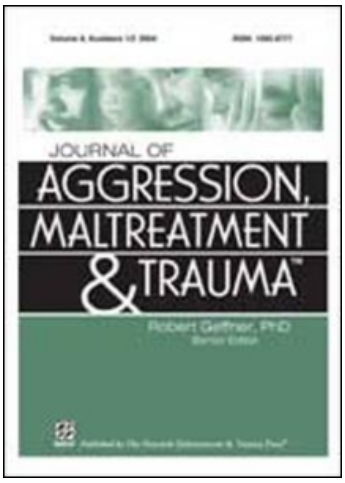

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Experiential Avoidance and Post-Traumatic Stress Disorder: A Cognitive Mediational Model of Rape Recovery

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SUMMARY. Does experiential avoidance predict PTSD severity among rape survivors? We tested a hypothesized model where causal attributions, cognitive schemas, and memory characteristics mediated the relationship between experiential avoidance and PTSD. Experiential avoidance was measured as a cognitive coping strategy; women scoring high on this measure did not try to integrate or make meaning of their rape experiences, but rather attempted to block out memories of

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their rapes or minimize or rationalize their rape experiences in some way. Data were cross-sectional. Participants were rape survivors (N = 139; 23% with current PTSD). Results included a measurement model of social cognitive factors and PTSD and the structural model. Two sets of pathways were delineated, both exacerbated PTSD. Overall, 60% of the variance in PTSD was explained. The results suggested that the effects of experiential avoidance on psychological outcomes were detrimental, but small. Re-experiencing was the only memory characteristic to mediate the rape-PTSD relationship. Causal attributions and maladaptive belief changes were far more powerful than any other predictors in explaining prolonged distress. Neither was strongly affected by levels of avoidance.

KEYWORDS. Trauma, mediators, sexual assault, experiential avoidance, PTSD, rape, recovery

Post Traumatic Stress Disorder (PTSD), characterized by intrusive recollections and cycles of avoidance and arousal, has been diagnosed in as many as 94% of rape victims assessed immediately after an assault (Rothbaum, Foa, Riggs, Murdock, & Walsh, 1992). This statistic suggests that almost all rape survivors experience some serious form of stress reaction following a sexual assault. Only the minority, one-third, go on to develop chronic PTSD, however (Solomon & Davidson, 1997). What causes one survivor to develop PTSD while another survivor does not? Certainly, no two rapes are exactly the same. But even people who encounter the identical traumatic event, such as two people who are in the same floor of a building during a natural disaster, often perceive and mentally experience it in different ways. In searching for predictors of PTSD, attention has focused on individual differences including demographic characteristics, preexisting psychopathology, social support, attitudes, crime descriptors, and cognitions such as perceptions of imminent death or bodily harm (e.g., Kilpatrick et al., 1989; Norris, 1992; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). The intent of the present study is to test an expanded conceptualization of solely cognitive mediators of rape-induced PTSD in an effort to understand the process by which one survivor, but not another, would develop such debilitating symptoms.

To begin our discussion of experiential avoidance and PTSD, we first provide a definition of experiential avoidance. This definition is followed by an overview of the theories that influenced the conceptualization of our model and a description of the hypothesized model itself. A literature review of experiential avoidance is then presented which includes a general discus-

sion of the current problems with research on avoidance. Finally, several brief reviews of the empirical findings that connect each of the mediating cognitive factors and describe their associations with psychological distress conclude the introductory section of this article.

DEFINITION OF EXPERIENTIAL AVOIDANCE

Because intrusive memories can be disruptive and painful, many survivors go to great lengths to avoid reminders of the trauma.

> Experiential avoidance is the phenomenon that occurs when a person is unwilling to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioral predispositions) and takes steps to alter the form or frequency of these events and the contexts that occasion them. (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996, p. 1154)

Experiential avoidance thus refers to cognitive, emotional, and behavioral avoidance strategies. Cognitive avoidance can include such strategies as not choosing to, or not being able to, think about the event, and rationalizing or minimizing the event. Behavioral avoidance involves avoiding places and people that remind a survivor of the experience, or refusing to do anything about the situation. Emotional avoidance generally refers to a survivor's efforts to avoid associated feelings (e.g., anger, guilt, sadness) when she is reminded of the rape.

Model Conceptualization

The intent of the present study is to expand the existing PTSD literature by testing an integrative model of the relationships between several different cognitive, social, and psychological elements, instead of examining each single category of variables separately. Our model focuses specifically on cognitive coping mechanisms, social cognitions, and reconstructed memories in an attempt to describe and understand the pathways by which cognitive factors mediate the relationship between rape and subsequent PTSD.

Several rich conceptualizations about the process by which rape leads to PTSD symptoms informed our model. We looked to both social cognitive theories that emphasize the impact of trauma on survivor's individual belief systems and preexisting views of the world (e.g., Harvey, 1996; Horowitz, 1986; Janoff-Bulman, 1992), as well as information-processing theories of PTSD that focus more on how trauma-related information is cognitively

represented and processed (e.g., Foa & Riggs, 1995). Brewin, Dalgleish, and Joseph's (1996) dual representation theory of PTSD was also influential in the construction of our model. Their theory not only explains the different types of memory that are associated with PTSD, but also takes elements of social-cognitive theories into account. According to Brewin and his colleagues, emotional processing of traumatic events refers to the manipulation of representations of past and future events and associated bodily states in working memory. This process involves both the activation of unconscious detailed sensory and physiological information about the trauma, and the conscious attempt to accommodate information that is incompatible with preexisting beliefs by searching for meaning and making attributions about cause. Recovery occurs when memories of the trauma have been fully processed and integrated with the survivor's other memories and beliefs about the self and world.

The model also benefited from discussions of mechanisms of remembering and forgetting. Christianson (1997) pointed to two seemingly contradictory mechanisms of emotional memory. The first makes traumatic memory persistent, a function that has evolved to assist humans in identifying and remembering threatening situations. Though persistent and unpleasant, traumatic memories are not always accessible, however. Thus, it can be inferred that a second mechanism operates to assist in ''forgetting'' unpleasant memories from conscious awareness.

Although the present study does not attempt to construct a comprehensive model of PTSD, these theoretical conceptualizations were critical to our process of determining the serial ordering of the model. We used these theoretical leads to hypothesize an a priori cognitive mediational model of rape recovery, and looked to the past empirical findings (described in the literature review) to ground each hypothesized link.

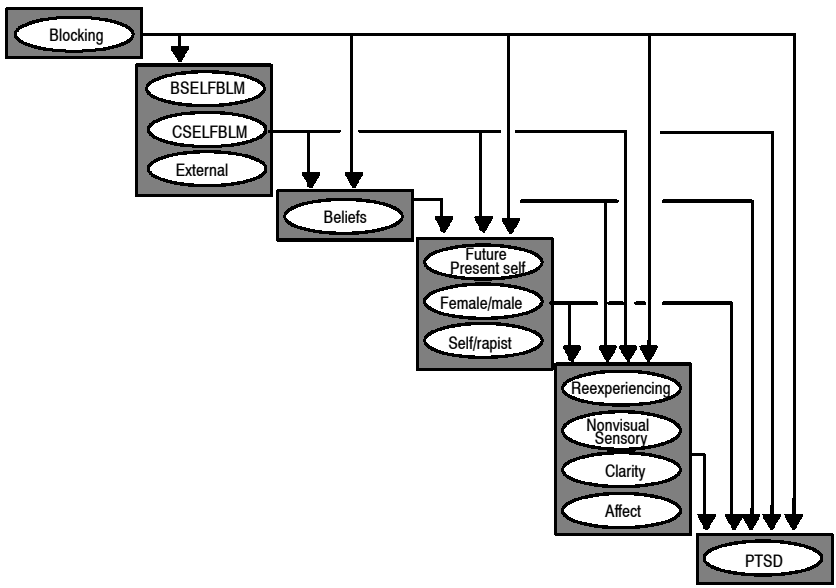
The mediational model (illustrated in Figure 1) proposes the following causal sequence. First, experiential avoidance, as measured as a cognitive coping strategy (''blocking''), influences social cognitions about rape. The social cognitions included in this model are causal attributions (behavioral and characterological self-blame and external blame) and cognitive schemas (beliefs and personal constructs). Second, both cognitive coping strategy and social cognitions influence the qualities of reconstructed rape memory. Third, the operation of these mediators substantially predicts PTSD symptom severity.

