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Rape Treatment Outcome Research: Empirical Findings and State of the Literature

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Abstract

This article reviews empirical support for treatments targeting women sexually assaulted during adolescence or adulthood. Thirty-two articles were located using data from 20 separate samples. Of the 20 samples, 12 targeted victims with chronic symptoms, three focused on the acute period post-assault, two included women with chronic and acute symptoms, and three were secondary prevention programs. The majority of studies focus on posttraumatic stress disorder (PTSD), depression, and/or anxiety as treatment targets. Cognitive Processing Therapy and Prolonged Exposure have garnered the most support with this population. Stress Inoculation Training and Eye Movement Desensitization and Reprocessing also show some efficacy. Of the four studies that compared active treatments, few differences were found. Overall, cognitive behavioral interventions lead to better PTSD outcomes than supportive counseling does. However, even in the strongest treatments more than one-third of women retain a PTSD diagnosis at post-treatment or drop out of treatment. Discussion highlights the paucity of research in this area, methodological limitations of examined studies, generalizability of findings, and important directions for future research at various stages of trauma recovery.

Keywords

sexual assault; rape; efficacy; treatment outcome; posttraumatic stress disorder; PTSD

One in six women (17.6%) will be raped or experience an attempted rape during her lifetime (Tjaden & Thoennes, 2006), equaling more than 17.7 million raped women in the United States. Rape is a particularly harmful victimization experience in terms of negative consequences for health and post-assault functioning (Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). In a national study, raped women had a 6.2 times higher rate of lifetime Posttraumatic Stress Disorder (PTSD) than non-victims of crime, with approximately one third of raped women meeting criteria. Therefore, 3.8 million women are estimated to have had raped-related PTSD and more than 1.3 million currently have PTSD (Kilpatrick, Edmunds, & Seymour, 1992). These numbers highlight the large number of sexually assaulted women in need of effective treatment.

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This article reviews treatment outcome data for women sexually assaulted during adolescence or adulthood. Sample selection criteria and sample characteristics are also examined to identify potential generalizability gaps and subsets of victims who are missing or underrepresented in empirical treatment studies.

Psychosocial Consequences of Sexual Assault

Burgess and Holmstrom (1974), two of the first researchers to examine women's reactions to rape, coined the term "rape trauma syndrome." Since the addition of PTSD to the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition* (DSM-III; APA, 1980), many have focused on PTSD as a sequelae of rape. However, sexually assaulted women may have a range of post-rape adjustment problems (e.g., mental health consequences other than PTSD, functional impairment) in addition to or without meeting diagnostic criteria for PTSD. In the National Comorbidity Survey, 80% of women and men with PTSD also met criteria for a comorbid diagnosis, mostly affective, anxiety, or substance abuse disorders (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Rape-related fears (e.g., fear of being home alone, fear of male strangers) and anxiety symptoms may be particularly persistent with women reporting elevations years after the assault (Veronen & Kilpatrick, 1983). The National Women's Study found that 30% of rape victims have had a major depressive episode, which is a three times greater rate than for non-victims of crime. Similarly, 33% of rape victims have contemplated and 13% have attempted suicide (versus 8% and 1% for non-victims of crime), equaling a 13 times increased risk of attempted suicide (Kilpatrick et al., 1992). Finally, sexual assault victims have 3 to 10 times higher rates of substance abuse than non-crime victims (Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997; Kilpatrick et al., 1992). Raped women with PTSD are five times more likely than raped women without PTSD and 26 times more likely than non-crime victims to have two or more substance abuse-related problems (i.e., problems related to work, school, family, health, police, or accidents) (Kilpatrick et al., 1992). Sexual assault victims also report self-blame and lowered self-esteem (Foa & Riggs, 1994), panic episodes (Nixon, Resick, & Griffin, 2004), disordered eating (Laws & Golding, 1996), sleep problems and nightmares, health problems and somatic complaints (Clum, Nishith, & Resick, 2001), sexual problems (Becker, Skinner, Abel, & Cichon, 1986), and problems with work and social functioning (Resick, Calhoun, Atkeson, & Ellis, 1981). Although some assaulted women appear to cope resiliently and may not need treatment, experiencing a sexual assault, particularly a completed rape, leads to a high risk for deleterious outcomes, often beyond what is seen for other traumas and crime victimizations (Kessler et al., 1995; Kilpatrick et al., 1987; Resnick et al., 1993).

Psychosocial sequelae subsequent to rape not only span a diverse range of problems but also change over time. Symptoms in the immediate aftermath of an assault have shown utility in predicting women's longer term functioning (Resnick et al., 2007b). Acute distress, in the first days and weeks post-assault, is almost a universal reaction. Prior to a forensic exam within 72 hours post-rape, women reported average Subjective Units of Distress ratings of 78 on a scale from 0 (total calm) to 100 (total panic/unbearable anxiety) (Resnick et al., 2007b). Rothbaum, Foa, Riggs, Murdock, and Walsh (1992) found that 94% and 64% of women meet PTSD criteria at two weeks and one month post-rape, respectively, and by three months about half improved without treatment. The other half of women in this study met PTSD criteria at three months post-rape. These women experienced some decline from initial distress levels, but then symptoms remained elevated and relatively stable. Other studies have also found that high levels of initial distress naturally decline after about three months for a portion of women (Kilpatrick, Veronen, & Resick, 1979), whereas, other women may remain symptomatic for many years without seeking help (Kilpatrick et al., 1987). Elapsed time since assault is important in the design of treatments for rape victims. Most studies have focused on victims at least three months post-assault to target women with chronic symptoms.

Review Parameters and Study Selection Criteria

Data from twenty samples are included in this review. Articles were identified through topical literature searches on PsycInfo and Web of Science, reviewing references of located articles, and conducting searches for key authors in the field. For inclusion, studies needed to provide quantitative treatment outcome information for adolescent or adult sexual assault victims, and a description of the intervention. Case studies and studies only providing therapists' subjective reports of client improvement are not included in this review. Samples that included both rape victims and victims of other types of trauma, without providing data specifically on treatment effects for sexual assault victims, are not included to allow conclusions to be drawn about intervention effectiveness specifically for sexual assault victims. There is evidence that sexual assault victims may have higher initial levels of symptomatology than victims of other crimes (Gilboa-Schechtman & Foa, 2001; Resnick et al., 1993; Solomon & Davidson, 1997) and may have a slower pattern of recovery (Foa, 1997; Gilboa-Schechtman & Foa, 2001). Treatments focused on adult survivors of childhood sexual abuse also are not examined. No studies including male victims of sexual assault meeting these criteria were located, thus this review focuses on female sexual assault victims. Of the 20 samples, 17 evaluate treatment interventions and three focus on secondary prevention programs—programs intended to decrease the likelihood of future problems in a high risk group.

Due to the limited number of published investigations, we did not exclude studies based on methodological limitations. Thus, taking into account variability in methodological strength is important. Foa and Meadows (1997) delineated criteria for evaluating the methodological strength of PTSD treatment studies: (1) clearly defining symptoms being targeted in treatment, (2) clear inclusion and exclusion criteria, (3) use of reliable and valid measures of outcome variables, (4) use of blind assessors to evaluate outcomes and patients trained not to reveal their treatment condition, (5) training of assessors, including reliability examination and ongoing calibration, (6) manualized, specific treatment programs, (7) unbiased or random assignment to treatment, and (8) monitoring of treatment adherence and integrity. We also add to these criteria having adequate sample size and statistical power to identify meaningful group differences when they are present. We define this as 0.80 power to detect a medium effect size differences between treatments, in line with conventionally accepted practices. Finally, we add collection of follow-up data to examine the ongoing impact and success of treatment as an additional criterion.

Treatments Empirically Evaluated in Sexual Assault Populations and Existing Support

Initial work in the area of sexual assault treatment arose from a crisis theory orientation (e.g., Burgess & Holmstrom, 1974), which has informed much of the work in rape advocacy organizations (Koss & Harvey, 1987). Limitations to the crisis theory approach for sexual assault victims have been noted, including lack of empirical evaluation and evidence that women with chronic symptoms need more intensive treatment (Kilpatrick & Veronen, 1983). Beginning in the late 1970s, cognitive behavioral interventions building on existing evidence-based anxiety treatments were adapted for sexual assault victims, most notably Stress Inoculation Training. Prolonged Exposure and, later, Cognitive Processing Therapy were also developed and evaluated specifically with sexual assault victims. To date, these three interventions, along with supportive counseling, are the most frequently evaluated treatments in this population.

The following sections present: (a) treatment descriptions and outcome data; (b) a discussion of similarities and differences between the primary treatments; and (c) an examination of treatment comparison data. The 17 studies that empirically evaluate treatments for adolescent

or adult sexual assault victims are presented in Table 1. We review 12 treatment studies for victims who are at least three months post-assault (most with chronic PTSD diagnoses) and five treatments that include recent victims—three acute treatments targeting victims less than three months post-assault, and two treatment studies including victims with a range of time since assault. Finally, results for the three secondary prevention programs are discussed.

Stress Inoculation Training (SIT)

Stress inoculation training was adapted by Kilpatrick and colleagues (Veronen & Kilpatrick, 1983) from Meichenbaum's (1974) anxiety management procedures to treat sexually assaulted women with elevated fear and anxiety and specific avoidance behaviors. SIT incorporates three primary treatment elements: (1) behaviorally based psychoeducation to explain and normalize fear and avoidance behaviors, (2) guided hierarchical, in vivo exposure assignments to target rape-related phobias (e.g., strange men, darkness), and (3) training in six behavioral and cognitive-behavioral coping strategies, specifically thought stopping, guided self-dialogue, muscle relaxation, controlled breathing, covert modeling, and role playing.

