Increased Mastery Elements Associated With Imagery Rehearsal Treatment for Nightmares in Sexual Assault Survivors With PTSD

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Exposure, abreaction, and mastery have been proposed as the therapeutic processes of nightmare (NM) reduction. Imagery rehearsal therapy (IRT) effectively reduces NMs but involves minimal exposure and abreaction. The authors investigated the use of mastery in the scripting of new dreams (NDs) elaborated during IRT. NM and ND reports were collected from 44 female sexual assault survivors with chronic NMs during their initial application of IRT. Mastery was assessed with a standardized dream coding system and a multidimensional mastery scale. NDs contained significantly fewer negative elements and more occurrences of positive elements and mas-

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tery than did NMs. NDs were not devoid of negative dream elements. An increase in mastery over negative dream elements is a core process involved in NM reduction.

KEY WORDS: nightmares; imagery rehearsal; mastery; dream coding

As many as 75% of individuals with a trauma history or suffering from posttraumatic stress disorder (PTSD) report having distressing dreams (Kilpatrick et al., 1994; MacFarlane, Bookless, & Air, 2001). Increased frequency of nightmares (NMs) is correlated with severe sleep disturbances, increased severity of psychiatric distress, and poor physical health (e.g., Clum, Nishith, & Resick, 2001; Kellner, Neidhardt, Krakow, & Pathak, 1992; Krakow, Artar, et al., 2000; Krakow, Germain, et al., 2001; Krakow et al., 2002). Sleep and dreaming disturbances occurring after exposure to a traumatic event predict the severity of posttraumatic symptoms at follow-up (Koren, Arnon, Lavie, & Klein, 2002; Mellman, Bustamante, Fins, Pigeon, & Nolan, 2002) and constitute the main reason for substance use in sexually assaulted women (Nishith, Resick, & Mueser, 2001). Interventions to reduce traumatic NMs are accompanied by clinically significant improvements in subjective sleep quality and psychiatric distress, including posttraumatic stress symptom severity (e.g., Forbes, Phelps, & McHugh, 2001; Germain & Nielsen, 2003; Gillin et al., 2001; Krakow, Hollifield, et al., 2001; Krakow, Johnston, et al., 2001; Krakow, Lowry, et al., 2000; Taylor & Raskind, 2002).

Case reports and uncontrolled and randomized controlled studies have shown that imagery rehearsal therapy (IRT) effectively reduces chronic traumatic NMs (Forbes et al., 2001; Halliday, 1982; Kellner et al., 1992; Krakow, Kellner, Pathak, & Lambert, 1995; Krakow, Hollifield, et al., 2001; Krakow, Johnston, et al., 2001; Krakow et al., 2002; Marks, 1978; Neidhardt, Krakow, Kellner, & Pathak, 1992). Briefly, IRT involves the imaginal rehearsal of a new dream (ND) that is nondistressing and that the patient elaborates by altering elements of the original NM scenario. IRT does not involve imaginal exposure to the NM or traumas and does not directly promote abreaction. IRT treatment is typically conducted in a small-group format, over two 3-hr sessions (see the Data Collection section for details). Clinically significant improvements are observed within 2 to 12 weeks posttreatment, and long-term follow-ups demonstrate maintenance of improvements (Kellner et al., 1992; Neidhardt et al., 1992; Krakow, Kellner, Neidhardt, Pathak, & Lambert, 1993). The therapeutic processes underlying the efficacy of IRT, however, are undetermined.

Marks (1978, 1987) suggested that exposure to distressing dream content abreaction and increased mastery were probable therapeutic processes underlying NM reduction through IRT. Marks emphasized exposure and abreaction as core processes of NM reduction with IRT. Consistent with his hypothesis, marked reductions in NM frequency and improvements in daytime functioning have been reported following NM exposure in patients suffering from nontraumatic NMs (Burgess, Gill, & Marks, 1998; Miller & DiPilato, 1983). Yet IRT effectively reduces NMs, using minimal exposure and abreaction. Therefore, exposure and abreaction may not be necessary processes involved in NM reduction. Rather, IRT may be effective at reducing traumatic NMs because it enhances the patient's ability to increase mastery over distressing dream elements.

