' mental health, Grauerholz (2000) convincingly argued that revictimization itself is an ecological phenomenon (see also Heise, 1998; Jewkes et al., 2002; White & Kowalski, 1998). For example, for victims of childhood sexual abuse, their postassault distress would be determined by aspects of the child, the assault sustained, informal support, formal systems, and sociocultural factors. If victims of childhood sexual abuse are then revictimized in adolescence, the postassault sequelae from that victimization would include the experiential vestiges of the prior victimization (and multilevel factors that contributed to postassault distress at that time; i.e., a chronosystem effect). In addition, the model would "repeat" itself in the context of the new victimization—new interactions in the ecology would shape the distress experience from the most recent assault (also a chronosystem effect). Women's victimization is cumulative and the response from social world is cumulative, and so it is little wonder then that the mental health consequences of revictimization are so severe.

### ***Self-Blame as a MultiLevel Meta-Construct***

Self-blame has been studied as from both individual-level and extraindividual perspective and therefore we conceptualize self-blame as a meta-construct that develops from and is shaped by multiple levels in the ecological system (see Figure 2). At the individual-level,

Janoff-Bulman (1979) identified two types of self-blame: characterological self-blame, which she theorized would be maladaptive because it involves blaming one's own character for the negative event, and behavioral self-blame, which involves blaming one's actions for the event. This latter type of self-blame may actually be adaptive because it enhances perceived control and the belief that future rapes can be avoided. Empirical support for Janoff-Bulman's model has been mixed. General self-blame has been found to be associated with PTSD and depression (Boeschen, Koss, Figueredo & Coan, 2001; Filipas & Ullman, 2006; Frazier, 1990; Frazier & Schauben, 1994; Meyer & Taylor, 1986; Ullman, Townsend, Filipas, & Starzynski, 2007; Wyatt, Newcomb, & Notgrass, 1991). Some studies have found that characterological self-blame is indeed more harmful and behavioral self-blame can protect against distress (Hill & Zuerta, 1989; Koss & Figueredo, 2004; Koss, Figueredo, & Prince, 2002), but others suggest that behavioral self-blame is more detrimental (Frazier, 2003; Frazier et al., 2005). Maladaptive coping strategies have also been linked with higher levels of self-blame and PTSD symptomatology (Filipas & Ullman, 2006; Frazier et al., 2005).

Yet, survivors' self-blame comes both from internal and external forces, as multiple ecological factors directly contribute to victims' negative attributions. For example, certain assault characteristics (e.g., greater severity of the assault, using alcohol/drugs) contribute to increased self-blame and thereby more postassault distress (Koss et al., 2002; Wyatt et al., 1991). Starzynski et al. (2005) reported that survivors with higher behavioral self-blame were less likely to reach out to both informal and formal support providers, perhaps out of concern that they would receive more criticism of their behavior or choices. Such apprehension may be warranted, as negative social reactions from informal supports have consistently been found to be associated with increased self-blame (Ahrens, 2006; Littleton & Breitkopf, 2006; i.e., a micro-system effect). Ullman and colleagues have documented univariate relationships between negative social reactions, self-blame, and PTSD symptoms, but in multivariate analyses, self-blame did not mediate the effect of negative social reactions on symptoms.

At the meso/exosystem level, Campbell and colleagues have documented in multiple studies that survivors often encounter victim-blaming treatment from legal and medical system personnel, and not surprisingly, survivors state that they do start to blame themselves more for the assault (Campbell, 2005, 2006; Campbell et al., 2001). In recent years, the emergence of community interventions, such as Sexual Assault Nurse Examiner (SANE) programs have made a positive systemic effort to curb victim-blaming and provide empowering postassault care to survivors (Campbell, Patterson, & Lichty, 2005). Interestingly, rape victims who received postassault care in a SANE program did not indicate that this model of care exacerbated their self-blame (Campbell, Patterson, Adams, Diegel, & Coats, 2008). At the macro-system level, Long, Ullman, Starzynski, Long, and Mason (2007) reported that less educated and older African American women tended to blame themselves more for the rape than younger, more educated African American women. The authors suggest that less educated African American women may have fewer resources to help counter the negative views about themselves (e.g., rape myth education) compared to college-educated women. The finding that older women blamed their behavior more than younger women may be because of their lack of exposure to sexual assault education and the nature of culture in which they were raised, which was more accepting of violence against African American women. A chronosystem effect has also been supported such that victims of repeated sexual assault have more self-blame, societal blame, and higher levels of trauma symptoms (Arata, 1999; Filipas & Ullman, 2006). Although we suspect it would be challenging to disentangle empirically the sources, levels, and relative impact of victims' self-blame, the extant literature clearly indicates that self-blame is fed and nurtured along an often destructive path by multiple people, settings, and cultures over time.