The causal relationships hypothesized between the attribution variables were not based on previous work on these particular variables, but were based on more general theories of causal attribution. Looking at the entire pattern of social cognitions tested, our causal order goes from Behavioral Self-Blame to Characterological Self-Blame to External Blame to Beliefs (about the world and one's place in it). This sequence implicitly goes from

local, specific, and unstable attributions (thought to be the least damaging) to more global, general, and stable attributions regarding blame for the event (the rape experience). First a survivor blames the rape on one particular action, then she blames her character, then she blames others, and finally she blames the nature of the world in general or at least her social place within it.

In Figure 1, the solid arrows below the diagonal that connect the successive categories indicate the major sequential pathways that were assigned causal priority according to the mediational hypothesis. The dashed arrows above the diagonal indicate alternative hypotheses that there were residual direct effects between the categories, even after the direct and indirect effects of the hypothesized sequence were completely accounted for. The objective was to restrict as many of these dashed paths as was consistent with the data to achieve a fully mediated model.

FIGURE 1. Conceptual Model for Cognitive Mediation of the Impact of Experiential Avoidance on PTSD



LITERATURE REVIEW

Experiential Avoidance

Researchers have both theoretically and empirically attempted to predict the effects of using such experiential avoidance coping strategies. The approach-avoidance theory of coping predicts experiential avoidance to play an adaptive role immediately following a traumatic event but a maladaptive one in the long-run. According to theory, avoidance coping permits victims to confront their traumatic experiences in manageable doses immediately after an event, but ultimately interferes with the integration process necessary for recovery over the long term (e.g., Horowitz, 1986; Lazarus & Folkman, 1984; Roth & Cohen, 1986). Some studies in which avoidance coping was measured immediately after an assault support the immediate adaptive role of avoidance. Not thinking or doing anything about the problem, and keeping busy and suppressing negative thoughts were associated with less psychological distress immediately following a rape (Frazier & Burnett, 1994; Frazier, Klein, & Seales, 1996). Evidence also supports the maladaptive effects of avoidance in the long term. Several studies of adult survivors of child sexual abuse and rape survivors interviewed at least one year post rape found avoidance coping to predict psychological distress (e.g., Coffey, Leitenberg, Henning, Turner, & Bennett, 1996; Santello & Leitenberg, 1993; Ullman, 1996). Alternatively, Arata's (1999) more approach-oriented expressive coping, which includes behaviors such as expressing and talking about feelings around others, was associated with fewer psychological symptoms.

Other experiential avoidance data, however, point in the opposite direction. Prospective studies of avoidance as measured by the Impact of Events Scale (Horowitz, Wilner, & Alvarez, 1979) predicted psychological disorder early on, but not later in recovery in populations of trauma witnesses and survivors of life-threatening accidents (Creamer, Burgess, & Pattison, 1992; Joseph, Yule, & Williams, 1994, 1995).

The inconsistencies in the coping literature can at least partially be attributed to variability in how experiential avoidance has been conceptualized and measured. Most of the standardized avoidance measures tap into different combinations of the various cognitive, emotional, and behavioral elements of experiential avoidance. For example, the Avoidance subscale of the Impacts of Events Scale (IES; Horowitz et al., 1979) taps into both emotional (e.g., "I avoid letting myself get upset when I think about it or am reminded of it") and behavioral avoidance (e.g., "I stay away from reminders of it"). The Disengagement subscales of the Coping Strategies Inventory, on the other hand, focus on strategies of cognitive and behavioral avoidance (e.g., "I avoided thinking/doing anything about the situation") as well as statements directed at self-blame and wishful thinking that the event would go away

(Tobin, Holroyd, Reynolds, & Wigal, 1989). Although it is not possible to describe every measure of experiential avoidance here, the examples presented illustrate the heterogeneous way in which this construct has been conceptualized and operationalized.

In summary, the inconsistencies in the avoidance coping literature appear to be attributable to both when avoidance was measured (how long after a rape) and how it was operationalized and measured. In addition, it appears that experiential avoidance may play different roles for different groups of trauma survivors. Evidence suggests that avoidance coping may be more adaptive for some types of trauma survivors than for others. As described above, studies of sexual abuse survivors generally find avoidance to be helpful in the short-term but maladaptive over time. In contrast, studies of witness and accident populations report the opposite. It is impossible, however, to separate and determine which of these three issues (time, measurement, or population) best explains the inconsistencies in the literature. Unfortunately, disentangling these confounds and resolving the inconsistencies in the literature are beyond the scope of the present study. Our awareness of these problems, however, influenced the manner in which we chose to measure and define experiential avoidance in this study.

Social Cognitions

Causal Attributions. Causal attributions, including the way in which a rape survivor apportions blame for the event, have been tied directly to post-traumatic functioning. Janoff-Bulman (1979, 1992) hypothesized that behavioral self-blame (blaming the event on one's behavior), as opposed to characterological self-blame (blaming the event on one's character), was adaptive because survivors experience a sense of control and believe they can avoid future sexual assaults. Empirical data, however, have actually associated both forms of self-blame with higher psychological distress in rape survivors (Abbey, 1987; Arata, 1999; Frazier, 1990; Frazier & Schauben, 1994; Hill & Zautra, 1989; Meyer & Taylor, 1986; or see Kushner, Riggs, Foa, & Miller, 1992, for a study of general uncontrollabililty and distress in crime victims).

Although most of the attribution literature has focused on these two types of self-blame, Frazier (1990) found that survivors actually blamed external factors, such as the rapist and society, more often than they blamed themselves for the cause of their rape. Blaming external factors, however, was not found to be as harmful as blaming one's self for the rape. Only behavioral and characterological self-blame were associated with depression in this sample of rape survivors. Regardless, rape survivors who report spending more time thinking about why the rape occurred have been found to suffer more psychological symptoms (Frazier, 1990; Frazier & Schauben, 1994). Thus, spending

the mental energy to assign blame, even to someone else, is not predicted to be an adaptive exercise.

Cognitive Schemas. Traumatic experiences such as rape are thought to affect both a survivor's beliefs about the world and her personal schemas or constructs, which are beliefs about herself and the people around her. Kelly (1955) proposed that people form personal constructs in an attempt to understand and predict people and events. Changes in these constructs are thought to be disruptive and stressful and to have consequences on some aspects of recovery (e.g., Janoff-Bulman, 1985; McCann & Pearlman, 1990).

Certain basic assumptions or schemas are thought to be especially vulnerable to trauma. Assumptions about power, safety, and trust, for example are often disrupted by traumatic experiences (e.g., Janoff-Bulman, 1992; McCann & Pearlman, 1990). Maladaptive changes in these types of beliefs have been shown to mediate the relationship between violent crime and psychological distress (Norris & Kaniasty, 1991). Frazier and Searles (1997) found that women raped by strangers, compared to those raped by men they knew, engaged in more behavioral and characterological self-blame and showed more maladaptive change in their core beliefs. Harter, Alexander, and Neimeyer (1988) similarly found that sexual abuse was linked to increased discrepancy in ratings of personal constructs of the self contrasted to ratings for significant others.

Memory

Attempts to account for traumatic memory processing must consider the ''interplay between social and cognitive mechanisms'' (Wright & Gaskell, 1992, p. 277). Freyd's theory of shareability argues that certain characteristics and properties of a memory change just through the process of sharing information. As a person intends to share a memory with someone else, the memory is recoded to be less continuous and dynamic and more categorical and easier to communicate (Freyd, 1996). The social context actually changes the qualities of the memory. Thus remembering involves not only accessing available information, but also reconstructing the past in the present to meet desired psychosocial uses, and reconstructing with others through collective remembering of personal and historical events. In the proposed model, social cognitions are hypothesized to directly influence the characteristics of the reconstructed rape memory. This conceptualization represents an expansion of our earlier findings that the retrospective construal of an unwanted sexual act influenced several dimensions of memory (Koss, Figueredo, Bell, Tharan, & Tromp, 1996).