The goal of the present study is to assess whether NDs elaborated by NM sufferers increase the patients' level of mastery of distressing dream elements. We hypothesized that NDs elaborated during the application of IRT would contain significantly fewer occurrences of negative dream elements (e.g., aggression, failure, avoidance) and significantly more occurrences of positive elements (e.g., success, positive emotion) as well as mastery elements

than would pretreatment NMs in a group of female sexual assault survivors with chronic NMs and PTSD.

METHOD

Participants

Participants were 44 women from Albuquerque who voluntarily enrolled in a larger study on NM treatment in sexual assault survivors (Krakow, Hollifield, et al., 2001; Krakow et al., 2002). Mean age was 37.1 years (SD = 10.9; range = 21–64). Mean NM chronicity was 19.6 years (SD = 16.3; range = 4 months–53 years), and the mean NM frequency was 5.7 NMs per week (SD = 4.3; range = 0.7–20.0). Thirty-one of the participants (70.5%) were Caucasian, and 12 (27%) were Hispanic. Demographic information was not available for 1 participant. The Human Research and Review Committee of the University of New Mexico School of Medicine approved the study. After the study was thoroughly described to the subjects, written and oral informed consent was obtained. Patients were recruited to participate in an NM treatment program for which they were paid $15 to complete the intake interview and $35 to complete the posttreatment follow-ups. They were recruited from rape crisis and mental health centers and via local newspapers. A participant was included if she met the following criteria: she was (a) an adult woman who (b) had had an unwanted sexual experience and had (c) weekly NMs, (d) insomnia complaints, and (e) posttraumatic stress symptoms. Participants were excluded if they were actively psychotic or intoxicated and if they reported having had NMs for less than 3 months.

Data Collection

Reports of NMs and NDs were collected over the course of the NM treatment program, which consisted of two 3-hr sessions and a 1-hr follow-up session 3 weeks after the second appointment (see Krakow, Hollifield, et al., 2001, for detail). Treatment was provided by Barry Krakow to small groups of 3 to 8 women. During the first session, participants were instructed on a cognitive–behavioral perspective, and NMs were explained as a learned behavior. Brief information on basic sleep hygiene principles and PTSD symptoms was also offered. A positive imagery exercise was then introduced and rehearsed, and seven brief cognitive–behavioral tools for dealing with unpleasant images (i.e., thought stopping, breathing, grounding, talking, writing, acknowledging, and choosing) were presented.

During the second session, the rationale for using imagery rehearsal in the treatment of NMs was explained. Specifically, the rationale underlying imagery rehearsal is that NMs may constitute a habit or learned behavior, albeit involuntary, that can be reduced and replaced when the patient practices a new habit (i.e., new imagery of the patient's own choosing). The technique was presented and practiced (see Kellner et al., 1992, and Krakow, Hollifield, et al., 2001, for more detail). Patients were asked to select and write a prior NM, then to change it in any way they wished, as per Neidhardt et al.'s (1992) model, which explicitly is nondirective in instructing patients on how to change the nightmare, other than to call the changed version an ND. To facilitate treatment adherence and prevent negative experience with IRT, we specifically instructed participants not to select an NM that replayed a traumatic event.

These types of NMs generally induce high levels of anxiety and arousal, which may interfere with the participant's ability to subsequently rehearse the ND in particular or apply the technique in general. Possible ways of altering the original NMs and specific forms of mastery are not mentioned by the therapist. Rather, participants are encouraged to change any component of the NMs they wish.