Individual SIT has been examined in three studies (Foa, Rothbaum, Riggs, & Murdock, 1991; Veronen & Kilpatrick, 1983; Veronen & Kilpatrick, 1982a cited in Foa, Rothbaum, & Steketee, 1993) and group SIT has been evaluated in one study (Resick, Jordan, Girelli, Hutter, & Marhoefer-Dvorak, 1988), altogether including a total of 47 women who provided outcome data (52 women were in the original intent to treat samples). Foa et al. (1991) reported significant benefits of SIT over wait list on PTSD, but not on depression, anxiety and fears. Resick et al. (1988) reported significant improvement on all examined measures for SIT women whereas wait list women did not change; however, these condition differences did not reach significance. In both of these studies, benefits were maintained through three months post-treatment. Pre-post improvements for women treated with SIT were reported in depression, fear, and anxiety in all four studies, as well as improvements in PTSD, hostility, mood, tension, assertiveness, self-concept, and self-esteem in all studies that examined these variables. Two of these studies used random or quasi-random assignment to SIT or control; however, in the two early Kilpatrick and Veronen investigations, method details were not reported or women selected SIT treatment over systematic desensitization or group support.

Prolonged Exposure Therapy (PE)

Prolonged exposure therapy for rape victims builds on earlier treatments with anxiety disordered patients (i.e., flooding exposure techniques) and emotion processing theory (Foa & Kozak, 1986). Extending more simplistic behavioral deconditioning theories of fear extinction, Foa and colleagues (Foa & Kozak, 1986; Foa & Riggs, 1994) suggest that exposure allows for correcting mistaken evaluations and meanings of events in addition to correcting faulty stimulus-response associations, and that it is the encoding of memories under extreme distress that leads to disjointed and disorganized memories, which then impede natural recovery and lead to post-traumatic stress. PE aims to decrease anxiety associated with rape memories, thus allowing victims to reevaluate meanings associated with the memories and construct a more organized trauma story. Treatment starts with psychoeducation, breathing training, and the development of a fear and avoidance hierarchy for in vivo exposures. The primary focus of therapy is on in-session, imaginal reexposure to the assault. Victims are asked to relive the rape scene and describe it aloud as they are imagining it, using present tense and vivid detail. This may be done several times during one session. The victim's retelling of their rape is audio-recorded and daily homework of listening to the account is assigned for further exposure (Foa et al., 1991).

Three samples, including 64 women (90 intent to treat), provide data on PE for rape victims with PTSD diagnoses at pre-treatment. The Resick, Nishith, Weaver, Astin, and Feuer,

(2002) study has the strongest methodology of the published sexual assault treatment studies and found significant, medium to large effect size differences between PE and a minimal attention control on PTSD, depression, and guilt. Foa et al. (1991) compared PE with a wait list control and significant differences were not found; however, power to detect condition differences was very low and PE women significantly improved on PTSD and depression, whereas control women did not. For PE treated women, significant pre-post improvements have been found in PTSD, depression, guilt, anxiety, rape-related fears, rape narrative organization, and alexithymia (Kimball, 2000; Foa et al., 1991; Foa, Molnar, & Cashman, 1995; Resick et al., 2002).

Cognitive Processing Therapy (CPT)

Cognitive processing therapy, developed by Resick & Schnicke (1992, 1993), also builds on emotional processing theory to identify rape victim's "stuck points" when attempting to process trauma-related information. "Stuck points" are manifestations of a PTSD sufferer's unsuccessful attempts to accommodate information related to the trauma into preexisting belief and memory structures. The overall goal is to help the client integrate their trauma into preexisting schemas, thus decreasing avoidance and intrusions of unintegrated aspects of the trauma. Treatment includes psychoeducation, exposure, and cognitive techniques. Exposure occurs through writing assignments in which the victim describes her rape and its meaning. The victim rereads her trauma account between sessions and writes about the impact of the trauma multiple times to incorporate new understandings and reevaluations. The second part of therapy focuses on victims' beliefs about the meaning and implications of their trauma. Through cognitive restructuring worksheets, Socratic questioning, and discussion, one theme—safety, trust, power/control, esteem, or intimacy—is addressed in the final five sessions.

Three samples with a total of 89 CPT condition women (112 intent to treat) have examined the efficacy of CPT (Resick et al., 2002; Resnick & Schnick, 1992; Resnick & Schnicke, 1993). All samples have focused on women with PTSD diagnoses (with the exception of two women with extremely elevated PTSD scores, but not meeting all diagnostic criteria). Both individual and group CPT treated women had significant pre-post improvements in PTSD, depression, and other outcomes (i.e., guilt, hopelessness, self-blame, social adjustment, and all Symptom Checklist-90 Revised subscales; Derogatis, 1977), which maintained through six or nine month follow-ups (Resick et al., 2002; Resick & Schnicke, 1993). Additionally, CPT was found to have large effect size differences over a minimal attention control in PTSD, depression, and guilt scores (Resick et al., 2002) and yielded significant changes in PTSD and depression, whereas wait list women's scores did not significantly change (Resick & Schnicke, 1992).

Eye Movement Desensitization Reprocessing (EMDR)

EMDR was developed by Shapiro (1995) for treatment of PTSD and involves exposure elements and cognitive techniques. During treatment, a scene is used to represent the entire rape trauma. The client imagines the scene and recites words related to the scene, while the therapist is moving her/his finger back and forth in front of the client. The finger movement is hypothesized to facilitate the processing of the trauma memory through the dual attention required to attend to the therapist's finger (an external stimulus) and the trauma scene (an internal stimulus). After the client's anxiety related to the scene exposure has decreased, the client rehearses a new, adaptive belief until the new belief "feels true" (Rothbaum, 1997, p. 326). EMDR has been somewhat of a controversial treatment amid questions of whether dual processing through tracking the therapist's finger is a necessary component and early claims by the treatment developer that the treatment could work in one session (Rothbaum & Foa, 1999).

A total of 15 sexual assault victims have been treated with EMDR in two outcome studies. The first study found that, compared to wait-list women, treated women improved significantly more on depression and PTSD at post-treatment and three month follow-up, but not on fear, anxiety, and dissociative experiences (Rothbaum, 1997). In a second investigation using a multiple baseline design, five women treated with EMDR showed significant decreases in depression, global distress, dissociative symptoms, anxiety and PTSD (Lindsey, 1995). These studies suggest that EMDR is effective for treating depression and PTSD in sexually assaulted women. However, in the absence of comparison to other active, exposure-oriented treatments, it is unclear whether the eye movement component is necessary and increases treatment effectiveness or whether benefits are accounted for by trauma memory exposure alone.

Supportive Counseling

In sexual assault treatment studies, a range of interventions have fallen under the guise of supportive counseling (SC). Three studies employed supportive interventions that may be similar to those employed in some rape crisis centers (Cryer & Beutler, 1980; Foa et al., 1991; Resick et al., 1988), whereas another used SC to control for benefits from regular contact with a therapist who is providing unconditional positive regard, active listening, and general support (e.g., Foa, Zoellner, & Feeny, 2006). SC has shown significant pre-post improvement in PTSD, anxiety, and fear in all studies that examined these variables, in depression in three of the four studies, and in several other outcomes examined in only one study. However, in comparison studies, cognitive behavioral treatments are generally more effective than supportive counseling (Foa et al., 1991; Foa et al., 2006; Resick et al., 1988).

Other Cognitive Behavioral Treatments for Sexual Assault Victims with Chronic Symptoms

Two other cognitive behavioral interventions have led to improvements for some women with chronic symptoms. Both of these treatments incorporate training in assertive, proactive responses in interpersonal interactions as a means of countering a fear response. In a sample of sexually assaulted veterans ($N = 10$), a multiple baseline pre-post examination of "Taking Charge," a self-defense group with cognitive behavioral and supportive therapy elements, evidenced gains in some PTSD indices, depression, and self-esteem (David, Simpson, & Cotton, 2006). A second study with low power for detecting group differences ($n = 12-13$ per group) found significant improvements for women treated with group assertion training (AT) and no differences between AT and SIT or supportive counseling (Resick et al., 1988). Currently, few conclusions can be drawn about these treatments given the small study sample sizes and the need for comparison with existing evidence-supported treatments.

Pharmacotherapy

Most pharmacotherapies for PTSD have been evaluated in mixed trauma or combat trauma populations. The Institute of Medicine (2008) identified 37 pharmacotherapy randomized controlled trials for PTSD, none of which focused solely on female sexual assault victims. Only one study, which did not use random assignment or a control group, has focused on sexual assault victims. In this study, five women with chronic PTSD were treated with a twelve-week trial of Sertraline, a selective serotonin reuptake inhibitor. Four of the women were classified as treatment responders, which was defined as a 30% or greater reduction in PTSD symptoms (Rothbaum, Ninan, & Thomas, 1996). Important methodological limitations of this study included a small sample size and no follow-up data after medication use ceased. It is unknown whether gains were maintained following pharmacotherapy or if symptoms returned.