Intrusive memories of trauma accompanied by cyclic attempts to avoid triggers of memories are the central feature of PTSD (American Psychiatric Association, 1994). Thus, memory phenomena are central to our understanding

of PTSD. Traumatic memories, however, have many other characteristics beyond the extent to which they intrude involuntarily into consciousness. Traumatic memories are said to be retrieved in the form of sensory and affective elements that include visual, olfactory, affective, auditory, and kinesthetic experiences (van der Kolk, 1996). We hypothesized that several dimensions of recall assessed by the Memory Characteristics Questionnaire (Suengas & Johnson, 1988) may increase the likelihood of PTSD. These dimensions of voluntary recall include affective intensity, vivid/lifelike detail, extensive sensory components, and thoughts, feelings, and bodily sensations reminiscent of the original experience during memory encoding.

METHOD

Participants

Participants were recruited by a postal survey that screened for rape and requested volunteers for a paid, private interview (see Koss et al., 1996). Surveys were mailed to 5,411 female medical center and university employees. Responses were received from 2,142 (40% response rate). Of these women, 618 (29%) met selection criteria for rape, and 279 (45%) consented for interviews. Subsequently, 267 (95%) were interviewed. The present study focused on the last 139 of these interviews where supplemental qualitative assessment was added to the standard quantitative measures.

Demographic characteristics of the survey respondents (mean age 40 years), the full interview sample (mean age 38 years), and the subsample examined here (mean age 39 years) are presented in Table 1. Statistical comparison is precluded because the three samples are subsets of each other. Inspection, however, revealed minimal differences in the demographic makeup of these groups. The present sample, compared to survey respondents, contained slightly fewer Asians, more people with no religious affiliation, more people with some college but fewer with graduate degrees, and more women with incomes lower than $7,500 but fewer with incomes over $50,000. Overall, the participants in the present study can be characterized as urban working women who were predominately white (89%), Protestant (39%), educated (6% with less than high school education), married/living with a partner (48%) or divorced (30%) with middle to lower income (only 14% had household incomes over $50,000, 19% reported incomes of less than $15,000).

Although this was a ''non-clinical'' sample and the mean time since the rape was slightly over 15 years, 23% of the survivors in the current study still met diagnostic criteria for current PTSD according to DSM-IV criteria (American Psychiatric Association, 1994). Thus, clinically significant levels of pathology were reflected in the sample.

TABLE 1. Demographic Frequencies in Percentages

Variable	Subsample (N = 137)	Full Sample (N = 253)	Survey Data (N = 2141)
Race			
African American	0.7	1.2	1.2
American Indian	0.7	0.4	0.9
Asian	0.7	0.4	2.2
Hispanic	7.1	9.4	7.9
White	89.3	87.9	87.7
Religion			
Catholic	27.1	31.6	30.7
Protestant	38.6	30.1	37.7
Jewish	2.1	3.1	4.3
Christian	12.9	17.6	14.8
Other	5.7	5.9	4.7
None	12.9	11.3	7.8
Education - completed			
Grades 7-12	1.4	1.6	1.1
High School Graduate (or GED)	4.3	5.9	4.7
Business/tech school	4.3	7.0	3.8
Some college	29.3	29.7	22.7
College degree	26.4	31.6	28.0
Graduate degree	33.6	23.8	39.6
Total Household Income - last year			
$7,500 or less	5.7	3.4	2.6
$7,501-15,000	12.9	11.7	9.2
$15,001-25,000	32.1	30.9	19.3
$25,001-35,000	15.0	17.2	17.4
$35,001-50,000	20.0	22.7	20.0
Over $50,000	13.6	13.7	31.6
Marital Status			
Single	16.4	16.0	17.1
Married	36.4	39.5	56.2
Living with Partner	12.1	14.1	7.0
Separated or Divorced	29.3	26.6	16.8
Widowed	4.3	3.1	2.8

Measures

Rape. The Sexual Experiences Survey, previously modified for use with women workers (Koss, Woodruff, & Koss, 1991) was used to screen for rape. Five questions operationalized rape, which was legally defined as vaginal, oral, or anal penetration against consent, by force, threat of force, or when the victim was intoxicated and incapable of giving consent. Penetration, no matter how slight, was sufficient to complete rape. The recall period was bounded by the participant's 14th birthday, representing the cut-off age for statutory rape. Only two states set a statutory age (the age below which sexual penetration is automatically rape) below 14 years (Searles & Berger, 1987). An example of a typical item includes: ''Has a man made you have sex by using force or threatening to harm you? When we use the word 'sex' we mean a man putting his penis in your vagina even if he didn't ejaculate (come).'' The word ''rape'' was not used in these questions, permitting a woman to be classified by researchers as a rape victim without necessarily accepting that self-label. Internal consistency reliability in the present data was .72, which is consistent with other published figures. All survivors were rescreened at interview and all endorsed one or more items consistent with rape.

Cognitive Avoidance

Given the variability in conceptualization and measurement of avoidance coping evident in the literature, we chose to build a measure from qualitative data allowing the components to emerge phenomenologically. Operating from an experiential avoidance perspective, our intention was to measure the extent to which participants avoided thoughts and emotions related to their trauma. Qualitative data for this measure were obtained by asking participants to complete a lifeline and mark and label the significant events in their lives. This technique was based on theoretical models of recovery that emphasize integrating the event into the life story (e.g., Brewin et al., 1996; Harvey, 1996). Participants then responded to follow-up questions depending on whether or not they placed the index rape, which was identified in screening as the unwanted sexual experience they remembered best, among the significant points in their lifelines. Those who placed the index rape on their lifelines were asked, ''What role did or does it play in your life?'' and ''Why was this experience important to you?'' Those who did not place the index rape on their lifelines were asked instead, ''I notice that you did not list the unwanted sexual experience as a significant event on your lifeline. What role has this event played in your life?'' and also ''Can you tell me in what ways has it been less significant than the events you chose?'' These responses were analyzed inductively (Patton, 1990). The categories of analysis were not im-

posed on the data prior to data collection and analysis, but instead emerged from the data. Labels used came from the language of the respondents. The coping strategies identified in the qualitative material are described below.

Blocking consisted of responses associated with not wanting, or not being able, to remember or think about the event, as well as feeling the experience was dream-like or unreal. Included were all responses suggesting that a participant attempted to block memories as a coping strategy, regardless of the effectiveness of their efforts. The term blocking was used because it appeared so frequently in the responses. Using the participants' own language was part of the qualitative approach to the data we used. It is not our intent to make connections to any technical definitions of this term. Examples of blocking responses include, " I have it pretty well blocked off . . . ," and "I have not thought about it in years," as well as, "I just don't want to think about it." Responses of this type were made by 43% of survivors. Downplaying was characterized by justifications, minimizations, rationalizations, or normalizations such as "It was just something that happens to women" or "It could have been a lot worse," or "As the sky is blue, violence against women just is." Fifty-eight percent of survivors included at least one remark of this type in their narrative. Selectivity included responses that suggested participants included only positive or rewarding experiences, rather than unhappy, or socially unacceptable events in their life narrative. "I just listed the good things, you know," and "I think the events I chose were more socially acceptable events," are examples of selectivity, which was identified among the responses of 30% of survivors. Useful Learning Experience included responses indicating something had been gained from the experience such as boundaries, awareness of rape issues and prevalence, or self-awareness, or motivation to leave an unhealthy relationship. Examples include, "It did start me on the road to making changes," and " . . . so it helped . . . in the long run to gain more self-esteem and to learn to take control of the situation rather than letting things happen to me. . . . " Statements of this type were made by 26% of survivors. Integration was scored when participants placed the index rape on their lifelines. Just 12% of survivors actually placed their rape among the events they considered most significant in the story of their lives.

Once the classification system was established, each narrative was coded by two independent readers who rated each response as 1 (for the presence) or 0 (for the absence) for each of these coping strategies. Interrater reliabilities ranged from 88% to 100%. Agreement was established on every discrepancy between the two raters. These individual strategies formed an Avoidance/Integration factor, whose development is explained in the discussion of the measurement model. Having established that the five categories formed an internally-consistent construct of cognitive coping strategies, we then engaged

in the development of a more informative continuum of avoidance such that each strategy could be assigned an empirically meaningful weight. A continuum of avoidance was then established based on these empirical weights. Each participant then received a Cognitive Avoidance score that reflected the highest level of avoidance strategy that she used. A more complete description of this procedure can be found in the description of the measurement model (p. 235).

