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## Immediate emotional responses to the Southern California firestorms

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# HAZARD HOUSE COPY

**Immediate Emotional Responses to the Southern California Firestorms\***

By

E. Alison Holman and Roxane Cohen Silver

**QUICK RESPONSE RESEARCH REPORT #72**

1994

HAZARD HOUSE COPY

\*This was also presented as a poster at the 102nd Annual Convention of the American Psychological Association, Los Angeles, CA, August, 1994.

The views expressed in this report are those of the authors and not necessarily those of the Natural Hazards Center or the University of Colorado.

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## Abstract

It is often assumed that immediate emotional responses to a disaster will invariably and uniformly be negative. It is also commonly assumed that the severity of trauma has a "dose-response" relationship with the severity of distress experienced post-disaster (see Freedy, Kilpatrick, & Resnick 1993a; Herman, 1992; Smith & North, 1993). The present study tested the validity of these assumptions in a sample of residents from communities affected by the Southern California firestorms. Eighty-five residents of Laguna Beach and the Malibu-Topanga area were interviewed within 36 hours of the Fall, 1993 fires, and again 2-4 weeks later. At Time 1, residents who had lost their homes reported significantly more shock and somatic symptoms, and marginally less positive affect than those who had not lost their homes. However, residents who lost their homes did not differ significantly from those who had not lost them in terms of the frequency and intensity of negative affect, nor in the intensity of positive affect they reported. By 2-4 weeks post-fires (Time 2), people who lost their homes reported significantly less shock and marginally less negative affect than they reported at Time 1, but affect levels did not differ significantly over time for those who had not lost their homes. By Time 2, residents who lost their homes did not differ from those who had not lost their homes in terms of the frequency or intensity of positive and negative affect reported. At Time 2, people who lost their homes reported more shock and somatic symptoms than those who had not lost their homes, but these differences only approached significance. These findings challenge several assumptions underlying prior disaster research, and offer the first systematic report of immediate emotional responses to a disaster.

### **Background and Rationale**

On October 27, 1993, a firestorm ravaged thousands of acres in Laguna Beach, California, seriously damaging or destroying 391 homes. One week later, on November 2, 1993, a similar fire raged through thousands of acres and 380 homes in the Malibu-Topanga Canyon area of Los Angeles County. After a two-day evacuation, residents in both areas were allowed back into their neighborhoods to see what was left of their homes. What kinds of feelings do individuals experience in the immediate aftermath of such a community disaster? Do individuals who lose their personal belongings and residence have different emotional responses over time than residents from affected communities who do not lose their homes? The present study addressed these questions by systematically investigating immediate emotional responses to the Southern California firestorms.

**Immediate Emotional Responses:** Anxiety reactions are the primary symptoms that have been reported in response to a variety of disasters such as earthquakes (Cardena & Spiegel, 1993), floods (Cook & Bickman, 1990), cyclones (Parker, 1977), the collapse of a hotel skywalk (Wilkinson, 1983), and a factory explosion (Weisaeth, 1989). Respondents have also reported retrospectively that they felt surprised or shocked, saddened, helpless, numb, and angry in the immediate aftermath of a disaster (see, e.g., Amato, 1986; Freedy, Kilpatrick, & Resnick, 1993b).

Upon reviewing the disaster literature, we found that many researchers commonly assume that individual responses to disaster are homogenous. Moreover, some researchers suggest that immediate responses will invariably be negative: "Everyone is expected to be upset in the early post-disaster period, and lack of variability will produce uniformity of

data from which few predictions can be made" (North & Smith, 1994, p. 9). Unfortunately, the focus of much of the disaster literature reflects this view--researchers rarely consider the role of positive affect or positive outcomes following disasters (cf. Joseph, Williams, & Yule, 1993). Such selective attention to identifying negative outcomes may inadvertently and unnecessarily pathologize disaster survivors.

Others have suggested that any emotional distress experienced in the immediate aftermath of a disaster will be modest and short-lived (Fritz & Marks, 1954; Quarantelli, 1985; Taylor, 1977). By assuming uniformity in the perceived magnitude and duration of immediate responses to disaster, however, these researchers have essentially ignored the individual differences in these responses that may help us understand long-term adaptation.