Cognitive Behavioral Interventions for Recent Sexual Assault Victims

Four studies report treatment data specifically for recent sexual assault victims (i.e., less than three months post-assault). Some early treatment programs target victims recently post-assault

(i.e., days to weeks) and attempt to provide prophylactic treatment to prevent chronic problems (e.g., 4-6 hours of Brief Behavioral Intervention Procedure (BBIP); Veronen & Kilpatrick, 1982b in Foa et al., 1993). Other acute treatment programs intend to facilitate a faster recovery (e.g., 8 hours of brief cognitive behavior therapy (bCBT); Foa et al., 2006), whereas other interventions are similar in scope to treatment for chronic symptoms and focus on treating existing symptoms (e.g., 7-14 hours of treatment; Echeburua et al, 1996; Frank et al., 1988). Women treated with bCBT recovered faster than women in a supportive counseling condition, at least through three months post-treatment; however, no differences were found between bCBT and an assessment control (Foa et al., 2006). A second study found some benefits for cognitive restructuring and coping skills training over progressive muscle relaxation and psychoeducation on PTSD outcomes (Echeburua et al., 1996). No differences were found between systematic desensitization and cognitive therapy in a sample of women ranging from several days to one year post-assault, nor in a subsample of “immediate treatment seekers” (victims within 30 days post-assault) (Frank et al., 1988). Finally, BBIP, which includes psychoeducation, imaginal reexposure, and coping skills training, yielded no outcome improvements over assessment conditions (Veronen & Kilpatrick, 1982b cited in Foa et al., 1993). Two studies (Cryer & Beutler, 1980; Frank et al., 1988) included women ranging in time since assault, but had no control group. Thus, any added benefit of these treatments over the natural decline in symptoms most victims experience in the months post-assault cannot be determined.

Summary of Distinctions Between Treatments

Many of the empirically evaluated treatments for sexual assault victims include some element of exposure and target elevated levels of PTSD, fear and anxiety, and/or depression. These treatments differ in the amount and focus of exposure. PE, CPT, and EMDR involve exposure to the rape trauma memory or scenes related to the trauma. PE spends a greater portion of treatment repeating imaginal exposure procedures, whereas CPT focuses one half of treatment on exposure and identifying “stuck points” in written accounts of the rape trauma, with the second half of treatment focused on cognitive components and the impact of the rape experience. EMDR also focuses much of treatment on exposure through dual attention imaginal reprocessing. Other treatments that have exposure components focus on exposure to specific target fears and avoidance behaviors that have developed since the assault. These exposure techniques may be done through imagery (e.g., systematic desensitization) or in vivo (e.g., SIT). Whereas the goal in the former three therapies is decreased anxiety surrounding the rape memory and accommodation of the rape event into the victim's life, the latter exposure techniques target specific maladaptive avoidance behaviors and decreasing anxiety surrounding rape-related cues.

Treatments also range in terms of other coping skills provided in treatment. Some treatments have a focus on arming clients with an array of coping skills (i.e., SIT); whereas other therapies, such as PE, do not incorporate extensive cognitive or coping skills components. Many of the treatments begin with psychoeducation related to responses that many women have following rape and likely address self-blame and guilt related to the rape experience. Finally, supportive counseling and crisis intervention groups that have been evaluated for sexual assault victims may not specify treatment targets, are likely to deal with topics identified by the rape victims, and generally do not use a manual or specify session-by-session content.

Data on comparisons between active treatments—CPT, PE, SIT, brief CBT and/or supportive counseling have been compared in four studies. Other treatments only have been compared to control conditions, evaluated using a pre-post design, or examined in a single investigation; these data are already reviewed above and are detailed in Table 1. Few significant differences were found between active treatments with several notable exceptions. Cognitive

behavioral interventions consistently led to better PTSD outcomes than supportive counseling did (Foa et al., 1999; Foa et al., 2006); this difference was not found for other outcomes, such as depression, fear, and anxiety, although two of the three studies had particularly low power for detecting group differences. In a well-designed study, CPT showed some benefit over PE on two guilt indices at post-treatment and had small to medium effect size benefits in PTSD and depression at early follow-up assessments (Resick et al., 2002). After controlling for initial guilt scores, guilt outcome differences at follow-up no longer reached significance, but effect size and clinically significant change indices still favored CPT over PE (Nishith, Nixon, & Resick, 2005). In an underpowered study ($n = 10-14$ per group), no differences were found between PE and SIT (Foa et al., 1991). The exposure component of SIT was excluded in this study to restrict overlap between conditions, which further limits conclusions that can be drawn about the superiority of either treatment. CPT has not been directly compared to SIT or supportive counseling. Overall, CPT and PE have received the most support in well-designed investigations and CPT may have some benefits over PE, particularly for victims with assault-related guilt.

Variability in Post-treatment Functioning and PTSD Diagnostic Status

Nine of the 17 treatment-focused samples in Table 1 provide data on individual participants' post-treatment or "end state" functioning, primarily defined as the proportion of women continuing to meet criteria for PTSD at post-treatment and follow-up assessments. In some investigations, however, end state functioning was determined by using cutoffs on outcome measures instead of focusing on diagnostic status. Only one to two samples (totaling 17 women or less per treatment) provide end state functioning data following SIT (50% retained PTSD diagnosis at post-treatment; 45% at follow-up), EMDR (20% with PTSD diagnosis at post; 0% at follow-up), supportive counseling (90% PTSD diagnosis at post; 55% at follow-up), or psychopharmacology (Sertraline: 60% PTSD diagnosis/clinically elevated symptoms at post; no follow-up data) interventions. Data are available for a larger number of women following CPT or PE interventions, with the strongest data provided by the Resick et al. (2002) study. As would be expected there are notable differences between the women who completed CPT treatment (11-20% retain a PTSD diagnosis) and women in the intent to treat sample (47% still meet PTSD criteria at post-treatment). Similarly, for PE, 18-60% of completers and 47% of the intent to treat sample retained a PTSD diagnosis at post-treatment. Resick et al. (2002) also report the proportion of women who do not meet "good end state functioning" criteria, which means these women are still above cutoff scores on depression, PTSD, and/or anxiety measures. At nine months post-treatment, 36% of women who completed CPT and 32% of women who completed PE did not meet criteria for good end state functioning (55% and 60% for women treated with CPT and PE, respectively, in the intent to treat sample). Although these numbers are very positive compared to the 88-100% of control women retaining at PTSD diagnosis at post-treatment, they also indicate that approximately a third of women still endorse elevated symptom levels following treatment, leaving room for continued improvement with these interventions.

Two acute interventions for rape victims provided end state functioning data. However, the Echeburua et al. (1996) study did not include a control condition to account for the expected natural decline in symptoms for victims in the first months post-assault, so few conclusions can be made from this data. At post-treatment, Foa et al. (2006) found that 29% of sexual assault victims had poor end state functioning following treatment with brief CBT compared to 75% of women treated with supportive counseling, suggesting faster symptom improvement for sexual assault victims treated with brief CBT (difference was no longer significant at follow-ups). This difference was not found for physical assault victims included in this study. With few samples providing this type of data and considerable variability from the studies that do give information on individual functioning, more data are needed to determine the proportion

of women who are still symptomatic after treatment and are in need of more or different treatment.

Secondary Prevention Programs

Three secondary prevention programs for sexual assault victims have been evaluated. These programs are intended to reduce sexual assault victims' risks for negative sequelae, including subsequent sexual victimization or mental health problems. Building on findings that sexually assaulted women are at increased risk for subsequent sexual assaults (versus women who have not been assaulted; Gidycz, Coble, Latham, & Layman, 1993), two programs have been developed that aim to reduce sexual assault revictimization through brief psychoeducation and skills training. One of these programs yielded decreased rates of rape revictimization two months later (Marx, Calhoun, Wilson, & Meyerson, 2001), whereas the other program did not appear to reduce revictimization rates (Hanson & Gidycz, 1993). For women about to undergo a forensic rape exam, Resnick and colleagues evaluated the impact of a 17-minute video intended to decrease anxiety and act as a prophylactic intervention for mental health and substance abuse problems. Six months later, women reported less marijuana use than women receiving treatment as usual (Resnick, Acierno, Amstadter, Self-Brown, & Kilpatrick, 2007a). Furthermore, among women with a previous rape, video condition women had lower pre-exam anxiety and lower PTSD and depression scores at follow-up (Resnick et al., 2007b). This study offers important preliminary evidence for using brief psychoeducational intervention in the immediate aftermath of a sexual assault in a format that could be easily disseminated.

Methodological Strength of Treatment Studies

In the following section, the methodological strength of the 17 treatment studies (the three secondary prevention studies are not considered in this section) is considered in relation to criteria established by Foa and Meadows (1997). In addition, we examined whether studies had adequate power to detect group differences and collected post-treatment follow-up data.

Thirteen of the 17 treatment studies specified symptoms being targeted and required elevations in symptoms for inclusion (i.e., meeting PTSD criteria, elevated fear and avoidance). Additionally, Resick et al. (1988) required that women reported problems with rape-related fear and anxiety, but did not specify requirements for the severity of these problems. Three studies (Cryer & Beutler, 1980; Frank et al., 1988; Veronen and Kilpatrick, 1982b in Foa et al., 1993) did not require that significant symptom levels were present. All studies except Frank et al. (1988) and Veronen and Kilpatrick (1982b, cited in Foa et al., 1993) specified additional inclusion or exclusion criteria aside from experiencing a sexual assault. Similarly, all studies used valid and reliable measures, with two exceptions (Foa et al., 1993 did not report measures used for Veronen and Kilpatrick 1982a and 1982b). Four studies (Foa et al., 1995; Foa et al., 2006; Frank et al., 1988; Resick et al., 2002) described training procedures for symptom assessors and one study (Resick et al., 2002) reported ongoing monitoring of assessor agreement to prevent reliability drift.