The NM and the ND were written on separate sheets of paper, in designated spaces that were equal in size (7 in. × 8 in.; 17.78 cm × 20.32 cm). A period of 5–8 min was then allotted for participants to mentally rehearse the ND. Copies of the written descriptions of the NM and the ND were collected and transcribed for subsequent scoring. At the end of this second session, participants were instructed to rehearse an ND for at least 5–20 min per day but never to work on more than two distinct NDs for any given week. The group met again 3 weeks later for the third session to discuss progress, share experiences, and answer additional questions about NMs, sleep, and PTSD. Therapeutic results of the program have been described elsewhere (Krakow, Hollifield, et al., 2000, 2001).

Measures

The Hall and Van de Castle (1966) Dream Content Scoring System

NMs and NDs were coded according to selected subscales from the Hall and Van de Castle (1966; H/V) dream content coding system. This instrument is based on qualitative and quantitative content analysis of thousands of dream reports collected from young adults. To date, the H/V coding system is the only validated and reliable instrument to code dream elements (Domhoff, 1996; Hall & Van de Castle, 1966). The H/V system contains 10 general scales, each of which is further divided into 2 or more subscales, for a total of 50 subscales. Interrater reliability for all subscales ranges between .75 and 1.00 (Domhoff, 1996). To avoid insufficient power and poor interrater reliability, researchers are cautioned to select a priori those subscales most relevant to the research purpose. The H/V coding system relies solely on counting explicit occurrences of a given type of dream subscale. Explicit operational coding rules are provided for each subscale, allowing high interrater reliability (Domhoff, 1996). Researchers code the dream content by counting the number of occurrences of selected subscales in a dream report. This allows quantitative comparisons between dream sets (herein, NM and ND).

For the purpose of this study, we selected only subscales for which operational definitions suggested volitional elements. Specifically, the Aggression (deliberate purposeful act or covert expression of aggression) and Friendliness (deliberate purposeful act or covert expression of support, help, kindness, or giving) subscales contain elements indicating volitional interpersonal actions. Failure and Success both refer to outcomes of volitional behaviors. Misfortune (impersonal fatalistic events) and Good Fortune (impersonal positive events) provide information on dream elements that are independent from the dreamer's volition. Although Good Fortune and Misfortune refer to nonvolitional dream elements, we included both subscales to discriminate between volitional and nonvolitional random dream elements. The numbers of positive emotions (explicit statements of happiness) and negative emotions (explicit statements of anger, apprehension, sadness, or confusion) reported in dreams were also counted. Additionally, the Positive Emotions and Negative Emotions subscales were selected on the basis that, by definition, NMs are highly emotional in nature, whereas non-NM dreams typically contain fewer explicit statements of emotions (Domhoff,

1996; Hall & Van de Castle, 1966). Finally, the number of words in each dream report was computed. Word count is limited to words used to describe the dream content, excluding redundancies, associations, external references, and the dreamer's personal judgments of the dream. Controlling for report length has been shown to be important, as it can significantly influence dream content coding (Domhoff, 1996; see Statistical Analyses section).

Multidimensional Mastery Scale

Two of the authors (Anne Germain and Antonio Zadra) developed a direct measure of mastery modeled after the H/V system and based on the detailed analysis of 10 NM reports provided by an independent sample of sexual assault survivors. Both authors independently examined the content of 10 NM reports and identified all possible examples of lack of mastery. They then listed as many alterations to potentially disturbing dream elements as possible. The lists of disturbing dream elements and possible alterations were then compared to create mastery categories. Six subscales of mastery were clearly envisioned by both authors, and these formed the final Multidimensional Mastery Scale (MMS). Operational definitions are provided for each of the six mastery subscales to minimize subjective judgments. The Behavioral Mastery subscale refers to occurrences in which the dreamer performs an action to alter the course of the dream to the advantage of the dreamer, such as fighting back or winning over the threat or the aggressor, or makes behavioral attempts to obtain assistance. Social Mastery measures when the dreamer changes personality aspects of other dream characters, removes threatening characters, changes the nature of an interaction with another character, adds a helpful new character or a nonthreatening social setting, or is assisted by another character on the dreamer's request. The Environmental Mastery subscale measures occurrences in which the dreamer changes the physical environment to a nonthreatening setting or makes the initial dream environment impermeable to threat. Spontaneous occurrence of a nonrequested helpful event is also counted as an occurrence of environmental mastery. Emotional Mastery is scored when the dreamer changes the overall dream affect or her emotional reactions to specific dream characters, events, or settings. Mythical Mastery measures the occurrence of a supernatural figure or event that intervenes in favor of the dreamer and releases her from the threat, terminates the threat, or reassures her without changing the course of the dream. An occurrence in which the dreamer uses supernatural powers to overcome the threat was also included in the Mythical Mastery subscale. Finally, the Avoidance subscale scores occurrences on which the dreamer awakens from the dream to escape perceived threats or avoids unpleasant dream scenes within the dream without changing them (e.g., "I close my eyes so I don't see the murder this time," "I die to stop the horror"). Avoidance is a core symptom of PTSD (American Psychiatric Association, 1994) and was therefore expected to be reflected in dream reports provided by our sample of female sexual assault survivors.