Finally, there is some evidence that the severity of exposure to, and degree of personal loss from a disaster directly predict long-term psychological distress (see Green, 1993). In fact, it is generally assumed among trauma researchers that the severity of trauma has a "dose-response" linear relationship with the severity of psychological distress experienced (see, e.g., Freedy et al., 1993a; Herman, 1992; Smith & North, 1993). The evidence supporting this assumption, however, has been challenged by other studies that have found no relation between trauma exposure and psychological outcome (Lima et al., 1987; see Holman & Silver, 1994, for a discussion).

Unfortunately, studies addressing immediate responses are often conducted retrospectively, months after the disaster occurred (see Freedy et al., 1993b; Ollendick & Hoffmann, 1982; Smith, North, & Spitznagel, 1993; Weisaeth, 1989). Without constraining data collection to the period immediately following a disaster, one cannot assume the data

reflect emotional responses to the disaster itself rather than the various stressors commonly experienced in the aftermath of such a tragic event. We know of no study to date that has systematically assessed "immediate" individual responses within a day or two of a disaster.

### **The Present Study**

The purpose of the proposed research was twofold:

- (1) to study the variation in immediate emotional responses to the Southern California firestorms, and
- (2) to examine the relationship between the severity of loss and respondents' emotional responses to the fire.

### **Method**

When the Fall, 1993, firestorms occurred in Southern California, a structured interview protocol was designed to be administered to Laguna Beach and Malibu-Topanga area residents within 36 hours of their return home after a mandatory 36-hour evacuation. We used media reports of damage to identify the most heavily affected neighborhoods. Interviewers with badges identifying them from the University of California, Irvine, were sent to these neighborhoods to interview adult residents as they returned to their homes after evacuation. Interviewers were instructed to approach individuals, establish that they were residents of the affected areas, and request their participation in a brief structured interview about how they were feeling regarding the firestorm. Eligible candidates for recruitment into our study included people who appeared to be assessing damage to their homes, as well as people walking on the streets of the targeted neighborhoods. The initial interview lasted approximately 30 minutes. Upon completion of the interview, participants

were given a list of names, addresses, and phone numbers of community mental health agencies and local mental health professionals willing to provide assistance to local residents. The final Time 1 sample included a total of 85 people, representing 58% of the individuals approached.

In order to identify ongoing patterns of emotional responses to the firestorm, respondents were recontacted approximately 2-4 weeks after the initial assessment and asked to participate in a second interview. Seventy-four of the original 85 people (87%) agreed. The second interview took approximately 45-60 minutes to complete, and respondents were compensated \$20 for their continued participation in the study.

### *Measures*

Positive and Negative Affect. The frequency with which respondents experienced four positive (happy, vigorous, satisfied, affectionate) and four negative (irritable, miserable, nervous, guilty) emotions in the past 24 hours was assessed using a 5-point scale ranging from never (1) to always (5). These items represent a subset of the Affects Balance Scale developed by Derogatis (1975). The internal consistency of the Positive and Negative Affect subscales at Time 1 and Time 2 ranged from .63 to .96. The intensity of each emotion experienced was also rated on a 4-point scale ranging from mildly (1) to extremely (4), allowing the computation of two summary scores representing the intensity of Positive and Negative Affect, with internal consistencies at Time 1 and Time 2 ranging from .52 to .75.

Shock. Emotional functioning was assessed with a four-item scale addressing emotional responses in the previous 24 hours: how often respondents felt numb, in



shock or stunned; cried; felt like crying but tried not to break down; and tried to force themselves to be strong even though they were very upset. Items were scored on a 5-point Likert scale with endpoints of not at all (1) and all of the time (5). The internal consistency of this four-item scale was .74 at Time 1, and .77 at Time 2.

Somatic Symptoms. Eight items from the somatization subscale of the SCL-90-R (Derogatis, 1983) were used to assess the degree to which respondents were distressed by somatic symptoms in the previous 24 hours. Items were rated on a 5-point scale ranging from not at all (0) to extremely (4). This scale had an internal consistency of .84 at Time 1 and .81 at Time 2.