In the study design column of Table 1, studies that used independent blind assessors (IBA; occurred in six out of 17 studies), treatment manuals (manual; 12 out of 17: nine specified manual was used and three were "highly structured" or "specified session content"), random assignment of victims to treatment condition (RA; eight out of 17), and monitoring of treatment adherence and integrity (TAM; seven out of 17) are identified. Reporting of post-treatment follow-up data is also specified in Table 1 (12 out of 17 studies). Finally, study sample size is reported in the sample details column of Table 1. All but one study (Resick et al., 2002) was likely underpowered to detect medium effect size differences between treatments. A minimum of 28 participants are needed per group to detect medium effect size differences between

conditions with 0.80 power, assuming an alpha level of 0.05 and using MANOVA statistics (sample size requirements were calculated for pre-post and pre-post-follow-up designs with two to four treatment groups using GPower 3.0; Faul, Erdfelder, Lang, & Buchner, 2007). Resick et al. (1988) estimated that their study, with ten to fifteen women per treatment condition, only had 0.10 to 0.15 power to detect a medium effect size difference between conditions, and that they would need to increase their sample size to 80 women per condition for power equal to 0.80.

Inclusion and Exclusion Criteria of Treatment Evaluation Studies

The majority of the available information about treating sexual assault victims comes from studies of women with PTSD, but without substance abuse problems or other severe comorbid diagnoses. Thirteen of the 17 treatment studies in Table 1 required women to meet criteria for PTSD diagnosis or have elevated levels of anxiety and/or fear symptoms as the primary presenting complaint (for older studies started prior to the inclusion of PTSD in DSM-III). Nine of the 17 studies excluded women with substance abuse or dependence and none referred to treating women with substance problems. Finally, 11 studies excluded women who had other major comorbid diagnoses (primarily schizophrenia, bipolar, and/or major depression), current suicidal intent or parasuicidal behaviors, current psychosis, and/or “other severe pathology.” The studies with these selection criteria generally had stronger methodologies and provided the most relevant information to the central questions of this review.

This focus on PTSD, albeit important, limits our understanding of the efficacy of these treatments for women presenting primarily with depression, subclinical PTSD, comorbid diagnoses, or other problems. Although few studies in this review gave detailed information about the number of women screened for participation and reasons for exclusion, Resick et al. (2002) reported that 74 treatment-seeking women (compared to 171 included in the intent to treat sample) were excluded because they did not meet full criteria for PTSD. Substance abuse and comorbid diagnoses are particularly pertinent and prevalent problems for sexually assaulted women, especially those with PTSD. The exclusion criteria highlight the complexity of doing sexual assault treatment outcome research. It is necessary, of course, for women to be able to consent to treatment (e.g., not currently psychotic) and for women to be able to cope with treatments that may involve processing of traumatic memories without unmanageable distress or dropout. If women have insufficient coping skills to handle distress during exposure elements or to fully engage in therapy, they also are likely to suffer distress due to symptoms that go untreated. Trauma-related symptoms often are associated with alcohol or drug problems, as a means of self-medication, but women frequently are excluded from treatment studies due to substance abuse and methods for treating substance abusing rape victims have yet to be evaluated. Similarly, for women excluded due to presence of a severe comorbid diagnosis, stress related to their rape victimization (e.g., missed work, relationship problems, isolation, testing for sexually transmitted infections or pregnancy, litigation) and traumatic symptomatology may be causing or exacerbating comorbid disorders. For these women, appropriate treatment of rape-related psychopathology and trauma could be necessary and may even improve functioning related to other disorders.

Attention to the complex symptom constellation of rape victims is needed. With comorbid diagnoses often leading to exclusion from treatment studies, clinicians could rightfully conclude that the complicated cases that they see clinically are inappropriate for the empirically supported interventions. Weaver, Chard, and Resick (1998) state, “for trauma-focused treatment, the most fragile clients are typically excluded from exposure work (i.e., the suicidal, parasuicidal, psychotic, substance-addicted)” (p. 393). Yet, there are insufficient guidelines on which clients fall above this threshold, little data to inform these decisions, and inadequate information on appropriate treatments for those who may not be candidates for exposure.

Treatment Study Sample Characteristics in Comparison to National Data on Rape

Table 2 details victim and assault characteristics for women summed across the 17 treatment studies presented in Table 1 and for women from the 1995 National Violence Against Women Study (NVAWS; Tjaden & Thoennes, 2006). The purpose of this comparison is to examine how representative the women included in existing treatment studies are compared to national data. The NVAWS currently provides the best national data for this sort of comparison, although there are several noteworthy characteristics of the NVAWS data: (a) all rape victims (attempted and completed) are included; (b) approximately 33% of women in the NVAWS reported receiving mental health counseling after their most recent rape experience whereas, in treatment studies, 100% have sought some form of intervention; (c), women living in a household without a phone, homeless and institutionalized women (i.e., prison, inpatient mental health or substance abuse treatment, etc.), and adolescents who have been sexually assaulted were not surveyed due to the telephone-based methodology and age inclusion criteria; and (d) women reported lifetime experience with sexual assault resulting in the inclusion of some women who were only victimized in childhood; based on the available data, we estimated that 2.4 to 3.1% of sexually assaulted women were raped only when age 12 or younger. Because the exact numbers are not available, we used numbers related to the total women raped in the NVAWS and reported information for only adolescent and adult women where possible.

As shown in Table 2, there was a higher proportion of African-American rape victims in treatment studies (25.4%) than in the national data (10.3%), which could be accounted for by the fact that several of the larger treatment studies (i.e., Foa et al., 2006; Resick et al., 2002) were conducted in urban areas where African Americans were the predominant minority group and the proportion of non-white individuals is generally higher than national averages. More importantly, it is notable that few other minority women (not African American) have been included in sexual assault treatment outcome studies. Across the 17 treatment studies, only four Hispanic, two American Indian/Alaska Native, two Asian, and eight "other" women have been included, which is in stark contrast to the hundreds of thousands of women who have been raped in each of these racial/ethnic groups in the United States.

In the eight treatment studies that reported victim-perpetrator relationship, 51.6% of victims were raped by strangers, compared to 17.6% of women in the NVAW study who were raped by strangers since age 12. Fewer recent studies provide data on the victim-perpetrator relationship. It is possible that in earlier studies, women raped by strangers felt more comfortable disclosing their rape and seeking treatment, due to rape myths about non-stranger rapes not being "real" rapes. There could be a different trend in more recent studies due to increased societal awareness about date and acquaintance rape in the last two decades. Data do not indicate that women raped by strangers are in more need of treatment than women raped by known assailants (e.g., Stermac, Bove, & Addison, 2001). Five studies did exclude women raped by a spouse or who were still in contact with the perpetrator (i.e., David et al., 2006; Foa et al., 1991; Foa et al., 1995; Foa et al., 2006; Resick et al., 2002), likely related to concerns about targeting symptoms that may be true danger signals rather than PTSD symptoms. However, it is unclear in several of these studies whether women were excluded only if they were still in danger from the perpetrator or more broadly just based on their relationship to the perpetrator.

Similarly, few studies reported data on women's child sexual abuse (CSA) history or prior adult victimizations. Several studies specified that they excluded women with an incest history (i.e., Foa et al., 1991; Resick et al., 1988; Resick & Schnicke, 1993) due to concerns that brief, particularly group, treatments may not adequately address the potentially complex symptom presentations of many CSA survivors (Resick & Schnicke, 1993). However, rape victims with and without a CSA history in the Resick et al. (2002) study showed similar improvements with treatment. Other studies have found differential intervention benefits for women with prior

victimizations versus women seen after their first rape (Resnick et al., 2007b). Prior victimization history may also overlap with exclusion criteria, such as suicidality, substance abuse, or other severe pathology. Continued examination of the impact of prior victimization history on treatment inclusion and success is needed. Finally, only one to four studies report data on other assault characteristics that could be compared to national data. Generally, the reported data don't correspond with the "typical" rape victim in the NVAWS; however, authors who reported this data may have done so because they knew they were treating a select subsample of rape victims. (Tables detailing inclusion and exclusion criteria by study and sample characteristics by study can be requested from the first author).

Discussion

Discussion of Outcome Results

Of the twenty samples included in this review, eleven involved random assignment to treatment condition—three of these were the secondary prevention studies. Of the remaining eight random assignment treatment studies, most had further limitations, such as low power to detect differences between groups, inclusion of recent victims without a control to account for natural recovery, and limited presentation of outcome data specifically for sexual assault victims. Only the Resnick et al. (2002) study had sufficient power to detect medium effect size differences between treatment conditions. Despite these limitations, much progress has been made in the last thirty years in the development and evaluation of effective treatments for sexual assault victims.

The available data suggest that several cognitive behavioral treatments are quite effective in treating PTSD, depression, and other common symptoms that sexually assaulted women are likely to experience. Notably, CPT, PE, and SIT have received the most research support. There is some evidence for benefits of CPT over PE, particularly regarding improvements in trauma-related guilt. However, both treatments appear to be effective and it would be premature to make a conclusion regarding superiority based on a single study conducted by the developers of CPT. In a study with low power for detecting differences between treatments, no significant differences were found between PE and SIT. CPT and SIT have not been directly compared. Finally, EMDR was effective in two, small-N studies. However, the benefits of EMDR beyond its exposure-related components have not been evaluated for sexual assault victims.