Our original qualitative analysis also identified strategies labeled Negative Attitude-Others, Negative Attitude-Self, and Negative Behavior Changes. These strategies did not load on the Avoidance/Integration factor, however, and thus were not included in the later analyses.

Social Cognitions

Causal Attributions. Causal Attributions were assessed with the Rape Attribution Questionnaire (Frazier, 1990), which consists of 21 items comprising three subscales that assess the participants' behavioral, characterological, and external attributions about rape. Ratings were made on a 5-point Likert scale ranging from Never (1) to Very Often (5). This assessment was included to determine how an actual sexual assault influenced an individual's causal attributions about rape. The Behavioral Blame scale determined the degree to which participants blamed rape on the victim's behavior. The scale included items such as, ''You put yourself in a vulnerable situation.'' Characterological Blame assessed to what extent participants blamed their own characters or personalities for rape (e.g., ''You are just the victim type.''). The External Attribution scale asked questions directed at blaming societal factors or the rapist (e.g., ''Men need to feel power over women.''). Published reliabilities include alpha coefficients for Behavioral Blame at 3, 10, and 30 days post-rape that ranged from .87 to .89. The comparable figures for Characterological Blame and External Blame ranged from .75 to .82 and .64 to .76, respectively. Alpha coefficients in the full sample were .83, .76, and .81 for Behavioral, Characterological, and External Blame respectively. Characterological and Behavioral Blame have been associated with poorer psychological outcomes in rape populations (Arata, 1999; Frazier, 1990; Frazier et al., 1996; Frazier & Schauben, 1994).

Cognitive Schemas

Trauma-Related Beliefs. Beliefs were assessed by the McPearl Belief Scale Revision D, which was the most recent version available of the scale now known as the TSI/CAAPS Belief Scale (Pearlman, 1996). This 80-item scale measured individuals' beliefs about the self, others, and the world. A

higher score indicated maladaptive changes in those cognitive schemas vulnerable to change by trauma exposure. The items ranged from specific, self-oriented statements such as "I find myself worrying a lot about my safety," to general feelings like "The world is filled with emotionally disturbed people." Responses were indicated on a 6-point Likert scale from Disagree Strongly (1) to Agree Strongly (6). The scale consisted of 10 sub-scales, with reported internal consistencies that ranged from .76 to .88. Alphas in the full sample were .55 to .88. The development of a single factor from these scales is described under the measurement model.

Personal Constructs. Personal constructs were assessed through the Family Perception Grid, based on Kelly's (1955) Role Construct Repertory Grid as modified by Harter et al. (1988). Participants rated their own characteristics in the past, the present, and the future. They were also asked about their construal of significant others including their mother, father, a male significant other, the typical man, the typical woman, close female friend, and rapist. The 10 characteristics rated on a 13-point Likert scale included: attractiveness, strength, intelligence, trustworthiness, dominance, warmth, independence, emotionality, openness, and reliance. These ratings were used to derive the following measures: (a) self-ideal discrepancy, which represented the difference between ratings of future self and present self; (b) gender polarization, which was represented by the sum of all ratings of men, subtracted from the sum of all ratings of women; and (c) rapist-self discrepancy, which was represented by the difference between participants' ratings of the rapist and themselves. It was hypothesized that rape survivors would report increased discrepancies between perceptions of the present and future self (self-ideal discrepancy), and between men in general and women in general (sex-role polarization). However, since the majority of rapes are committed by acquaintances, not stereotypical violent, deranged strangers, it was hypothesized that a rape experience would decrease the discrepancy between the self and the rapist (rapist-self discrepancy). Harter and colleagues (1988) expressed their data as Euclidean distances (sums of squared difference scores). We transformed our data by taking the square root of the Euclidean distances, giving us the Root Mean Square Differences. Because squared terms often have non-normal distributions, this transformation rendered the distributions more tractable.

Memory Characteristics

Participants were asked to recall everything possible about their rape or unpleasant experience and to make ratings of the qualities of their reconstructed memory in response to the Memory Characteristics Questionnaire (MCQ) (Suengas & Johnson, 1988). The full 43 item MCQ includes the 17 items that compose the four memory factors constructed and cross-validated

by Koss et al. (1996). In the present study the additional items were assigned on a theoretical basis to these factors. The procedures used to confirm these item assignments are detailed later in the description of the measurement model. The factors as well as their internal consistency reliabilities in the full sample were the following. The first factor, called Clarity (alpha = .890), consisted of 28 questions pertaining to visual details of the event, emotional intensity felt at the time of the event, and how often the memory is thought and talked about. The Affect factor (alpha = .610) contained three ratings of valence (positivity or negativity) of feelings and the unexpectedness of the event remembered. The Reexperiencing factor (alpha = .798) contained eight items reflecting participants' subjective reexperiencing of the physical sensations, emotions, and thoughts that characterized the original event. The fourth factor, Nonvisual Sensory (alpha = .724), consisted of five questions about sensory components of memory including touch, smell, taste, or sound (vision loaded on the Clarity factor). All items were rated on a 7-point scale.

Post-Traumatic Stress Disorder

Symptoms of PTSD were assessed with the Post-Traumatic Symptoms Scale–Rater version (Foa, Riggs, Dancu, & Rothbaum, 1993), which corresponds to DSM-IV PTSD criteria. This 17-item scale allows categorical diagnosis of PTSD, dimensional scores for each sub-scale (avoidance, intrusion, and hyperarousal), as well as a global severity score. Internal consistency reliability for the re-experiencing, avoidance, and arousal sub-scales in the full-sample were .76, .72, and .71 respectively. These reliabilities are similar to reported figures (.78, .80, and .82; Foa et al., 1993). Test-retest reliability across one month was .74. The inter-rater reliability was kappa = .97 for the severity score (Foa et al., 1993). The estimation of the relationships of the subscales to a higher order factor representing global PTSD severity is described in the measurement model. We could not assume that PTSD was a single factor in a non-clinical population.

Data Analyses

Univariate Analyses

Missing Data. Scores on multi-item factors were imputed for respondents with one or more of the item scores missing based on the nonmissing values for the same person on all the other items comprising the factor. A respondent was only deleted when all indicators were missing. Only two respondents were lost using this multivariate imputation procedure (Figueredo, McKnight, & McKnight, 1996).

Residualization on Demographics. Demographic variables might have been correlated with some of the variables used in the model. To determine the amount of variance accounted for by demographics, they were entered into regression equations to predict each of the 289 items to be included in the multivariate model. Overall, seven of 289 regressions resulted in R squared's significant at the Bonferonni corrected probability of $p < .0002$. None of these effects involved ethnicity, marital status, or income. Five effects involved age and two involved education. These effects accounted for between three and 22 percent of the variance in study variables. Given the small number of significant effects, we chose to residualize the variables prior to multivariate analysis. Residualization subtracts any deviation systematically predicted by demographic variables from each score (Cohen & Cohen, 1983). This procedure statistically controls for the influence of demographics without explicitly including demographics in the multivariate model (P. M. Bentler, personal communication, October 1989). The adjusted scores, or regression residuals, were then used for multivariate modeling.

Effects of Time. The passage of time is well documented to ameliorate the effects of trauma, specifically as demonstrated by the reduced rate of PTSD observed in longitudinal studies. Most of this natural recovery appears to occur within the first few months after the trauma and then levels off to a slow, gradual improvement over time (Creamer et al., 1992; Rothbaum et al., 1992). No participants in this study were interviewed during that initial period of nonlinear recovery. We examined whether time constituted a threat to the internal validity of the present data. Specifically, did time significantly moderate the effect of rape on PTSD, thus violating the assumptions of a linear and additive model? To examine this question, a hierarchical regression model was run on the present participants and a group of 50 nonraped women selected from among survey respondents. The results revealed main effects for rape on PTSD, F (1,297) = 4.89, p = .028, and for time on PTSD, F (1,297) = 4.49, p = .0 35, but no significant interaction between them in the prediction of PTSD, F (1,297) = 0.26, p = .604. Thus, PTSD symptom severity decreased linearly over time since rape. We did not residualize the effects of time as was done with demographic variables because any mediating processes must occur during the time elapsed. Residualizing the effects of time would have removed the effects of the hypothesized mediators (see Pedhazur & Kerlinger, 1982).