## Results

### *Time 1:*

. Residents who lost their homes reported significantly more shock and marginally less positive affect than residents who did not lose their homes.

. Residents who lost their homes reported significantly more somatic symptoms than those who did not lose their homes.

. Residents who lost their homes did not differ from those who did not lose their homes in the frequency or intensity of negative affect, nor in the intensity of positive affect.

. Positive affect was reported more frequently and more intensely than any other emotion for the sample as a whole.

*Time 1 to Time 2:*

. Over time, residents who lost their homes reported significantly less shock and marginally less negative affect.

. Levels of affect from Time 1 to Time 2 did not differ for those residents who did not lose their homes.

*Time 2:*

. By 2 weeks post-fires, residents who lost their homes did not differ from those who did not lose their homes in terms of the frequency or intensity of positive affect, and the frequency or intensity of negative affect reported.

. Residents who lost their homes reported more shock and somatic symptoms than those who did not lose their homes, but these differences only approached significance.

. Positive affect continued to be the most frequently and intensely reported emotion for the sample as a whole.

### Discussion

The findings of this study suggest that in the immediate aftermath of a major disaster, individuals in the affected area experience a wide range of positive and negative emotions. The high frequency of positive emotions reported by our respondents suggests that even in the face of a potentially life-threatening fire, individuals may experience feelings of happiness, affection, and satisfaction. In fact, within 36 hours of the fires, residents reported that their positive emotions were more

frequent and intense than the negative emotions they experienced, suggesting that the assumption of predominant universal distress in the immediate aftermath of a disaster is a misconception (cf. Wortman & Silver, 1987). Clearly, the role of positive affect in coping with extreme stress is an important consideration for future research.

Our findings also suggest that while the severity of loss is associated with the degree of shock and somatic symptoms experienced in the immediate aftermath of a disaster, this relationship quickly disappears. In fact, by 2-4 weeks after the fires, the pattern of emotional responses did not differ significantly between individuals who lost their homes and those who did not.

### Conclusions

As the first systematic study of immediate emotional reactions to a natural disaster, the findings from this study provide important information about how people respond to disaster. In particular, our findings demonstrate that immediate responses to disasters are not uniformly negative as previously expected.

It is our hope that this study encourages future research that reflects a broader conceptual scope assessing both positive as well as negative affect in response to disaster. The overall success of this research suggests that it is possible to obtain immediate reactions from individuals facing extreme forms of stress. Our research team intends to conduct follow-up interviews with these residents through at least one year post-fires, in an attempt to link early emotional responses to long-term adjustment. Hopefully, the results reported herein will be valuable for assisting researchers and clinicians trying to understand the underlying processes influencing long-term adaptation to extreme or traumatic stress.

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# Laguna Beach and Malibu-Topanga Area Residents