Dream Content Scoring

Dream reports were scored by two experienced raters (Anne Germain and Brigitte Faucher)—one of whom (Brigitte Faucher) was initially unaware of the purpose of the study—who had previously received extensive training in the H/V coding system. Scoring was performed according to the strict H/V coding rules (Hall & Van de Castle, 1966). Anne

Germain provided training on the MMS. With a practice dream set comprising 42 dreams (21 NMs and 21 NDs, unidentified to the masked rater), training consisted of didactic and written presentation on the operational definitions of each mastery dimension and practice rating. Agreement between the two raters was 83%. Divergences were reviewed and arose mainly from the fact that dreams were not scored in pairs (NM and ND). This led the unaware judge to omit a few occurrences of social ($n = 5$), environmental ($n = 2$), and emotional ($n = 3$) mastery on the MMS. The rater was then given pairs of dreams (NM and ND) to code along both the H/V coding system and the MMS. The rater remained uninformed that the two dreams (NM and ND) were provided by the same patient until the end of the study. A total of 44 pairs of NM and ND reports were rated on both the H/V coding system and the MMS. Half of the 44 NM–ND pairs were rated by the second judge (Anne Germain). Interrater reliability coefficients are presented in the RESULTS section.

Statistical Analyses

For each report, the total number of occurrences of each subscale of the H/V coding system and of each dimension of the MMS was divided by the total word count for the report. For example, a report containing three occurrences of aggression with a total of 150 words yielded a ratio of .02. These ratios were then used in subsequent analysis. Although this procedure yields highly conservative results, it neutralizes the potential confounding influence of word count on dream content differences and provides more robust results (Domhoff, 1996).

Multivariate analyses of variance (MANOVAs) using dream type (NM vs. ND) and subscales (eight for the H/V system, six for the MMS) as repeated measures were then computed separately for the H/V subscales and the MMS to compare the differences between the two dream sets while controlling for dream length. When significance was attained, individual analyses of variance using dream set (NM vs. ND) as the repeated measure were used to identify differences on each H/V and mastery subscale. Software Statistica 5.1 (StatSoft, 1996) was used for all statistical computations. The level of statistical significance was set at .05. To further assess the magnitude of change between NM and ND, we calculated Cohen's *d* values with raw means and standard deviations from NM and ND scores (Cohen, 1988). A Cohen's *d* value of 0.50 represents a medium effect size, whereas a value equal to or above 0.80 indicates a large effect. Positive *d* values indicate reductions of negative elements or increases in mastery in ND compared with NM, whereas negative *d* values indicate increases in negative elements or decreases in mastery from NM to ND.