Other cognitive behavioral treatments not coupled into treatment packages, including cognitive restructuring, coping skills training, progressive relaxation, systematic desensitization, and assertion training have shown some treatment gains; however, the number of studies and women in each of these conditions is still limited. In addition, one psychopharmacological investigation has been conducted with sexual assault victims, but data were not presented on women's symptoms after medication usage stopped. Due to the limited data, the effectiveness of these other cognitive behavioral treatments and of pharmacological treatment need further evaluation, and if evaluated, should be compared to CPT, PE, or SIT to determine whether they are more effective than these existing treatments. Finally, supportive counseling, which probably is the most widely used treatment in rape counseling centers, offers some benefits (as seen in pre- to post-intervention improvements), but cognitive behavioral strategies appear to lead to faster and higher rates of recovery, particularly for PTSD outcomes.

Two CBT approaches for recently assaulted women have shown some promise for facilitating quicker recovery or possibly preventing symptom development. For victims within one month post-assault, Foa et al. (2006) found that a brief CBT intervention led to faster recovery rates than supportive counseling did. A second study targeted women prior to a forensic rape exam with a focus on preventing post-assault mental health and substance abuse problems (Resnick

et al., 2007b). More studies along these lines are needed to identify the most effective ways to intervene with rape victims in the days and initial months post-rape.

The findings from this review line up with treatment recommendations for traumatized individuals or individuals with PTSD more generally. Bisson et al. (2007) conducted a meta-analysis of treatments for chronic PTSD (symptoms for at least three months) secondary to a variety of traumas and concluded that, in general, trauma-focused treatments and EMDR led to better outcomes than stress management and that all three of these approaches were superior to other therapies, including supportive therapy, psychodynamic therapy, and hypnotherapy. These findings support the superiority of treatments that focus on the memory of a trauma event and its meaning, rather than coping skills, support, or other non-trauma-focused techniques. International Society for Traumatic Stress Studies treatment guidelines (Rothbaum, Meadows, Resick, & Foy, 2000) designated exposure as having the most support among cognitive behavior therapies for trauma. Stress Inoculation Training was also deemed an effective treatment. The Resick et al. (2002) study examining CPT versus PE had not yet been published; thus CPT was listed as promising, but needing more support, due to fewer published investigations.

Several studies with related populations also may provide important information for directing future treatment evaluation efforts. These studies included some sexual assault victims, but also included childhood sexual abuse survivors, physically assaulted crime victims, or victims of other types of trauma. Foa et al. (1999) compared PE, SIT, and a combination exposure and SIT treatment in a sample of sexual and physical assault victims. All three conditions were superior to a wait list control and few between treatment differences were found. On a measure of end state functioning, PE was found to be superior, followed by SIT, then the combination treatment. Foa et al. (2005) examined PE alone and PE with a cognitive restructuring component in a sample of women, 68.7% of whom were sexual assault victims. No added benefit was found for the cognitive restructuring component over PE alone and both treatments led to significant improvements in PTSD and depression over wait list women. Rothbaum, Astin, and Marsteller (2005) treated a sample of adult and child rape victims with PE or EMDR and found that both conditions led to decreases in PTSD and state anxiety, with no differences between the two treatments. Finally, Taylor et al. (2003) compared outcomes for PE, EMDR, and relaxation training (RT) in a sample of mixed trauma victims, 45% of whom had experienced a sexual assault. This study found that PE led to larger decreases in reexperiencing and avoidance symptoms than EMDR and RT, reduced avoidance symptoms more quickly than RT, and led to fewer PTSD diagnoses than RT. Taken together these results bolster the findings of this review regarding the efficacy of PE, CPT, and SIT, and suggest that future studies comparing EMDR and PE for rape victims should specifically examine reexperiencing and avoidance symptom clusters.

By focusing on sexual assault victims, this review provides specific information about post-treatment functioning and the proportion of sexually assaulted women who remain symptomatic, even if some treatment gains were made. Characteristics that may be unique to or more common in this trauma population could influence outcomes or treatment process. For example, sexual assault victims may have difficulties in intimate and sexual relationships, have concerns about being dirty or damaged related to societal ideals about female sexuality, be hesitant to disclose a trauma due to victim blaming and no independent evidence that the trauma occurred, have been assaulted by known or trusted individuals in locations to which they have ongoing exposure, be coping with forensic examination and/or ongoing legal proceedings, and experience anxiety while awaiting test results for pregnancy or sexually transmitted infections.

Treatment Non-responders and Predictors of Treatment Outcome

Despite overall symptom reductions in most studies, notable proportions of women maintained clinical levels of symptomatology at the end of treatment. Although the largest study of CPT and PE (Resick et al., 2002) found that 15-30% of treatment completing women retained a diagnosis of PTSD and/or Major Depressive Disorder, numbers from other studies (e.g., Foa et al., 1991) and the Resick et al. (2002) intent-to-treat sample indicate that closer to half of women retained a diagnosis after treatment. The variability in post-treatment functioning across studies and within treatments calls for a continued focus on this aspect of treatment efficacy (as opposed to only average group change). Examining these data is integral in taking steps towards predicting for whom different treatments are most effective and determining what can be done for women who do not respond to treatment. In attempts to identify predictors of treatment outcome, Foa et al. (1991) did not find that participant demographics, assault details, and therapy compliance ratings predicted treatment response; whereas, in a sample combining both physical and sexual assault victims, physical injury and a childhood trauma history both increased the likelihood of more severe PTSD at post-treatment (Hembree, Street, Riggs, & Foa, 2004).

Outcomes Evaluated

Frequently studies have evaluated PTSD, depression, rape-related fears, and anxiety outcomes. Additional focus on other issues that sexually assaulted women report—substance abuse, low self-esteem, suicidal ideation, relationships problems, trust, and ability to engage in new relationships—could be useful. Weaver et al. (1998) discuss the tension between staying focused on short-term trauma treatment versus a desire to “fix” all of the areas that need attention” (p. 393). These authors stress the point that focusing on too many topics can derail trauma-focused work and be a type of therapeutic avoidance, yet some therapists may have concerns about not taking a more holistic approach to client recovery. Sexual assault victims are also at increased risk for revictimization (Gidycz et al., 1993). Most revictimization research has included child sexual assault survivors. Despite numerous theories that have been put forth about what might put women with previous sexual assault experiences at greater risk (for a review, see Breitenbecher, 2001), the extant data has not provided conclusive answers (Classen, Palesh, & Aggarwal, 2005). Although assault responsibility lies with the perpetrator and looking for victim characteristics that lead to revictimization may be misdirected, neglecting to address risks for revictimization and safety in treatment may be a disservice to victims. Marx et al. (2001) found that a two session intervention decreased women's risk of being raped in the following nine weeks. Replication and examination over longer follow-up is needed, however, this study offers suggestions for a revictimization prevention component, which could be delivered in ongoing treatment or in an independent, brief group framework.

Another neglected topic in the empirical treatment literature is discussion of healing, recovery, and posttraumatic growth, with the focus instead on reducing symptoms and avoiding negative outcomes. Efforts to define, quantify, and measure constructs such as meaning making and posttraumatic growth are complicated and still in an early stage (e.g., Zoellner & Maercker, 2006), but treatment goals of reaching non-clinical levels on outcome measures may not speak to a survivor's overall level of functioning, well-being, and quality of life. One investigation of life changes following sexual assault found that women reported both positive and negative changes post-assault and that those women reporting positive changes two weeks post-assault reported lower distress one year following the assault (Frazier, Conlon, & Glazer, 2001). More attention to growth, improved functioning in psychosocial and occupations domains, and other positive outcomes may be one avenue to improving current treatments.

Generalizability of Results: Sample Characteristics and Exclusion Criteria

Given the high rates of comorbidity, determining effective and appropriate treatments for women with comorbid trauma-related problems is an essential area for future research. Because current exposure based techniques may temporarily increase distress, they may not be appropriate for substance abusing women or if there is a risk of precipitating a relapse for prior users (Resnick & Schnicke, 1993). Efforts to identify effective treatments for sexual assault victims with comorbid problems can build on existing joint substance abuse and PTSD interventions implemented with other populations, such as “Seeking Safety” (Najavits, 2002). There is also support for a prolonged exposure and coping skills intervention for comorbid PTSD and cocaine dependence, which has also been used with alcohol abusers (Coffey, Schumacher, Brimo, & Brady, 2005). Cloitre, Koenen, Cohen, and Han (2002) have achieved promising results pairing skills training based in Dialectical Behavior Therapy and trauma-focused cognitive behavior therapy for adult survivors of child sexual abuse.

Future studies also should consider sampling from underrepresented groups and examining whether culturally sensitive modifications or awareness of culture-specific attitudes about or experiences with rape could lead to better treatments. Additionally, reporting sample details, such as prior victimization history and relationship with the assailant, may help clinicians judge the generalizability of researched interventions to their clients.