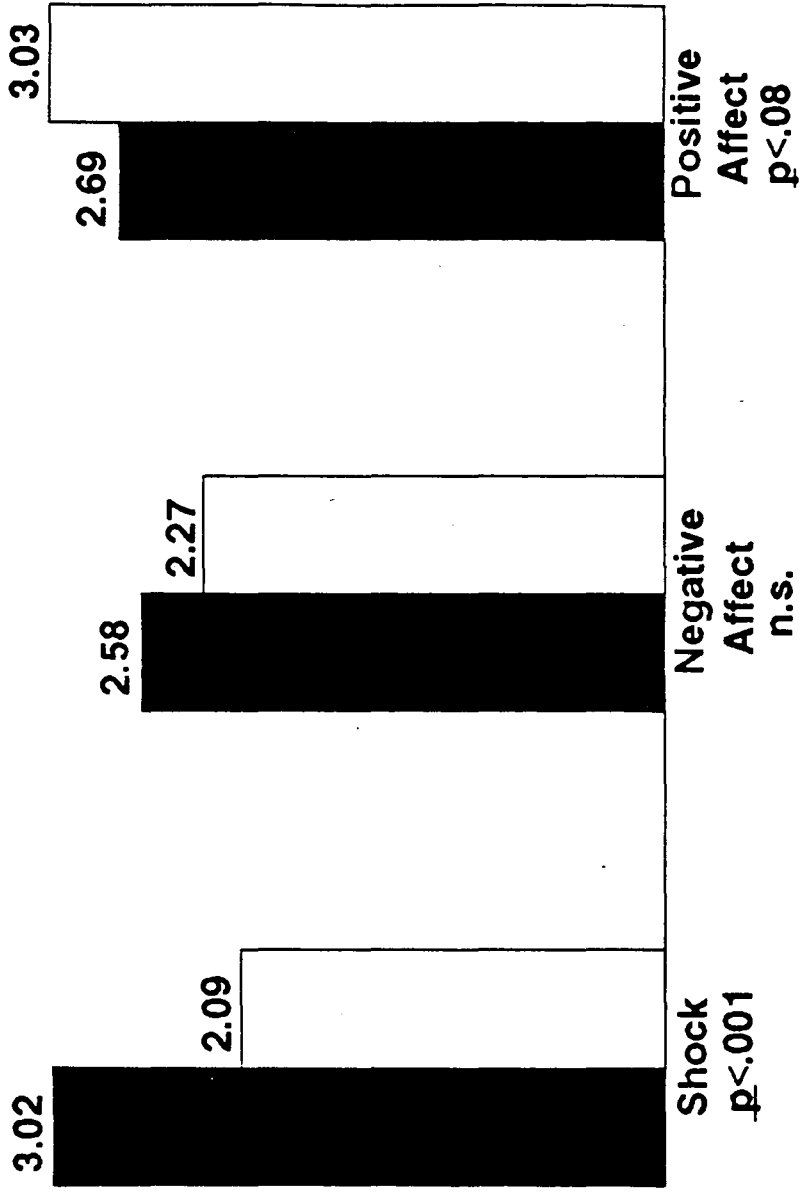
N=85

<b>Age:</b>	<b>Range 21-83 yrs</b>
	<b>Mean 47 yrs</b>
<b>Female:</b>	<b>44 (52%)</b>
<b>Male:</b>	<b>41 (48%)</b>
<b>Owned Home:</b>	<b>57 (67%)</b>
<b>Rented Home:</b>	<b>28 (33%)</b>
<b>Lost Home:</b>	<b>24 (28%)</b>
<b>Did Not Lose Home:</b> (But suffered smoke, soot, partial burn damage)	<b>61 (72%)</b>