Multivariate Analyses

A factor analytic structural equations model consists of two major components: (1) a measurement model, and (2) a structural model.

The Measurement Model. The measurement model is the component of the model where a number of directly measured items are related to a smaller set

of hypothetical constructs (called latent variables or common factors) presumed to be underlying the correlations among them. Although the present sample was not small in absolute terms, the items were too numerous with respect to the sample size to support item factor analytic procedures for lower-order scales. Instead, lower-order factor scores were estimated as unit-weighted factor scales. Items were assigned to factor scales based on the standard scoring of the measures. To examine internal consistency, item-factor correlations were computed and tested for statistical significance. This procedure generated tables of bivariate correlations that provide more detailed information on the factor loadings of the individual items than the simple Cronbach's alphas reported earlier. The results reproduced the original authors' scoring for the scales, with the exception of the TSI, which was found to be adequately represented by a single higher order factor rather than by eight subscale scores. This higher-order factor was also estimated using unit weighting. The bivariate correlations between individual items and factor scores are found in Table 2 (Avoidance/Integration factor), Table 3 (Behavioral Self-Blame, Characterological Self-Blame, and External Blame), Table 4 (the Gender Polarization factor), and Table 5 (four cross-validated memory factors). A higher order Belief factor was found to adequately represent the lower order factors obtained using the scales' recommended scoring. The bivariate correlations between each lower order factor and the higher order Belief factor are summarized in Table 6.

One hypothesis, whether there is a general PTSD factor in a nonclinical population, was considered of sufficient theoretical interest to perform Confirmatory Factor Analysis using Bentler's (1989) structural equations modeling program (EQS). The higher order factor was then incorporated as an explicit component of the structural equation model.

TABLE 2. Avoidance/Integration Factor: Bivariate Correlations of Item Scores to Unit-Weighted Factor Scores

Item description	Blocking
Blocking Cognitive Strategy	.482*
Downplaying Cognitive Strategy	.556*
Selectivity	.491*
Integration	−.740*
Useful Learning Experience	−.492*

* $p < .05$.

TABLE 3. Causal Factors: Bivariate Correlations of Item Scores to Unit-Weighted Factor Scores

	Causal Factors		
Item	Behavioral	Characterological	External
You are a poor judge of character.	.675*	.566*	.154
You made a bad decision.	.762*	.445*	.018
You should have been more careful.	.812*	.487*	.025
You didn't resist.	.641*	.437*	.005
You didn't know how to defend yourself.	.533*	.352*	.287*
You put yourself in a vulnerable position.	.778*	.434*	.035
You sent the wrong message.	.641*	.460*	-.021
You can't take care of yourself.	.520*	.639*	.227*
You are just the victim type.	.286*	.554*	.306*
You have bad luck.	.393*	.555*	.170*
You are a careless person.	.502*	.730*	.169*
You are a bad person.	.314*	.688*	.148
Attract men who hurt women.	.326*	.596*	.410*
You trust people too much.	.519*	.590*	.050
Never help around when you need it.	.147	.240*	.581*
Men don't respect women.	.183*	.395*	.745*
Perpetrators get off too easy.	.100	.241*	.693*
Men need to feel power over women.	.091	.313*	.773*
The perpetrator was sick.	.063	.088	.592*
Men are angry at women.	.107	.285*	.790*

* $p < .05$

Constructing the Cognitive Avoidance Continuum. Item Response Theory (IRT) was used to assign weights to the dichotomously coded coping strategies so an avoidance continuum could be constructed from the indicators of the Avoidance/Integration factor. Useful Learning Experience and Integration were first reverse scored and relabeled *Non-Learning Experience* and *Non-Integration* to ensure that their scores indicated avoidance. A one parameter logistic (Rasch) model was then used to assess item difficulty according to IRT. In general, IRT is thought to have advantages over classical test theory for providing item characteristics that are not group dependent (see

TABLE 4. Personal Constructs: Bivariate Correlations of Item Scores to Unit-Weighted Factor Scores

Euclidian Differences	Gender Polarization
Present mother and father	.804*
Typical man and typical woman	.676*
Male friend and female friend	.747*

* $p < .05$

Hambleton, Swaminathan, & Rogers, 1991, for a thorough discussion of these advantages and of IRT in general). The one parameter logistic model was calculated with the equation $P_i(\theta) = \frac{e^{(\theta - b_i)}}{1 + e^{(\theta - b_i)}}$ using the IRT program BIGSTEPS (Linacre & Wright, 1994). In this model, θ represents the propensity for avoidance or the avoidance score, $P_i(\theta)$ represents the probability that a randomly selected participant with a propensity for avoidance equal to θ endorses item i, and b_i represents the propensity for avoidance at which $P_i(\theta) = 0.5$, or 50%. Thus, the item difficulty parameter, and the parameter of greatest interest in this weighting procedure, is b_i. Because θ (in this case, avoidance propensity) is a standardized continuum, the b_i parameter can be negative or positive, with b_i parameters that are more negative indicating items requiring relatively low levels of θ to be coded and b_i parameters that are more positive indicating items requiring relatively high levels of θ to be coded.

The b_i parameters assigned to the avoidance codes were −2.19 for Non-Integration (indicating that a very low avoidance propensity is required to achieve this code), −.84 for Non-Learning Experience (indicating that relatively more avoidance propensity is required to achieve this code), .71 for Downplay, 1.06 for Blocking, and 1.81 for Selectivity (indicating that a very high propensity for avoidance is required to achieve this code; see Table 7). For the purposes of this analysis, these b_i parameters were converted such that the lowest b_i (Non-Integration) was set to 1, and the relative distances between the b_i parameters for each code were preserved. With this conversion, weights were assigned to the codes as follows: 1 for Non-Integration, 2.35 for Non-Learning, 3.36 for Downplay, 4.25 for Blocking, and 5 for Selectivity (see Table 7). This scheme also allowed for a possible score of zero (no codes).

TABLE 5. Memory Factors: Bivariate Correlations of Item Scores to Unit-Weighted Factor Scores

Item	Memory Factor			
	Clarity	Affect	Reexpr	Sensory
Your memory of the event is little/clear	**.746***	.115	.396*	.635*
Your memory involves VISUAL DETAIL a little/lot	**.607***	−.037	.234*	.478*
Your memory of the event is in black & white/color	**.407***	−.012	.072	.366*
The overall vividness of the memory is vague/vivid	**.810***	.157	.475*	.650*
Order of events in your memory is confusing/orderly	**.526***	.023	.121	.352*
The incident in your memory is simple/complicated	**.284***	.154	.310*	.236*
The story in your memory seems unreal/realistic	**.413***	−.016	−.025	.212*
The memory for the location is hazy/clear	**.390***	−.022	−.022	.238*
The incident...occurs somewhere unknown/familiar	**.288***	.028	.034	.098
The arrangements of the objects vague/clear	**.593***	.025	.148	.342*
The arrangements of the people vague/clear	**.551***	.017	.046	.372*
For the period in your life of event vague/clear	**.567***	−.042	.049	.272*
Your memory for the YEAR is vague/clear	**.569***	−.101	.023	.308*
Your memory for the SEASON is vague/clear	**.421***	−.140	.208*	.348*
Your memory for the DAY is vague/clear	**.498***	−.196*	.258*	.332*
Your memory for the HOUR is vague/clear	**.673***	−.027	.345*	.474*
Time in your memory seems shortened/lengthened	**.388***	.186	.213*	.325*
At time... had serious implications not at all/definitely	**.545***	.152	.477*	.292*
Remember how you felt at the time not at all/definitely	**.521***	.115	.431*	.272*
Your feelings at the time were not intense/intense	**.388***	.280*	.195*	.212*
Overall, you remember this event hardly/very well	**.766***	.142	.489*	.563*
Memory for events before this event not at all/clearly	**.506***	−.068	.304*	.245*
Memory for events after this event not at all/clearly	**.505***	.033	.312*	.299*
Doubts of accuracy of the memory great deal/no doubt	**.465***	.163	.125*	.243*
Since happened, thought about not at all/many times	**.308***	.026	**.536***	.090
Since happened, talked about not at all/many times	**.275***	−.092	.311*	−.027
The completeness of the memory is sketchy/complete	**.752***	.089	.311*	**.661***
Your memory involves SOUND little/a lot	**.475***	−.059	.221*	**.681***
Your memory involves SMELL little/a lot	.290*	.046	.245*	**.701***
Your memory involves TOUCH little/a lot	.408*	.105	.294*	**.643***
Your memory involves TASTE little/a lot	.349*	.052	.151	**.696***
Overall tone of the memory is negative/positive	−.051	**.778***	.067	.016
Your feelings at the time were positive/negative	.032	**.719***	.064	.015
Remembering now, feelings are positive/negative	−.077	**.735***	.191*	−.008