RESULTS

Interrater Reliability

Half of the 44 NM–ND pairs were rated by the second judge (Anne Germain). Interrater agreement was computed as the ratio between the number of agreements and the total number of agreements and disagreements. The overall agreement ratio was .85 on the H/V system, with specific reliabilities ranging from .77 to .94 (Friendliness = .83; Aggression = .86; Success = .85; Failure = .94; Good Fortune = .86; Misfortune = .77; Emotions = .79). On the MMS, overall reliability was .84, with specific reliabilities ranging from .81 to .98

(Behavioral Mastery = .81; Social Mastery = .83; External Mastery = .82; Emotional Mastery = .91; Mystical Mastery = .98; Avoidance = .98). As reliabilities were judged to be satisfactory and stable, only scores from the masked judge were used in subsequent analyses.

H/V Dream Content Scoring System

The need to control for report length was indicated by the observation that NMs were significantly longer than NDs ($p = .002$). The 2 (NM vs. ND) × 8 (H/V subscales) MANOVA revealed a significant Dream Set × Scale interaction, $F(7, 36) = 13.84$, $p < .001$. This interaction indicates that the number of occurrences of some H/V subscales increased, whereas the number of occurrences of other subscales decreased. Table 1 presents the raw mean number of occurrences for each H/V subscale (i.e., mean number of occurrences uncontrolled for dream report length). Consistent with the initial hypotheses, NDs contained significantly more occurrences of friendliness, success, and positive emotions than did NMs and fewer occurrences of aggression, failure, misfortune, and negative emotions than did NMs (all ps < .05). Cohen's d values indicated moderate to large effects between the two dream sets (range = 0.49–0.98). Only the number of occurrences of good fortune did not differ between the two dream sets.

MMS

Twenty-two of the 44 NMs (51.2%) and all 44 NDs contained at least one occurrence of mastery. Table 2 presents the raw mean number of occurrences for each H/V subscale (i.e., mean number of occurrences uncontrolled for dream report length). The average numbers of mastery occurrences and subscales were significantly greater in NDs compared with NMs (ds = 1.80 and 1.59, both ps < .001). The MANOVA using dream sets (NM vs. ND) and the six mastery subscales as repeated measures revealed a significant Dream Set × Dimension interaction, $F(5, 38) = 13.33$, $p < .001$, indicating that the number of occurrences

Table 1. Mean Number of Occurrences for the Eight Subscales of the Hall and Van de Castle (1966) Dream Coding System for Nightmares and New Dreams for the 44 Sexual Assault Survivors

	Nightmares		New dreams				
Subscale	*M*	*SD*	*M*	*SD*	ANOVA	*p*	Cohen's *d*
Word count	132.77	65.27	96.63	41.54	11.27	.002	0.68
Aggression	1.65	2.36	0.61	1.09	11.47	.02	0.47
Friendliness (friend)	0.56	0.88	0.86	1.19	6.85	.01	0.54
Failure	0.56	0.98	0.02	1.50	13.64	.001	1.01
Success	0.16	0.43	0.37	0.66	5.38	.03	0.49
Misfortune	2.05	2.13	0.40	0.70	22.32	<.001	0.98
Good fortune	0.16	0.37	0.26	0.54	3.14	.08	0.12
Negative emotions	0.79	1.01	0.16	0.43	12.0	.001	0.71
Positive emotions	0.05	0.21	0.35	0.69	11.23	.002	0.91

Note. Mean number of occurrences for each category presented are uncontrolled for dream report length. ANOVAs were computed on the number of occurrences for each dream report, with dream report length controlled. For example, a report containing three occurrences of aggression, with a total of 150 words would yield a ratio of .02. ANOVAs were computed with these ratios. Degrees of freedom for the ANOVAs were 1 and 43. ANOVA = analysis of variance.