# Frequency of Immediate Emotional Responses to Southern California Firestorms (Time 1) (N=83)

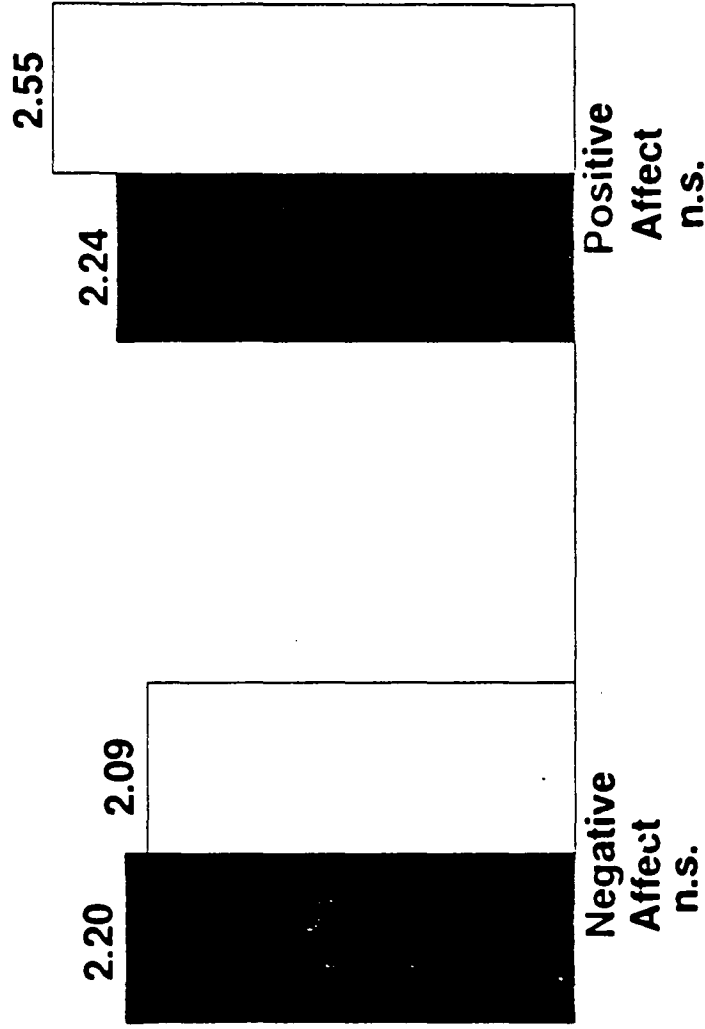
■ Lost Home  
□ Did Not Lose Home



$F(3,79)=6.22$   
 $p < .001$

# Intensity of Immediate Emotional Responses to Southern California Firestorms (Time 1) (N=79)

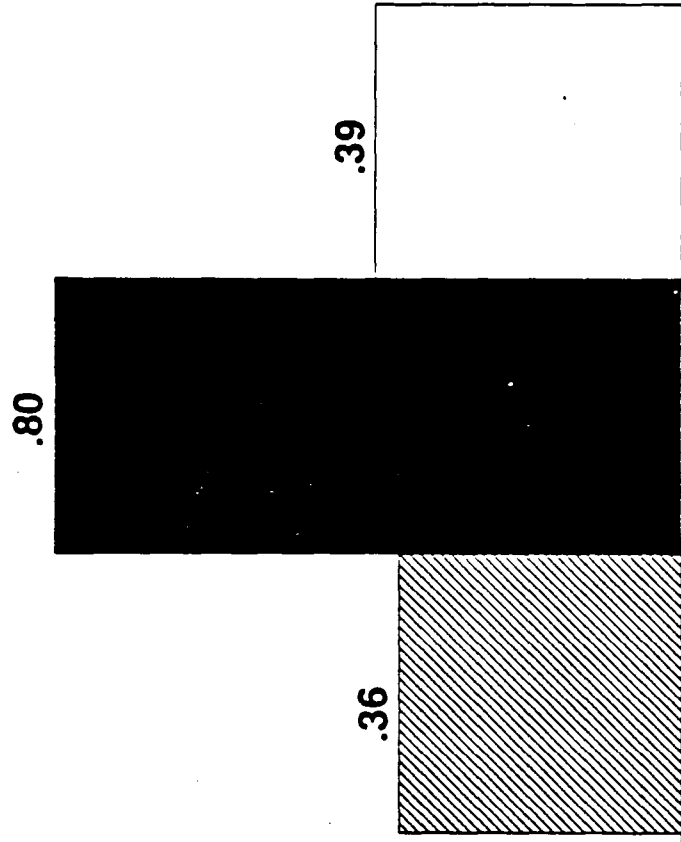
- Lost Home
- Did not Lose Home