## CONCLUSIONS AND FUTURE DIRECTIONS

In this review, we extended the work of Neville and Heppner (1999) to examine how multilevel ecological factors affect sexual assault victims' psychological sequelae. Our

analysis indicates that the mental health consequences of rape are caused by multiple factors beyond characteristics of the victim or the assault. Indeed, many studies found no relationship between sociodemographic variables and postassault distress. Survivors' preassault mental health may affect the recovery process, but because prior research has not assessed prior victimizations in relation to preexisting mental health, it is difficult to know what these findings actually reflect. An emerging field of study suggests biological processes are important in recovery, but why women have different cortisol levels (and thereby different degrees of posttraumatic symptomatology), and whether cortisol levels vary by victimization history, is not yet understood. The degree of violence and threat in the assault itself affects women's mental health outcomes to some extent, but whether the offender is a stranger or known person is not consistently predictive of victims' psychological outcomes. Overall, it would be difficult to predict fully women's postassault sequelae only from individual or assault characteristics.

Research findings are more consistent at the micro-, meso/exo-, macro-, and chronosystem levels. Receiving social support from family, friends, and peers is helpful, but these positive reactions may not be as powerful as unexpected negative reactions. This is not to say that positive social support is unimportant, rather the findings suggest that negative reactions are more central to the prediction of depression and PTSD severity. If victims seek help from the legal system, it is probable that their cases will not be prosecuted, and the treatment they receive from legal system personnel will likely leave them feeling blamed, doubted, and judged, which, not surprisingly, is associated with increased PTSD symptomatology. If survivors seek medical care for a forensic examination and evaluation and management of sexually transmitted infections and pregnancy, they will typically encounter fewer difficulties obtaining needed assistance (relative to legal system contact), but may still be treated in ways that exacerbate their postassault distress. By contrast, community mental health services and rape crisis center advocacy can buffer these negative effects. Although empirical research on macrosystem factors is limited, institutionalized racism and

pervasive rape myths contribute to societal acceptance of sexual assault, which creates a more difficult social context for victims to negotiate their recoveries. Cumulative trauma, a manifestation of the chronosystem, is highly detrimental to women's well-being.

A critical next step in the development of an ecological model of rape recovery is to examine interactions across different levels of the social ecology. For example, what individual or assault characteristics, in conjunction with what kinds of coping strategies are associated with more positive or negative psychological outcomes? Then, adding the next layer of conceptual complexity, how do these individual-level features play out in different postassault help-seeking experiences? It may be that some survivors are more likely to have negative experiences with formal social systems, such as the legal and medical systems, and this contact may be more or less detrimental to some survivors than others—although such findings would not excuse any victim-blaming treatment from social system personnel. Similarly, how these individual and extraindividual factors co-occur for women who have been repeatedly sexually victimized throughout the lifespan are essential to examine. It is not difficult to imagine that negative informal or formal help-seeking experiences in an earlier assault would curb later help seeking for a subsequent assault and compound victims' psychological distress. We suspect that the mixed findings in the literature regarding individual and assault characteristics may be due not only to methodological differences across studies, but may also reflect unexamined cross-level interactions.

Although the literature on postassault recovery has advanced rapidly since Neville and Heppner's review, sexual assault survivors are a heterogeneous population and we still know very little about the recovery processes of many subgroups of survivors. Prevalence research suggests that women with disabilities (e.g., mobility/visual/hearing impairments, mental/emotional disabilities, cognitive/developmental disabilities, and/or chemical dependency) are at disproportionately high risk for being sexually assaulted (e.g., as many as 85% of women with disabilities have been raped, Elman, 2005), but how their recovery process unfolds is largely

unknown. Similarly, the experiences of lesbian, bisexual, and transgendered survivors, elderly women, and immigrant women are largely missing in the literature. For this review, we made concerted effort to find research on sexual assault within intimate partner violence (IPV), and this work indicates that the combined effect of IPV and sexual assault is highly detrimental to women's mental health, but these survivors are understudied in both the IPV and sexual violence literatures. There is also a pressing need to examine specific cultural factors to understand how women from different racial/ethnic backgrounds are affected by mainstream and culture-specific beliefs and norms.