Table 2. Mean Number of Occurrences for the Six Mastery Subscales for Nightmares and New Dreams for the 44 Sexual Assault Survivors

	Nightmares		New dreams				
Subscale	*M*	*SD*	*M*	*SD*	ANOVA	*p*	Cohen's *d*
Total no. mastery occurrences	1.30	1.95	1.95	1.31	17.99	<.001	1.80
Total no. mastery subscales	0.61	0.70	1.37	0.58	61.72	<.001	1.59
Behavioral Mastery	1.21	1.73	0.65	1.23	2.84	.10	0.72
Social Mastery	0.07	0.26	0.74	0.26	24.06	<.001	1.33
Emotional Mastery	0.00	0.00	0.07	0.26	2.64	.11	0.25
Environmental Mastery	0.00	0.00	0.44	0.63	16.87	<.001	0.63
Mythical Mastery	0.00	0.00	0.02	1.52	1.00	.32	0.15
Avoidance	0.33	0.47	0.02	1.52	13.41	.001	0.92

Note. Mean number occurrences for each category presented is uncontrolled for dream report length. ANOVAs were computed on the number of occurrences for each dream report, with dream report length controlled. For example, a report containing three occurrences of aggression, with a total of 150 words, would yield a ratio of .02. ANOVAs were computed with these ratios. Degrees of freedom for the ANOVAs were 1 and 43. ANOVA = analysis of variance.

increased for some mastery subscales and decreased for others. Occurrences of social and environmental mastery were significantly more frequent in NDs compared with NMs (ds = 1.33 and 0.63, respectively, both ps < .001). As expected, occurrences of avoidance were less frequent in NDs compared with NMs (d = 0.92, p = .001). Contrary to the hypothesis, however, occurrences of behavioral mastery tended to be less frequent in NDs compared with NMs (p = .10). The medium effect size of 0.72 nevertheless indicated a substantial reduction in the number of occurrences of behavioral mastery in NDs compared with NMs. The number of occurrences of emotional mastery and mythical mastery did not differ significantly between the two dream sets.

DISCUSSION

Increased Mastery as the Core Therapeutic Process of IRT

This study demonstrates a quantifiable increase in occurrences of mastery in NDs elaborated during the application of IRT compared with pretreatment NMs in a group of female sexual assault survivors with chronic NMs and PTSD. According to the H/V dream coding system, NDs contained significantly more positive and fewer negative dream elements than did NMs. It is interesting that NDs were not completely devoid of occurrences of negative elements measured by the H/V subscales, which suggests that participants might be changing their reactions to these negative elements in the early application of IRT rather than removing all occurrences of negative elements from the NM scenarios. The decreased number of occurrences of misfortunes and the nonsignificant change in good fortunes (which both refer to events that occur independently of the dreamer's volition) in NDs compared with NMs support the hypothesis that volitional dream content alterations characterize the application of IRT.

The MMS permitted more direct examination and further characterization of the nature of the observed increase in mastery with IRT. In NMs, occurrences of mastery were exclusively behavioral, social, and avoidant in nature, whereas in NDs, a greater number of mastery subscales were used, and the occurrences of these types of mastery were propor-

tionally more numerous. The use of social and environmental mastery was considerably increased in NDs compared with NMs. Conversely, considerable decreases in the number of occurrences of behavioral mastery and of avoidance were observed in NDs compared with NMs. It is possible that if the dreamer uses more social and environmental strategies to neutralize distressing oneiric elements, less behavioral attempts (including avoidance) are required to master unpleasant dream elements in NDs. It is noteworthy that increased mastery in NDs was observable despite the fact that IRT per Neidhardt et al.'s (1992) model does not include instructions to increase mastery when the technique is described during treatment.