F(3,75)=3.49  
p<.02

# Degree of Somatic Symptoms 36 Hours After Southern California Firestorms (Time 1) (N=79)

- Normative Community Sample
- Lost Home
- Did Not Lose Home



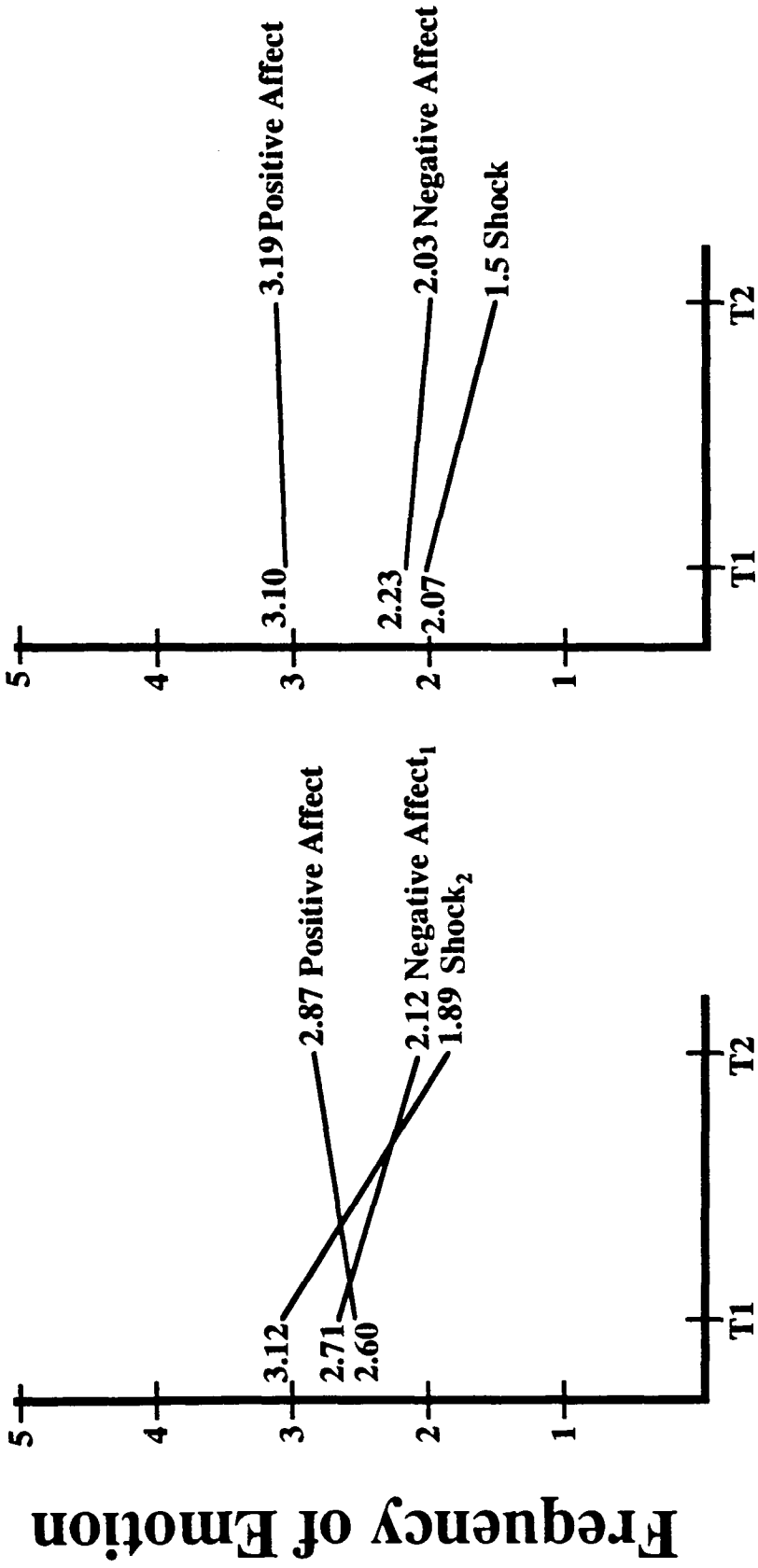
Somatic Symptoms  
 $p < .001$

$F(3,75) = 3.49$   
 $p < .02$

**Changes in Affect Between**

**Immediate Reponses  
and 2-Weeks Post-Fires**