Other Important Methodological Considerations for Future Research

Some of the well-designed, recent studies in the literature do use treatment manuals and monitor treatment integrity, report follow-up data (sometimes up to one year post-treatment), use blind assessors for diagnoses, and use valid and reliable measures to assess outcomes. Recent investigations also provide more discussion of women's post-treatment functioning, including reporting of effect sizes, indices of “good end state functioning” and clinically significant change, and the number of women still meeting clinical diagnostic criteria for PTSD, depression, or other relevant disorders. Studies should continue to include these methodological strengths.

In designing future studies, several key issues must be addressed. Particularly in studies including women immediately after an assault and up to three months post-assault (“recent victims”), a control group must be employed to determine whether improvement resulting from a treatment intervention is beyond the natural symptom decline that many victims evidence in the immediate aftermath of a rape (Kilpatrick & Calhoun, 1988). Secondly, all but one study in the literature (Resick et al., 2002) are underpowered to detect medium effect size differences between two treatments.

Another important focus of future studies will be an effort to dismantle components that may be particularly effective for specific symptoms or that could be used in a stepped approach depending on treatment response. Similarities in treatment techniques are seen among many of the existing treatments, as well as among treatments that are only described in the literature, but have not been empirically evaluated. Rather than comparing treatments with overlapping components, an attempt to identify specific empirically-supported components or principles may provide more valuable information for therapists planning interventions with their own clients. In a recent dismantling study of CPT for violence victims, of whom 31% identified adult sexual assault as their primary trauma, Resick et al. (2008) found that women in the cognitive therapy component had greater PTSD improvement than women in the written exposure component.

Women may come to the attention of helping professionals through a variety of means. Some women are seen immediately post-assault due to injuries or for a forensic rape exam. Other

women may disclose their sexual assault after several weeks or months and visit a student counseling center, a sexual assault center, or approach a private therapist. Women may also talk to their primary physician about symptoms associated with the trauma, such as sleep problems, general anxiety, depression, or pain, without disclosing the sexual assault or even without linking their own symptoms to the event. Many women may not reveal that they were raped for years following the incident. These women may seek treatment directly related to the sexual assault or for issues that are secondary to their assault or to rape-related PTSD (e.g., divorce, decreased libido, anhedonia), possibly still without divulging the trauma. These scenarios and the various helping professionals that could be approached at these different stages (e.g., medical doctor, psychologist, sexual assault advocate, lay counselor, etc.) lead to different questions for treatment. Research is needed to inform treatment decision-making and to identify the most appropriate treatments for victims at multiple phases (i.e., immediate support, prophylactic intervention or brief acute treatments, treatments for victims evidencing chronic symptoms, and treatment for women already treated with efficacious interventions, but still showing elevated symptomatology) and presenting with a variety of problems (i.e., subclinical levels of PTSD, depression, substance abuse, severe comorbid diagnoses, etc.).

Are Clinicians Using These Researched Interventions?

Most currently supported treatments for sexual assault victims include some element of exposure. However, there is evidence that exposure based interventions are not frequently used by clinicians and lay counselors who may be most likely to treat sexual assault victims. In a large survey of doctoral-level psychologists and a smaller sample of psychologists with a specialty in cognitive behavior therapy and trauma, 83% of the main sample and 35% of the specialty sample reported treating none of their PTSD clients with exposure (Becker, Zayfert, & Anderson, 2004). The main sample endorsed a mean of 12 contraindications for exposure therapy, and listed increases in suicidality (76%), self-injury (68%), and dropout (59%) as complications of exposure. These complications and many of the contraindications have not been supported as issues particular to exposure therapy in the research literature. Other concerns about exposure therapy have been noted, including beliefs that exposure will retraumatize the victim, will take autonomy away by “forcing” the victim to recall the trauma, will not allow the victim to recover at her own pace, and will cause decompensation (Cook, Schnurr, & Foa, 2004). Taken together, these data highlight the limited use and knowledge of exposure therapy among doctoral level psychologists. However, it is promising that attempts to train therapists with no prior experience in exposure therapy have met with success (Cahill, Foa, Hembree, Marshall, & Nacash, 2006).

For therapists to initiate use of exposure techniques, considerable support often will be necessary, including ongoing supervision and consultation. Collaborations between research institutions and sexual assault advocacy organizations and trauma therapists in the community could be an avenue for providing therapists with the necessary support to institute changes in treatment approach (see Cook et al. (2004) for additional, thoughtful suggestions for improving dissemination of empirically supported treatments). Finally, effectiveness research is needed to examine intervention outcomes for sexual assault victims treated in community settings.

Conclusions

Data on treatments from the 20 samples included in this review indicate that CPT and PE have the most empirical support for treating sexual assault victims. SIT has also yielded positive treatment effects. These treatments led to gains in posttraumatic stress, depression, and other outcomes. Two small studies using EMDR also showed treatment success. In general, cognitive behavioral interventions led to more positive treatment outcomes than supportive counseling, particularly for PTSD. Yet, there is evidence that one-fifth to one-half of sexual assault victims

may still meet PTSD diagnostic criteria following treatment, even with the most efficacious interventions. More studies are needed specifically targeting this population to determine rates of recovery and good end state functioning, and ways to improve these outcomes.

Most of the well-designed treatment studies require that victims meet diagnostic criteria for PTSD, are at least three months post-rape, and do not have major comorbid diagnoses. Little information is available about treatment-seeking women who do not meet criteria for PTSD. Also, more information is needed about effective ways to treat sexually assaulted women with substance abuse problems or comorbid problems. Finally, few well-designed studies have examined the best intervention approaches for victims in the immediate aftermath of a rape.

There is evidence of a disconnect between treatments identified as the most effective in the research literature and those used by clinicians. Efforts are needed to evaluate treatments believed to be effective by clinicians and to disseminate the most efficacious treatments for sexual assault survivors. Particularly with clinician concerns about the appropriateness of exposure for some clients, a more targeted look at sample selection and a focus on whom specific treatments are most effective and appropriate for is integral in delivering the best possible services to victims.

With a conservative estimate of one in six women experiencing a sexual assault at some point in their lives and a third of these women suffering from PTSD, identification of the most effective treatments for this population has important implications. The contrast between the large number of women who have been sexually assaulted in the United States—over 17 million—and the small number of empirically based studies points to a critical need for scientific study to inform best practices. Sexual assault crisis and advocacy agencies are an important resource for sexual assault victims and also provide an existing infrastructure to disseminate information about and conduct trainings on the most effective treatments specifically for this population. Partnerships between scientific investigators and advocacy groups to conduct translational research and identify best practices are recommended.

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Treatment Outcome Studies with Sexual Assault Victims: Study Details and Results

Sample Details ^a	Treatment Conditions	Study Design	Constructs Examined	Results: Condition Comparisons ^b	Results: Pre-Post ^b and End State Functioning
<i>Interventions for Chronic Symptoms (more than 3 months post-assault):</i>					
David, Simpson, & Cotton (2006) <i>N</i> = 10 (<i>M</i> = 48 yr; 28-62) • No tx dropouts reported • 70% White, 10% Native American • chronic PTSD diagnosis • military sexual assault	GROUP TX	• Multiple baseline pre- post design	• PTSD	N/A	• PTSD reduced at FUs, n.s. at POST (<i>avoidance & arousal</i> only).
	• “Taking Charge” Self-defense and personal safety therapy	• Pre, POST, 6 month FU	• Depression		• Depression & self-efficacy indices improved at POST & FU.
		• recruitment: outpatient clients at Veterans Administration hospital	• Self-efficacy		• Less fear of future assault at POST, n.s. at FU
		• 36 hours tx	• Fear		• Better risk discernment at POST & 3 mon FU, n.s. at 6 mon FU.
			• Risk discernment		
Resick, Nisith, Weaver, Astin, & Feuer (2002) <i>N</i> = 121 (<i>M</i> = 32 yr) 29% dropout rate (50) • 25% AA, 71% White • chronic PTSD diagnosis [data also reported in Kimball (2000) and Nishith et al. (2005)]	• Cognitive Processing Therapy (CPT)	• RA, manual, TAM, IBA	• PTSD	• CPT small PTSD ES & small-moderate depression ES benefit over PE at POST; no consistent differences between PE & CPT by 9 mon FU.	• CPT & PE improved on all outcomes; gains maintained at FU.
	• Prolonged Exposure (PE)	• Pre, POST, 9 month FU	• Depression		• MA no significant change
	• Minimal Attention Control (MA)	• recruitment: ads, referrals from ER, police	• Guilt		• % PTSD diagnosis at POST & FU: 42-47% CPT, 47-53% PE, 98% MA (ITT); 16-20% CPT, 15-30% PE (Completers).
		• 13 hours tx + HW (<i>M</i> = 27 hrs CPT; 54 hrs PE)	• Alexithymia	• CPT better than PE on 2 of 4 guilt indices at POST; FU n.s. (pre-tx levels controlled), but ESs & clinically significant change data favor CPT over PE.	• % Depression diagnosis at FU: 23-31% CPT, 30% PE (ITT); 4-18% CPT, 15-22% PE (Completers).
				• CPT & PE better depression, PTSD, & guilt than MA at POST [large ESs].	• % poor ESF at POST & FU: 47-55% CPT, 60-64% PE (ITT); 24-36% CPT, 32-42% PE (Completers).
Rothbaum (1997) <i>N</i> = 18 (<i>M</i> = 34 yr) 14% dropout rate (3) • Race/ethnicity n.r. • chronic PTSD diagnosis	• Eye Movement Desensitization & Reprocessing (EMDR)	• RA, manual, TAM, IBA	• PTSD	• EMDR improved on PTSD & depression more than WL at POST.	• Pre-post improvement: anxiety, fear, dissociative experiences (but not different from WL change).
	• Wait list (WL)	• Pre, POST, 3 month FU	• Depression		• Gains maintained at FU.
		• recruitment: referrals, rape crisis centers, ads	• Anxiety		• % PTSD diagnosis at POST: 10% EMDR & 88% WL.
		• 6 hours tx	• Fear		
			• Dissociative experiences		
Rothbaum, Ninan, & Thomas (1996) <i>N</i> = 5 (<i>M</i> = 42 yr; 23-50) 29% dropout rate (2) • 40% AA	• Sertraline Tx (Selective Serotonin Reuptake Inhibitor)	• Pre-post design	• PTSD	N/A	• 60% still in clinical PTSD range.
		• Pre, POST			• 80% classified as tx responders (>30% decrease in PTSD symptoms)
	• recruitment: referrals from professionals, ads				• No follow-up data after medication use ended.
	• 12 weeks of tx				