TABLE 5 (continued)

Item	Memory Factor			
	Clarity	Affect	Reexpr	Sensory
Event was surprising or unexpected not at all/extremely	.258*	**.340***	.035	.154
Looking back, serious implications not at all/definitely	.324*	.207*	**.657***	.220*
Now, feelings are intense/not intense	.256*	.209*	**.729***	.246*
Re-experiencing physical sensations no/complete	.376*	.038	**.741***	.355*
Now, re-experiencing emotions no/complete	.228*	.071	**.701***	.172
Now, re-experiencing thoughts no/complete	.402*	−.048	**.685***	.357*
Memory reveals something of you not much/a lot	.192*	.155	**.588***	.186*
Felt would affect me a long time none/extremely	.289*	.055	**.492***	.225*
In memory...you are in control/just happening to you	−.176	−.005	−.053	−.064

Note. Bold text indicates items scored on each factor. * $p < .05$.

TABLE 6. Traumatic Beliefs: Bivariate Correlations of Subscale Scores to Higher Order Belief Factor

Subscales	Belief Factor
Safety	.687*
Self Trust	.771*
Other Trust	.795*
Independent	.700*
Power High	.460*
Power Low	.776*
Other Esteem	.735*
Self Esteem	.828*
Self Intimacy	.656*
Other Intimacy	.799*

* $p < .05$.

Infit and outfit mean square statistics were also calculated to provide additional information about the coping indicators as scale items. The infit is a mean square statistic sensitive to unexpected responses to items whose b_i is near an individual's own level of θ (in this case, θ being propensity for avoidance). The outfit is a mean square statistic sensitive to unexpected responses to items whose b_i is far from an individual's level of θ (Linacre and

TABLE 7. IRT Scaling Procedure Outcomes for Cognitive Avoidance Continuum

Code	Original b_i	Transformed weight	Infit	Outfit
Non-Integration	−2.19	1	.61	.27
Non-Learning	−0.84	2.35	1.07	.96
Downplay	0.71	3.36	1.01	.99
Blocking	1.06	4.25	.97	1.28
Selectivity	1.81	5	1.17	1.21

Wright, 1994). In general, infit and outfit statistics lower than .5 indicate dependency in the data, while those higher than 1.5 indicate noise in the data. Of all the codes, only one (Non-Integration) showed signs of dependency in the data, with an outfit of .27.

For these analyses, the five individual coping items were lined up on a continuum by weight. Given the assumption of IRT, that b_i indicates the level of θ required to be endorsed by a given individual, it was decided that an individual's total avoidance score would be indicated by the most strongly weighted code she received. That is, a participant's total avoidance score reflected the most strongly weighted coping strategy she used. So for example, if a participant was coded Non-Learning Experience, Downplay and Blocking, but not Non-Integration or Selectivity, that individual received a total avoidance score of 4.25, reflecting the weight of the Blocking strategy code. An alternative scoring option would have been to sum the weighted codes for a new scale score. Given the assumptions of IRT, however, we thought it prudent to avoid exaggerating the effects of these empirically derived weights.

Another alternative would have been to use estimates of participant or person θ instead of the estimates of item θ we described above. When conducting an IRT analysis, one derives both item estimates of θ (here, avoidance) and also person estimates of θ (the level of θ the model predicts an individual to possess). We chose to use the individual's highest scoring avoidance code item θ for calibration purposes because it was more interpretable. As it turns out, the estimates of person θ correlated at .7 ($p < .001$) with the level of θ assigned by an individuals highest scoring avoidance code. Thus, the distinction between the two types of estimates is only a theoretical, not an empirical one.

The Structural Model. The structural component of the model is essentially a path analysis between the factors. Path analysis, or structural equations modeling, consists of imposing a restricted set of causal relationships (or pathways), specified a priori, and testing them against the observed correla-

tions. Any structural model that can adequately reproduce that pattern of intercorrelations with a reduced set of hypothesized causal pathways is judged superior by the principle of parsimony. Here model parsimony was produced primarily by the restriction of the direct causal pathways between non-successive categories of mediators in our theoretically derived hypothesized sequence (see Figure 1). Although it was not possible to wholly omit all of these residual direct effects, priority of inclusion was given to those additional pathways that both (1) bypassed fewer stages in the temporal sequence, and (2) could be associated with plausible alternative hypotheses consistent with prior research. Thus, some respecification was required of the strictly sequential causal model we initially hypothesized, but these were done in a systematic way according to predetermined, hierarchial rules of inclusion.

The only residual effects that were specified were the residual correlations among the memory factors. Residualized correlations represent those portions of the correlations between factors that remain unexplained by the model because they are not attributable to any effects of the model predictors. In contrast to the causal attribution variables, there was no theoretical justification for hypothesizing any particular causal sequence between the four memory factors. Nevertheless, these memory factors had been found significantly correlated in samples of both raped and nonraped women. That is, their ''residual'' correlations were the naturally occurring correlations between these factors that were not attributable to the spurious effects of the rape experience (serving as a common causal influence on all of them within raped women). Thus, they were left as unexplained or ''residual'' correlations for that reason. It would be unreasonable to model their total covariances with our restricted structural model of the effects of rape. Table 8 presents the residual correlations below the diagonal and the unresidualized correlations above the diagonal for the memory factors. Residual correlations probably represent more generalizable estimates of the correlations that other investigators will find if they extend this work to populations other than rape survivors. No other residual correlations were specified.

TABLE 8. Memory Factor Intercorrelation Matrix

Memory factor	1	2	3	4
1. Clarity Overall		.063	.463*	.672*
2. Affect	.058		.139*	.069
3. Re-experiencing	.570*	.048		.361*
4. Sensory nonvisual	.686*	.038	.367*	

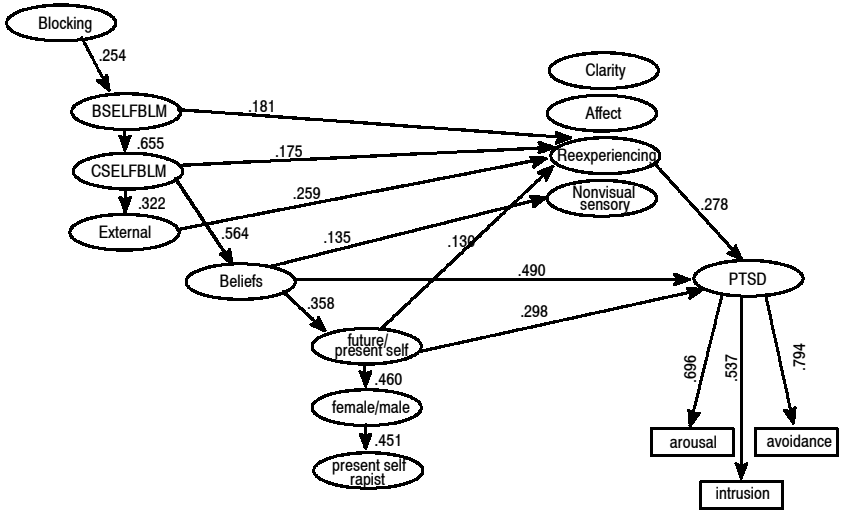
Note: The numbers above the diagonal are unresidualized correlations; those below the diagonal are residualized. See text for discussion of each type of correlation.
* $p < .05$.