**(N = 73)**



**Lost Home**

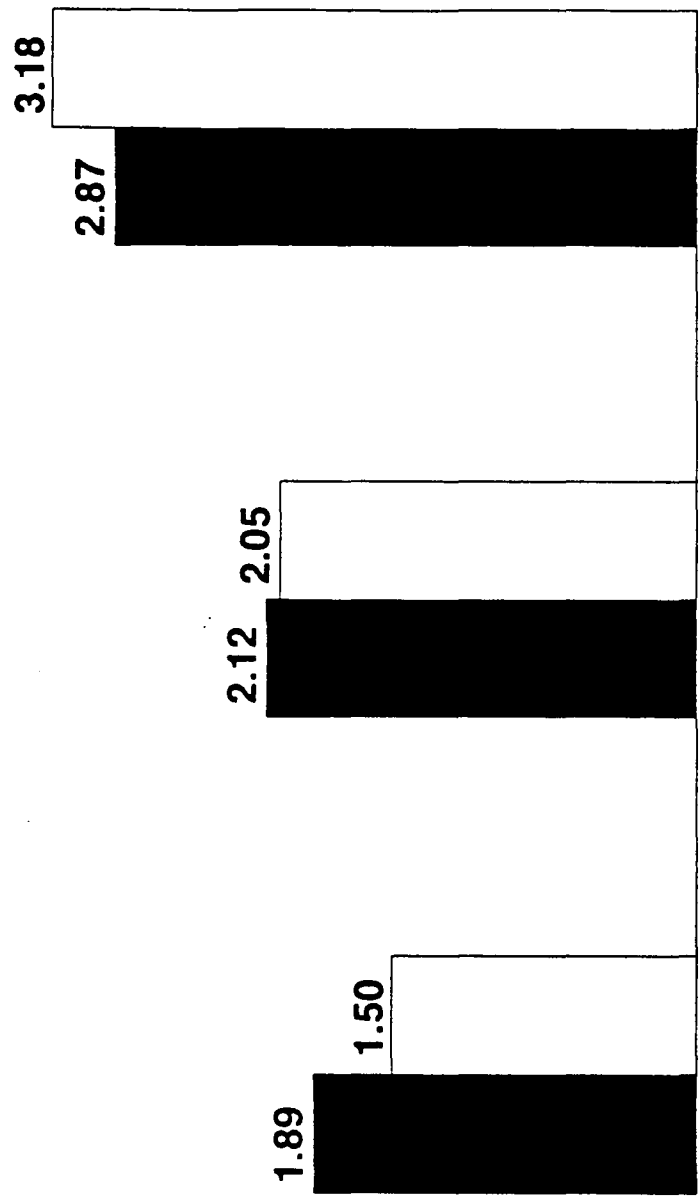
**Did Not  
Lose Home**

1 F(1,71) = 5.57 p < .03  
2 F(1,71) = 9.85 p < .01

Overall F (3,69) = 3.80  
p < .01

### Frequency of Emotional Responses to Southern California Firestorms 2-4 Weeks Post-Fire (Time 2) (N=74)

Lost Home  
 Did Not Lose Home



Shock  
p<.05

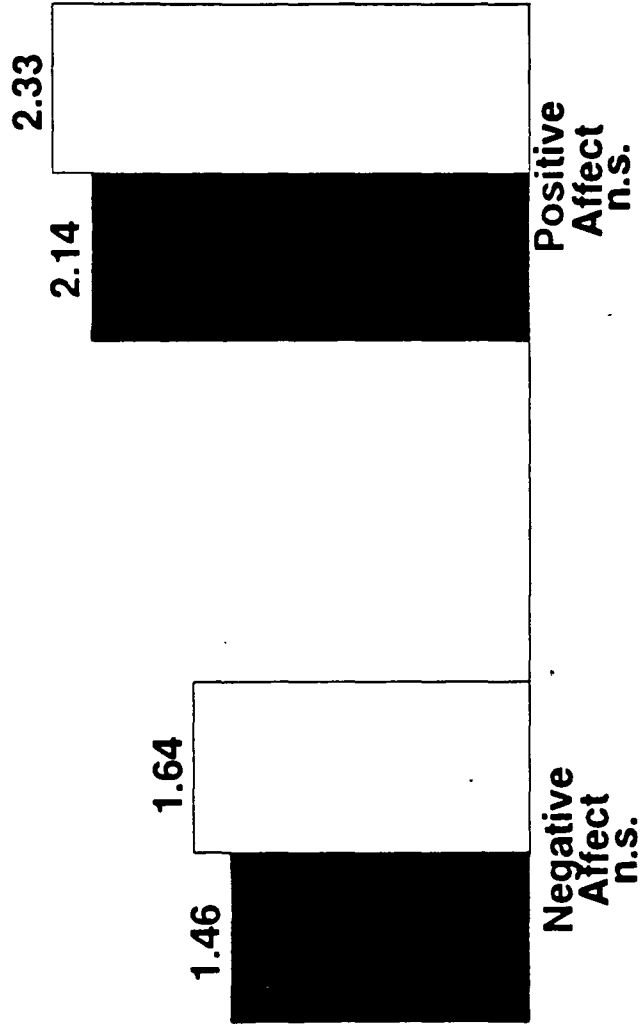
Negative Affect  
n.s.