Sample Details ^a	Treatment Conditions	Study Design	Constructs Examined	Results: Condition Comparisons ^b	Results: Pre-Post ^b and End State Functioning
<ul style="list-style-type: none">chronic PTSD diagnosis4-37 years post-assault					
Foa, Molnar, & Cashman (1995) <i>N</i> = 14 (<i>M</i> = 30 yr; 18-48) <ul style="list-style-type: none">Dropouts n.r.21% AA, 79% Whitechronic PTSD diagnosis3 mon-29 yrs post-assault	<ul style="list-style-type: none">Exposure Therapy	<ul style="list-style-type: none">Subsample (dropouts & inaudible tapes excluded), manualPre, POST, 1 year FUrecruitment: some referrals from emergency room staff; otherwise n.r.13.5 hours tx + HW	<ul style="list-style-type: none">PTSDDepressionAnxietyFearNarrative: organization, thoughts & feelings actions & dialogue, fragmentation	N/A	<ul style="list-style-type: none">Significant decreases on <i>PTSD, depression, anxiety, & fear</i>.Changes between 1st & last session narratives: increases in <i>organized thoughts and thoughts & feeling</i>.100% improved on <i>PTSD</i> (mean improvement 68.5%). 13 of 14 improved on <i>depression</i> (mean 50% symptom reduction).
Lindsey (1995) <i>N</i> = 5 (<i>M</i> = 29 yr; 18-42) <ul style="list-style-type: none">17% dropout rate (1)100% Whitechronic PTSD diagnosis3 mon-26 yrs post-assault	<ul style="list-style-type: none">Eye Movement Desensitization & Reprocessing Therapy (EMDR)	<ul style="list-style-type: none">Pre-post design, manualPre, POST, 1 month FUrecruitment: ads, referrals from rape centers & professionals6-9 hours tx	<ul style="list-style-type: none">PTSDDepressionAnxietyGlobal distressDissociative symptoms	N/A	<ul style="list-style-type: none">Decrease on all outcomes by FU.All had clinically significant change on <i>PTSD, depression, & global distress</i>; 80% clinically significant change on <i>anxiety</i>.<i>PTSD diagnosis</i>: 40% at POST; 0% at FU.
Resick & Schmicke (1993) <i>N</i> = 9 (<i>M</i> = 30 yr) <ul style="list-style-type: none">Dropouts n.r.78% White, 11% Hispanicchronic PTSD diagnosis5 mon-14 yrs post-assault	<ul style="list-style-type: none">Cognitive Processing Therapy (CPT)	<ul style="list-style-type: none">Pre-post design, manualPre, POST, 6 month FUrecruitment: referrals from rape centers & professionals, self-referral18 hours tx + HW	<ul style="list-style-type: none">PTSDDepressionHopelessnessSelf-blameSCL90 scales	N/A	<ul style="list-style-type: none">Pre-post decrease on all outcomes.Gains maintained at FU.11% had <i>PTSD diagnosis & major depressive disorder</i> at POST & FU.
Resick & Schmicke (1992, 1993) <i>N</i> = 39 (<i>M</i> = 31 yr; 19-45) <ul style="list-style-type: none">5% dropout rate (2)10% AA, 90% White	GROUP TX <ul style="list-style-type: none">Cognitive Processing Therapy (CPT)Wait list (WL) [Wait list treated at POST]	<ul style="list-style-type: none">Victims on WL ≥12 weeks = WL group (not RA), manual, IBA for ½Pre, POST, 6 month FUrecruitment: referrals from rape centers & professionals, self-referral18 hours tx + HW	<ul style="list-style-type: none">PTSDDepressionSocial adjustmentHopelessnessBlameSCL90 scales	<ul style="list-style-type: none">WL and CPT compared on <i>PTSD & depression</i> only. At POST, CPT improved on these outcomes; WL no change.	<ul style="list-style-type: none">CPT: Pre-POST improvement on all outcomes; maintained at FU.WL no change pre to POST. After all women treated (<i>N</i> = 36):POST: 11% <i>PTSD diagnosis</i>; 14% <i>major depressive disorder</i>.

Sample Details ^a	Treatment Conditions	Study Design	Constructs Examined	Results: Condition Comparisons ^b	Results: Pre-Post ^b and End State Functioning
<ul style="list-style-type: none">significant PTSD symptoms (94% PTSD diagnosis)3 mon–30 yrs post-assault					
Foa, Rothbaum, Riggs, & Murdock (1991) <i>N</i> = 45 (<i>M</i> = 32 yr)	<ul style="list-style-type: none">Stress Inoculation Training (SIT; exposure element not included)	<ul style="list-style-type: none">RA, session content specified, TAM, IBA	<ul style="list-style-type: none">PTSD	<ul style="list-style-type: none">SIT less avoidance & total PTSD at POST than SC or WL.	<ul style="list-style-type: none">All conditions improved on all measures at POST; except, PTSD avoidance & intrusion reduced at POST for SIT & PE only.
<ul style="list-style-type: none">18% dropout rate (10)					
<ul style="list-style-type: none">25% AA, 73% White	<ul style="list-style-type: none">Prolonged Exposure (PE)Supportive Counseling (SC)	<ul style="list-style-type: none">Pre, POST, 3 month FUrecruitment: referrals from victim assistance agencies & ads	<ul style="list-style-type: none">DepressionAnxietyFear	<ul style="list-style-type: none">PTSD clinically significant change: significant at POST (SIT 71%, PE 40%, SC 18%, WL 20%); n.s. at FU (SIT 67%, PE 56%, SC 33%).	<ul style="list-style-type: none">Gains maintained at FU.
<ul style="list-style-type: none">chronic PTSD diagnosis	<ul style="list-style-type: none">Wait list (WL)	<ul style="list-style-type: none">13.5 hours tx + HW		<ul style="list-style-type: none">% with PTSD diagnosis: significant at POST (SIT 50%, PE 60%, SC 90%, WL 100%) n.s. at FU (SIT & PE 45%, SC 55%, WL treated).	
<ul style="list-style-type: none">3 mon–12 yrs post-assault					
Resick, Jordan, Huter, & Mathoefer-Dvorak (1988) <i>N</i> = 37 (<i>M</i> =29 yr)	GROUP TX	<ul style="list-style-type: none">Quasi-random group assignment, manual for SIT & AT, TAM	<ul style="list-style-type: none">Depression	<ul style="list-style-type: none">No differences between SIT, AT, & SC.	<ul style="list-style-type: none">SIT, AT, & SC: significant pre- post improvement on all outcomes; WL no change.
<ul style="list-style-type: none">14% dropout rate (6)	<ul style="list-style-type: none">Stress Inoculation Training (SIT)	<ul style="list-style-type: none">Pre, POST, 6 month FU	<ul style="list-style-type: none">Anxiety		<ul style="list-style-type: none">Improvements maintained through 6 month FU, except depression, self esteem, & some fear indices maintained through 3 month FU.
<ul style="list-style-type: none">19% AA, 81% White	<ul style="list-style-type: none">Assertion Training (AT)	<ul style="list-style-type: none">recruitment: referrals from rape centers, media, flyers	<ul style="list-style-type: none">ParanoiaPsychoticism		
<ul style="list-style-type: none">problems with rape-related fear and anxiety	<ul style="list-style-type: none">Supportive + Information (SC)	<ul style="list-style-type: none">12 hours tx	<ul style="list-style-type: none">PTSD Avoidance & intrusion		<ul style="list-style-type: none">~33%, ~25%, & 23-33% of treated women improved >1 SD on global distress, phobic anxiety, & depression, respectively, at POST.
<ul style="list-style-type: none">3 mon–34 yrs post-assault	<ul style="list-style-type: none">Wait list (WL)		<ul style="list-style-type: none">Self-esteemFearAssertivenessNegative emotions		
Veronen & Kilpatrick (1983) <i>N</i> = 6 (age n.r.)	<ul style="list-style-type: none">Stress Inoculation Training (SIT)	<ul style="list-style-type: none">Women selected tx (not RA), manual, TAM	<ul style="list-style-type: none">Anxiety	<ul style="list-style-type: none">N/A	<ul style="list-style-type: none">Improvement on all outcomes.
<ul style="list-style-type: none">Dropouts & ethnicity n.r.		<ul style="list-style-type: none">Pre, POST, 3 mon FU	<ul style="list-style-type: none">Fear		<ul style="list-style-type: none">POST: women still 1SD above norms for “normal” females on some measures; fear below mean for non-victims.
<ul style="list-style-type: none">elevated fear & avoidance		<ul style="list-style-type: none">recruitment: n.r.	<ul style="list-style-type: none">Mood		
<ul style="list-style-type: none">3 mon – 7 yrs post-assault		<ul style="list-style-type: none">20 hours tx + HW	<ul style="list-style-type: none">SCL90 scales		