Structural equations models were evaluated by use of chi-square, the Bentler-Bonnett Comparative Fit Index (CFI), the Bentler-Bonnett Normed Fit Index (NFI), and the Bentler-Bonnett NonNormed Fit Index (NNFI) (Bentler, 1989; Bentler & Bonnett, 1980). Chi-square measures the statistical goodness-of-fit of the covariance matrix observed to that reproduced by the model. A significant chi-square is therefore grounds for rejection of the model specified. The Bentler-Bonnett indices are measures of practical goodness-of-fit for large sample sizes. Index values greater than 0.90 are considered satisfactory levels of practical goodness-of-fit, even if significant chi-square values are obtained (Bentler, 1989; Bentler & Bonnett, 1980).

RESULTS

Figure 2 depicts the final results of the restricted structural equations model. The path coefficients are standardized regression weights obtained by Maximum Likelihood estimation. The correlated residuals among endogenous factors are not represented graphically to avoid visual clutter, but they are presented in Table 8 and discussed later. Although the chi-square value was statistically significant, X^2 (88) = 114.225, p = .011, indicating that the model did not perfectly predict the covariances among the constructs, the

FIGURE 2. Structural Equations Model of the Cognitive Mediators of the Experiential Avoidance-PTSD Relationship



practical indices of fit were acceptable (NFI = .832, NNFI = .928, CFI = .944). The following description of the findings begins with the measurement component of the model, and then proceeds to the direct effects of each construct in the hypothesized temporal sequence. Finally, the indirect pathways by which PTSD was influenced are described.

The Measurement Model

The latent construct representing overall PTSD severity had large factor loadings on the subscales of Arousal (.696), Intrusion (.537), and Avoidance (.794). This finding demonstrated that there was strong convergent validity among the symptoms of PTSD even in this non-clinical population.

The Structural Model

Direct Effects

Cognitive Avoidance ("Blocking"). Cognitive Avoidance had a direct positive effect on Behavioral Self-Blame (.254). Those women who used cognitive strategies to try to avoid thoughts of the experience were more likely to blame themselves for the event. Cognitive Avoidance did not directly influence any other causal attributions, nor did it directly influence any cognitive schemas, memory characteristics, or PTSD.

Causal Attributions. All three types of attributions had direct effects on the Reexperiencing component of Memory: Behavioral Blame (.181), Characterological Blame (.175), and External Blame (.259). Engaging in any type of blame was associated with recall richer in re-experiencing of sensation, thoughts, and feelings associated with the original incident. Only Characterological Blame directly influenced Beliefs (.564), suggesting it may have a distinct capacity to cause more psychological disruption than does Behavioral Blame or External Blame. However, the distinctiveness of Characterological Blame should be interpreted with caution due to the high residual intercorrelation between Characterological and Behavioral Blame (.655). Causal attributions did not directly influence any other memory characteristics, any other cognitive schemas, or PTSD.

Cognitive Schemas

Beliefs. Beliefs had a strong direct effect (.497) on PTSD. Disruption in beliefs was associated with increased PTSD severity. Beliefs also had direct effects on the size of the Future/Present Self discrepancy (.358) that suggested disrupted beliefs were associated with finding oneself falling short on

many character dimensions. No other direct pathways to personal constructs were supported. Beliefs contributed directly only to the Nonvisual Sensory aspect of Memory (.135).

Personal Constructs. The Future/Present Self discrepancy directly influenced PTSD (.298). Those women with a larger discrepancy were more likely to suffer symptoms of PTSD. The gender polarization construct representing discrepant views of men and women failed to predict negative psychological outcome.

Memory. Memory had a direct effect on PTSD through the Reexperiencing factor of Memory (.278). None of the other memory factors (Clarity, Affect, or Nonvisual Sensory) exhibited any influence on PTSD.

Mediated Effects

The social cognition factors, including causal attributions about rape and cognitive schemas, played an important role in mediating the influence of experiential avoidance on PTSD through two distinct sets of pathways. The social cognition factors exerted their influence by: (1) indirectly influencing PTSD through the qualities of reconstructed memory, specifically through the Reexperiencing factor; and (2) directly influencing PTSD mainly through the Beliefs factor.

Influence of Social Cognitions Mediated by Memory. Behavioral Blame, Characterological Blame, and External Blame all indirectly influenced PTSD through their effects on the Reexperiencing memory factor. Rape survivors who engaged in any of these forms of blame experienced more thoughts and feelings reminiscent of the original event during voluntary memory reconstruction and reported more symptoms of PTSD.

Direct Influence of Social Cognitions. Beliefs had the strongest direct effect of all the mediators on PTSD (.497). Women whose beliefs were most disrupted were the most likely to experience symptoms of PTSD. Beliefs also indirectly influenced PTSD through personal constructs. Those women with disrupted belief systems were most likely to experience a large discrepancy between their present and future self (.358), and in turn to suffer from more PTSD symptoms. The only direct influence on disruption of beliefs was exerted by Characterological Blame (.564). Characterological Blame played a role in both sets of pathways that influenced PTSD and was the only mediator to directly influence Beliefs, the strongest predictor of PTSD severity.

Summary of Effects

The structural model as a whole accounted for 60% of the variance in PTSD. The main effect of Cognitive Avoidance on PTSD must be attributed

entirely to the collective action of the hypothesized mediators because there was no significant direct effect of Avoidance remaining in the model. The total effect of Cognitive Avoidance on PTSD was .08, which indicated that it only accounted for 1% of the variance. Thus, the remaining 59% of the explained variance in PTSD was predicted by social cognitions and memory characteristics. The bivariate correlation between Avoidance and PTSD was also virtually zero ($r = -.01$). We had originally thought that Avoidance would play a larger indirect role in predicting PTSD. Contrary to the strong avoidance theory, however, cognitive avoidance had very little influence, direct or indirect, on PTSD.

DISCUSSION

What does explaining 60% of the variance in PTSD mean in this context? Because the level of analysis used in this model is the individual survivor, it means that 60% of the variance in individual recovery (or lack thereof) from rape-induced PTSD was explained by the cognitive mediators. Our model shows what those mediating mechanisms might be, as well as some cognitive risk factors that may prolong recovery. An understanding of these processes will inform the assessment of survivors seeking care and contribute to our theoretical understanding of treatment effects.

The results of this study suggest that cognitive avoidance strategies were detrimental in terms of PTSD severity for a sample of survivors interviewed an average of 15 years post-rape. These findings are consistent with the bulk of the sexual assault coping literature, and specifically support the approach avoidance theory that hypothesizes experiential avoidance to be a maladaptive long-term coping strategy. Because downward social comparison strategies were included in our continuum of cognitive avoidance (coded as down-playing strategies), the effect on symptoms might have been expected to be negative. Making downward social comparisons through minimization and rationalization has been referred to as a strategy of positive illusion, a concept that has been found to maintain mental health (Taylor & Brown, 1988; Taylor, Wood, & Lichtman, 1983).

The social comparison strategies in this study (down-playing) did not earn as much statistical weight as indicators of avoidance compared to strategies directed at completely blocking out thoughts of the rape specifically (blocking) or thoughts of negative life events generally (selectivity). Thus the social comparison strategies may not have had much influence in this model. It is possible that a homogeneous measure of positive illusion would play a more adaptive role in mediating psychological distress. For example, Positive Distancing strategies, which are a combination of cognitive distancing, optimism, and acceptance statements from the Abbreviated Version of the Ways

of Coping Inventory (Parkes, 1984), have been associated with less psychological distress in a population of sexual assault survivors (Valentiner, Foa, Riggs, & Gershuny, 1996). Future research projects that separate and investigate the unique influence of each individual cognitive coping strategy on psychological symptoms will further refine theory in this area. Finally, since this study only investigated the influence of cognitive coping strategies on PTSD, future studies also need to systematically investigate whether purely behavioral or purely emotional avoidance strategies are more adaptive coping mechanisms.