Marks (1978) first suggested that exposure to distressing oneiric content and subsequent abreaction were the two most potent therapeutic processes in NM treatment. The present data suggest that mastery may constitute the core therapeutic component of IRT, because the technique used in the present study did not involve direct or extensive use of either exposure or abreaction, yet IRT has been repeatedly shown to be effective at reducing NM frequency and NM-related distress (e.g., Forbes et al., 2001; Kellner et al., 1992; Krakow et al., 1993; Krakow, Hollifield, et al., 2001; Neidhardt et al., 1992). Writing down an NM, however, may constitute a clinically significant form of exposure, and participants may have voluntarily rehearsed the NM rather than the ND. Although it was not possible to control for these possibilities, participants were specifically instructed to avoid mentally rehearsing NMs. Also, on a dream log completed each day for 3 weeks immediately following treatment, patients were queried about whether they had rehearsed an old NM, and no patient reported doing so. It is also highly unlikely that participants directly rehearsed or wrote down NMs for 1 hr a day, which is the recommended duration of direct exposure (Burgess et al., 1998). Thus, direct exposure is unlikely to be a primary therapeutic component of imagery rehearsal techniques for NM reduction. Avoiding mentally rehearsing an NM also prevents abreaction, unless the ND indirectly promotes such a process. It can be argued that other NM reduction techniques, such as lucid dreaming and hypnosis techniques (Abramovitch, 1995; Brylowsky, 1990; Eichelman, 1985; Zadra & Pihl, 1997), which involve neither abreaction nor exposure, are effective because they also access the patient's ability to increase mastery in dream scenarios.

Mastery Over Intrusive Imagery in PTSD

This study is consistent with the contention that PTSD involves a dysregulation of the imagery system (Horowitz, 1983). Studies have shown that lack of control over vivid imagery characterizes PTSD patients and is positively correlated with PTSD severity (Bryant & Harvey, 1996; Laor et al., 1999). The observation that NMs contained fewer occurrences of mastery than NDs indicates that a lack of control over imagery is generalized to mental activity during sleep. In turn, PTSD patients report fewer coping skills for managing or inhibiting distressing mental activities during sleep than do non-PTSD patients (Mikulincer, Glaubman, Wasserman, Porat, & Birger, 1989). IRT directly addresses this lack of coping skills by providing patients with new skills to increase the ability to manage distressing mental content during sleep.

The present findings raise the possibility that the increase in mastery observed in NDs may also reflect a more global active component in the reduction of other intrusive symptoms in PTSD (i.e., flashbacks). Traditional cognitive–behavioral approaches for the treatment of PTSD suggest that treatment efficacy may be attributable to maintenance of anx-

iogenic imagery until habituation occurs (see Brunello et al., 2001, for review). The present results indicate that habituation may be supplemented by an increase in mastery over distressing, intrusive imagery. To our knowledge, the role of increased mastery as an active component of reduction of other intrusive symptoms in PTSD remains unexplored.

Limitations and Clinical Implications

Certain limitations must be addressed. First, only NDs, rather than prospectively collected posttreatment dreams, were available for analysis. Examinations of posttreatment dream reports are required to determine how the observed increase in mastery might be incorporated into subsequent dream scenarios or otherwise influence dream activity. Second, because only one ND report was available for each participant, the extent to which the rehearsed dream (collected during the participant's initiation to IRT) might have been representative of subsequent rehearsed scenarios is unknown. Finally, the participants in this study were all women; given the existence of gender differences in dream content (Domhoff, 1996; Hall & Van de Castle, 1966), it remains possible that different content and mastery patterns will emerge for men.

Despite these limitations, the present study demonstrates that an increase in mastery characterizes NDs elaborated during the application of IRT in its initial use. Also, IRT appears to minimize the need for direct and prescribed exposure and abreaction, which may be especially psychologically painful for trauma victims, who experience frequent NMs. In the absence of exposure and abreaction, IRT may facilitate treatment compliance and efficacy in addition to providing patients with a rapid therapeutic experience from which they may build motivation for further, more emotionally involving psychological treatments. Additionally, increased mastery over distressing dream content may encourage NM patients to generalize this ability and develop a greater sense of mastery in other areas of functioning (e.g., Zadra & Pihl, 1997). The latter raises the possibility that some patients with PTSD may significantly benefit from adjunctive NM-focused interventions to complement other pharmacological or cognitive–behavioral treatment strategies aimed at reducing daytime PTSD symptoms. Further research is required to elucidate mechanisms underlying imagery rehearsal treatment efficacy for NMs as well as for apparent therapeutic effects on PTSD.

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