Sample Details ^a	Treatment Conditions	Study Design	Constructs Examined	Results: Condition Comparisons ^b	Results: Pre-Post ^b and End State Functioning
Veronen & Kilpatrick (1982a) <i>N</i> = 15 (age n.r.) • Dropouts & ethnicity n.r. • elevated fear & avoidance	• Stress Inoculation Training (SIT)	• Pre-post design, manual • Pre, POST • recruitment: n.r. • 20 hours tx + HW	• Depression • Anxiety • Phobic anxiety • Fear • Tension	N/A	• Improvement on all outcomes.
<i>Interventions for Acute Symptoms (less than 3 months post-assault):</i>					
Foa, Zoellner, & Feeny (2006) <i>N</i> = 42 (<i>M</i> = 34 yrs) • 27% dropout rate (15) • 63% AA, 31% White • Acute PTSD diagnosis • 1-1.5 months post-assault	• Brief CBT (bCBT) • Supportive Counseling (SC) • Assessment Condition (AC)	• RA, manual, TAM, IB-A • Pre, POST, 1 year FU • recruitment: ads. referrals from ER, police • 8 hours tx + bCBT HW	• PTSD • Depression • Anxiety • End state functioning (ESF; cutoffs on PTSD & depression)	• At POST: bCBT better <i>ESF</i> (71% bCBT, 25% SC) & <i>self-reported PTSD</i> than SC. FU: n.s. [faster recovery for bCBT]. • bCBT & AC: no differences at POST or FU.	• All conditions improved on all measures at POST; maintained at FU.
Echeburua, Corral, Sarasua, & Zubizarreta (1996) <i>N</i> = 20 (<i>M</i> = 22 yr: 15-45) • Dropouts & ethnicity n.r. • Acute PTSD diagnosis • 1 to 3 months post-assault	• Cognitive Restructuring and Coping Skills (CR/CS) • Progressive Relaxation (PR)	• RA • Pre, POST, 1 year FU • recruitment: treatment seekers, counseling center in Spain • 4-5 hours tx • No control group to account for natural recovery in this time frame	• PTSD • Depression • Anxiety • Fear • Adaptation	• CR/CS lower <i>PTSD symptoms</i> than PR by 12 month FU (<i>reexperiencing</i> and <i>avoidance</i> subscales). • All other outcomes: n.s.	• CR/CS & PR improved on all outcomes at POST & FU, except CR/CS <i>fear</i> n.s. at POST. • Continued improvement from POST to FU on <i>PTSD</i> and <i>adaptation</i> . Also, for CR/CS only, <i>fear & depression</i> . • % <i>PTSD diagnosis</i> : n.s. At POST; 20% of CR/CS & 50% of PR. At FU: 0% of CR/CS & 20% of PR.
Veronen & Kilpatrick (1982b) <i>N</i> = 15 (age n.r.) • Dropouts & ethnicity n.r. • all rape victims eligible • 6-21 days post-assault	• Brief Behavioral Intervention Procedure (BBIP) • Repeated (RA) & Delayed (DA) Assessment	• RA, “highly structured” tx • Pre, POST • recruitment: n.r. • 4-6 hours tx	Specific outcomes examined n.r.	• No differences between BBIP, RA, & DA conditions.	n.r.
<i>Interventions for Chronic or Acute Symptoms (range of time since assault):</i>					
Frank, Anderson, Stewart, Dancu, Hughes, & West (1988) <i>N</i> = 84 (<i>M</i> = 23 yrs)	• Cognitive Behavior Therapy (CBT)	• RA, session content specified, TAM, IB-A • Pre, POST	• Depression • Anxiety • Fear • Self-esteem • Social functioning	• No differences between CBT & SD conditions.	• CBT & SD had significant change on all outcomes.

Sample Details ^a	Treatment Conditions	Study Design	Constructs Examined	Results: Condition Comparisons ^b	Results: Pre-Post ^b and End State Functioning
<ul style="list-style-type: none">• 38% dropout rate (52)• 19% AA, 81% White• all rape victims eligible• <1mon–1 yr post-assault	<ul style="list-style-type: none">• Systematic Desensitization (SD)	<ul style="list-style-type: none">• recruitment: referral from rape crisis centers• 14 hours tx + CBT HW• No control group to account for natural recovery in this time frame	<ul style="list-style-type: none">• SCL90 scales• Expressed & wanted relationship inclusion, control, & affection• Self-reported improvement	N/A	<ul style="list-style-type: none">• Immediate (< 1 month post-assault) and delayed (~1.5mon–1 yr post-assault) treatment seeker groups both showed improvement.
Cryer & Beutler (1980) <i>N</i> = 7 (age range 21–38 yrs) 22% dropout rate (2)	GROUP TX <ul style="list-style-type: none">• Group Therapy (peer support; other details n.r.)	<ul style="list-style-type: none">• Pre-POST design• Pre, POST• recruitment: emergency room staff referred• 15 hours tx• No control group to account for natural recovery in this time frame	<ul style="list-style-type: none">• SCL90 scales• Expressed & wanted relationship inclusion, control, & affection• Self-reported improvement	N/A	<ul style="list-style-type: none">• <i>Symptom intensity, obsessive-compulsive worry, anxiety, phobic anxiety, expressed control over others</i> decreased at POST.• 6 of 7 women decreased 10+ t-scores in at least one scale.• 3 of 7 reported only slight tx gains, with one worsening during tx.

Note. n.r. = not reported. n.s. = not significant. yr = years old. AA = African American. mon = month(s). tx= treatment. RA = random assignment to treatment conditions. manual = manual used. TAM = treatment adherence monitored. IBA= independent blind assessor used. POST= post-treatment. FU = follow-up assessments. HW = homework. ITT = intent to treat sample. SCL90 scales = somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticsm; also number of symptoms and global severity index (Derogatis, 1977). ESF = end state functioning. Treatment condition abbreviations specified within row.

^aReported sample size is number of women completing treatment; treatment dropouts also specified when information available.

^aGenerally only significant findings reported. For examined constructs that are not reported on in results columns, treatment condition or pre-post differences were not significant.

Table 2
Treatment Sample Characteristics Compared to National Rape Data

Sample	Sexual Assault Treatment Studies (17 Samples) ^a	Raped women in U.S. based on 1995 NVAW study & 1995 census data
N	590	<i>N</i> = ~17,723,000 women raped in lifetime (17.6%) # of Women in U.S. (1995) ϕ ~ 100,697,000
Ethnicity	346 White (non-Hispanic) (71.3%) 139 total non-White (non-Hispanic) (28.7%) 4 Hispanic white (0.8%) 123 African American (25.4%) 2 American Indian/Alaska Native (0.4%) 2 Asian/Pacific Islander (0.4%) 8 Other (1.6%) [12 studies provided data]	13,852,000 White (non-Hispanic) (78.2%) 3,871,000 total non-White (non-Hispanic) (21.8%) 348,000 Hispanic white (2.0%) 1,830,000 African American (10.3%) 373,000 American Indian/Alaska Native (2.1%) 112,000 Asian/Pacific Islander (0.6%) 1,207,000 mixed race (6.8%)
Perpetrator ^c	118 Known (48.4%) 53 Date/Acquaintance (21.7%) 126 Stranger (51.6%) [7 studies provided data]	16,031,000 total Known (90.5%) 9,262,000 Intimate partner (52.3%) 4,551,000 Acquaintance (25.7%) 2,217,000 Relative (12.5%) 3,122,000 Stranger (17.6%)
Prior Rape History	<ul style="list-style-type: none"> 78/261 child sexual abuse history (29.9%) [5 studies provided data] 102/219 prior/multiple rapes (46.6%) [3 studies provided data] 	<ul style="list-style-type: none"> Number of rapes: <i>M</i> = 2.9 3,101,525 adult rape victims were also raped in adolescence or childhood (~17.5%) # of different rapists: <ul style="list-style-type: none"> 13,859,000 - 1 person (78.2%) 2,393,000 - 2 people (13.5%) 1,471,000 - raped by 3+ (8.3%)
Assault Characteristics	<ul style="list-style-type: none"> 57.0% (69/121) threatened to harm or kill victim [2 studies] 38.7% (36/90) any physical assault during rape [2 studies] 47.8% (89/186) weapon used/shown [4 studies] 46.1% (49/102) any injury [3 studies] 80.7% (46/57) reported rape to police [2 studies] 78.4% (29/37) received medical treatment [1 study] 	<ul style="list-style-type: none"> 31.9% threats to harm or kill victim 37.8% any physical assault during rape (ranging from slap to attempted to drown) 10.8% weapon used 31.5% victim physically injured (74% were scratches, bruises, or welts) 19.1% rape reported to police 36.2% received medical treatment 43.1% fear of serious injury/death during assault

^aWhen available, demographic data reported for entire intent to treat sample. When unavailable, data reported for treatment completers.

^bBased on women age 18 and older in 1995 (Tjaden & Thoennes, 2006).

^cProportions for perpetrator relationship add to more than 100% for NVAWS data because some women reported the assailant relationship for more than one perpetrator.