The findings of this study expanded the existing literature by using a statistically weighted qualitative measure that isolated the cognitive strategies involved in experiential avoidance. Even more importantly, though, the findings estimated the magnitude of their effect on PTSD, not as an isolated process, but in the context of other components of recovery. The results of this study suggest that cognitive avoidance exhibited only a very small effect on psychological outcomes compared to the role of social cognitions. Such a finding has important clinical implications. Although survivors will not be harmed by therapeutic approaches that strive to replace survivors' avoidance coping strategies with more adaptive approach ones, clinicians are likely to make a larger impact by focusing on their clients' disrupted belief systems instead. Our results suggest that in terms of predicting psychological symptoms, it is relatively unimportant whether or not a survivor uses cognitive avoidance strategies to cope with her rape experience.

Several of the effects were mediated through the Reexperiencing memory factor. This construct captured the extent to which feelings, physical sensations, emotions, and thoughts from the original trauma were reexperienced in voluntary recall. The results suggested, however, that these meta-memory ratings of rape recall played a limited role in the prediction of PTSD. There is a concern about possible bias in this relationship as well. We were conceptually clear about the distinctions between voluntary reexperiencing and intrusive memory, and the questions to indicate each were different. An example of the reexperiencing items is "As you are remembering now, to what extent are you reexperiencing in your mind or body the EMOTIONS or FEELINGS that you had during the event?" Whereas, typical content of an intrusive memory items was the following, "Have you had recurrent or intrusive distressing thoughts or recollections about the incident?" Although conceptually distinct, we cannot reject with the present data the alternate hypothesis that the relationship between the two is explained by conceptual, semantic, or measurement overlap with the content of intrusive memory component of PTSD assessment.

The results also replicated in a third independent sample of survivors the lack of predictive power for health outcomes demonstrated for the remaining memory characteristics of Clarity, Affect, and Nonvisual Memory (Koss et al.,

1996). The bulk of our hypotheses about the effects of social cognitions on how memory is reconstructed in a social setting failed to receive support. Although there was a small effect of belief disruption to increase the nonvisual sensory components in recall, this effect was a dead end that failed to have any relationship with PTSD. None of the social cognitions had an influence on vividness or emotional intensity, nor did these memory characteristics predict the severity of PTSD.

Although some may disagree with how we chose to assess memory characteristics, we used a standardized and cross-validated measure that duplicated the range of phenomena across which memory is known to vary. Critics of our measure may suggest that individuals are just not very good at making meta-memory ratings. It should be noted, though, that the diagnosis of the PTSD intrusion criteria depend on a similar introspection and memory rating process. It is currently difficult or impossible to reconcile studies of memory among rape or other trauma survivors because measurement has been so varied. For example, Mechanic, Resick, and Griffin (1998) reported that 82% of rape survivors had a clear memory of the assault at 3 months postrape, whereas we have reported that rape memories are more vague and hazy than memories for other emotionally intense experiences. Mechanic and colleagues (1998) used single clinician ratings to represent memory clarity. We encourage future research to explore alternative methods of measuring memory. Memory phenomena are central to theories of the etiology and treatment of PTSD. It is incumbent on those who promote these conceptualizations to devote attention to their measurement with the same precision that is evident in assessment of PTSD.

With the exception of Reexperiencing, the experiential avoidance-PTSD relationship was mediated entirely by social cognitions. The present findings extend existing literature (e.g., Frazier, 1990; Frazier et al., 1996; Frazier & Schauben, 1994) demonstrating that behavioral blame has a negative impact on PTSD. Even more interesting was the finding that characterological blame appeared to play a unique role in predicting PTSD severity through its large, deleterious effect on maladaptive belief change. It is still debatable, however, whether or not characterological self-blame is distinct from behavioral self-blame as Janoff-Bulman (1979) originally hypothesized. The conceptual distinction is questioned by the sizable empirical relationship between measures of behavioral and characterological self-blame. The distinction is not successfully defended empirically.

Trauma-related alterations in core beliefs proved to be the most potent predictors of PTSD symptomotology. They influenced PTSD both directly, and indirectly through the tendency of shattered beliefs to translate into a large discrepancy between how survivors actually viewed themselves and how they would ideally like to be. The finding that the future/present self-dis-

crepancy was associated with increased symptoms of PTSD is consistent with Strauman's and his colleagues' theory that such self-discrepancies are markers of cognitive vulnerability that contribute to the onset and maintenance of emotional disorders (Strauman, 1994). Experimental studies have found discrepancies between the present and ideal self to be associated with depression (Strauman, 1994). In the present study, this future/present self-discrepancy appeared to capture the sense of permanent damage and irremediable shame that has been historically associated with raped women. The discrepancy may also reflect rape survivors' negative self-perceptions related to their perceived powerlessness to alter the course of their assault. By implication, therapeutic attempts to reverse or mollify some of these cognitions should result in lowered PTSD severity. Cognitive Behavioral Therapy (CBT) has been found to be effective in reducing self-discrepancies and symptoms of clinically depressed patients (Strauman, 1994). And, CBT has been found effective in treating PTSD among rape survivors (e.g., Resick & Schnicke, 1992). Future treatment studies could address whether the self-ideal discrepancy mediates clinical recovery in rape survivors with PTSD.

Our results strongly advocate for future research that focuses on the disruption of these belief systems and treatments that restore them. The findings of this study clearly suggest that a disruption in beliefs is the most important cognitive factor in predicting PTSD. Thus, we are now encouraged to focus our attention on these belief systems in an effort to pinpoint the precise components that are responsible for such psychological distress. A fine-grained, in-depth assessment of belief systems is critical to our understanding of the process by which beliefs are disrupted, and furthermore to our development of effective therapeutic interventions for rape-induced PTSD. For example, the importance of blaming highlighted by the present study leads us to interest in survivors' ideas about justice, need for revenge, and how these ends are served or hindered by current social responses to rape.

Several strengths of the present study must be highlighted. First is the community sample. Clinical populations generally consist of women whose coping strategies have failed to protect them from distressing symptoms, so the negative effects of traumas such as rape are magnified. By studying a community sample, we were able to see the full range of responses that women have to rape. Although some women did suffer from the various symptoms of PTSD, most of the women continued without symptoms that exceeded threshold. Unfortunately, our model does not identify any protective or resiliency factors, except as suggested by the absence of the factors that exacerbated symptoms. A second strength was our integrated, systemic analysis of cognitive mediators. We did not treat each mediator as an isolated variable. Only through a systemic outlook can we understand how the breakdown of one mechanism will affect another, and identify those mechanisms

that cause the most damage to the system when they are disrupted. Third, the inclusion of qualitative data provided a construct that did not share the same self-report method bias of the other measurement tools. Although the measure used in the present study is admittedly unvalidated, it was based on reliable dual coded ratings of the narratives.

These strengths balance certain limitations. The structural model is based on cross-sectional data that was not cross-validated. However, all of the elements of the model except for the cognitive coping measure (which was available only on a subset of the sample) have been cross-validated in a longitudinal study of these same mediators (Koss, Figueredo, & Prince, 2000). The longitudinal study recruited rape survivors within three months of their assault and followed them for two years.

Also, because the current study was not comprised of any survivors who had been interviewed within the first three months post-rape, we were limited in our ability to assess whether or how the relationship between experiential avoidance and PTSD changes over time. Given our finding that experiential avoidance does not play such an important role in predicting psychological distress, however, this does not appear to be as pressing a research question.

Another limitation of the study is that the causal order of the mediators was theoretically based. Some may disagree with our a priori order. No theoretical model can be considered the conclusive representation of any observed phenomenon, and hypothetical constructs must be refined with the progress of psychological science. This study also only looked at mediators of experiential avoidance and PTSD. We did not measure pre-trauma influences on experiential avoidance, such as childhood abuse, nor were characteristics of the rape included that could help explain why some survivors engaged in avoidance coping. We did, however, find solid empirical support for our conceptualization. The present results suggest that many of the critical variables mediating rape and PTSD dwell somewhere within the domain of core beliefs about the self and others, the attribution of blame and responsibility, and especially social cognitions concerning control, safety, vulnerability, power, trust, and intimacy. Contrary to our expectation that experiential avoidance would play a key role in predicting PTSD, we found that avoidance coping had very little influence on psychological distress. Instead, the results reinforce the oft-cited conclusion that the impact of sexual violence is primarily an assault on the survivor's world of meaning.

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