A key advantage of an ecological model of mental health impact is that it can suggest multiple strategies for intervention (see Table 2). Although individual and assault characteristics are difficult, if not impossible, to modify in their own right, it is possible to address myths and stereotypes about sexual assault and its victims, which could have positive effects on victims' recoveries. Public education efforts must emphasize that women's experiences of rape are usually not "stereotypical rapes" (i.e., violent stranger assaults). There is no universal experience of rape: all kinds of women may be victimized, and women may exhibit markedly diverse responses to this traumatic crime. At the microsystem level, rape awareness programs need to provide information for informal support providers about the varied reactions survivors may exhibit. In addition, such programs should emphasize to informal support providers that positive reactions such as emotional support and tangible aid are helpful for recovery, and negative reactions, such as egocentrism and blame, may overshadow any positive efforts. At meso/exosystem level, there

are many promising intervention models for improving the community response to rape. Emerging data suggest that sexual assault nurse examiner (SANE) programs and sexual assault response teams (SARTs) significantly improve the provision of consistent, victim-centered medical and crisis intervention services, and simultaneously increase rates of successful prosecution (see Campbell, Patterson, & Lichty, 2005 for a review). In addition, restorative justice programs for sexual assault provide a mechanism outside of the traditional criminal justice system to address victims' needs (see Koss, 2006; Koss & Achilles, 2008 for reviews). Rape crisis center services are beneficial to victims, and increasing the availability and accessibility of these programs to more survivors may also contribute to more consistently positive postassault help-seeking experiences (Campbell, 2006). Intervening at the macrosystem level may be the most difficult, but the comprehensive models developed by the CDC (2004) and WHO (Jewkes, Sen, & Garcia-Moreno, 2002) outline strategies for working with multiple systems and settings; specifically, they suggest using a wide variety of tactics, such as policy change, organizational change, systems advocacy, media campaigns, and rape awareness/prevention education, to create broad-based systemic change. Similarly, efforts that focus on the prevention of sexual assault reduce the likelihood of multiple victimizations in women's lifetimes, thereby curbing negative chronosystem effects. Both Kelly's and Bronfenbrenner's ecological theories emphasize that changes at any one level of the social ecology can have extended effects at other levels. As a result, there are many feasible approaches to improving the societal response to rape victims and addressing their postassault recovery needs.

## IMPLICATIONS FOR PRACTICE, POLICY, AND RESEARCH

- At the individual level, public education efforts must emphasize that women's experiences of rape are not universal. All women can be victimized and they are likely to respond in diverse ways. Education efforts must also stress that survivors' experience of rape are usually not "stereotypical rapes" (i.e., stranger rape).
- At the microsystem level, rape awareness programs need to provide information for informal support providers about the varied reactions survivors may exhibit. These programs should also emphasize to informal support providers that positive reactions such as emotional support and tangible aid are helpful for recovery, and negative reactions, such as egocentrism and blame, may overshadow any positive efforts.
- At meso/exosystem level, promising programs such as the sexual assault nurse examiner (SANE) programs and sexual assault response teams (SARTs) can help improve the provision of consistent, victim-centered medical and crisis intervention services, and may increase rates of successful prosecution. Likewise,



increasing the availability and accessibility of rape crisis centers to more survivors may contribute to more consistent positive postassault help-seeking experiences.

- Although intervening at the macrosystem level is most difficult, comprehensive intervention models may help reach multiple ecological systems and settings. Comprehensive models should use a wide variety of strategies, such as policy change, organizational change, systems advocacy, media campaigns, and rape awareness/prevention education to create broad-based systemic change. Making changes within these systems may help improve the

community's response to rape and eventually change our culture to support survivors and hold perpetrators accountable.

- Efforts that focus on the prevention of sexual assault reduce the likelihood of multiple victimizations in women's lifetimes, thereby curbing negative chronosystem effects.
- Future research should also consider using an ecological approach to understand sexual assault survivors' postassault psychological experiences. Specifically, research should attempt to understand how variables at the multiple ecological levels interact to impact mental health outcomes.

## NOTE

1. We distinguish community-based mental health services, such as the services provided by psychiatrists, psychologists, or social workers in private or public clinic settings, from the therapies available to victims who participate as research subjects in randomized control (RCT) treatment outcome studies (e.g. Foa, Rothbaum, Riggs, Murdock, 1991; Krakow et al., 2001; Resick et al. (2008); Resick, Nishith, Weaver, Astin, & Feuer, 2002). These treatment outcome studies consistently find that their evidence-based practices are associated with decreased psychological distress symptomatology.

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- community's response to rape and eventually change our culture to support survivors and hold perpetrators accountable.
- Efforts that focus on the prevention of sexual assault reduce the likelihood of multiple victimizations in women's lifetimes, thereby curbing negative chronosystem effects.
- Future research should also consider using an ecological approach to understand sexual assault survivors' postassault psychological experiences. Specifically, research should attempt to understand how variables at the multiple ecological levels interact to impact mental health outcomes.
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\*Indicates article included in empirical review.



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