Positive Affect  
n.s.

F(3,70)=2.47  
p<.10

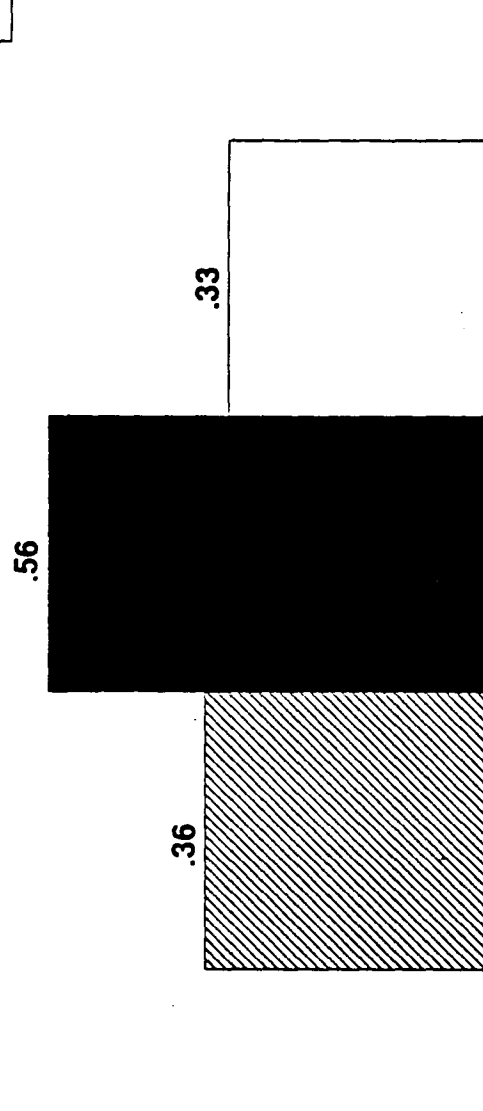
# Intensity of Emotional Responses to Southern California Firestorms 2-4 Weeks Post-Fires (Time 2) (N=74)

■ Lost Home  
□ Did not  
Lose Home



# Degree of Somatic Symptoms 2-4 Weeks After Southern California Firestorms (Time 2) (N=74)

- Normative Community Sample
- Lost Home
- Did Not Lose Home



Somatic Symptoms  
 $p \leq .10$

$F(3,70)=2.77$   
 $p < .05$

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Table 1. Correlations among wave 1 and wave 2 cognitive, emotional, and social responses

Wave 1 <sup>a</sup>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<b>Cognitive</b>															
<b>Emotional</b>	1.00														
1. Temporal Disintegration		1.00													
2. Positive Emotion	.35	1.00													
3. Negative Emotion	.64	-.38	1.00												
4. Numb/Shock	.58	-.22	.49	1.00											
5. Somatization	.64	-.24	.57	.50	1.00										
<b>Social</b>															
6. Ventilation	.16	.34	.10	.13	.18	1.00									
<b>Wave 2<sup>a</sup></b>															
<b>Cognitive</b>															
<b>Emotional</b>															
7. Temporal Disintegration	.56	-.24	.40	.50	.54	.11	1.00								
8. Impact of Events Avoidance	.51	-.29	.51	.45	.51	-.07	.63	1.00							
9. Impact of Events Intrusion	.53	-.27	.47	.63	.44	.14	.65	.60	1.00						
10. Positive Emotion	-.26	.52	-.31	-.28	-.32	.09	-.48	-.39	-.35	1.00					
11. Negative Emotion	.44	-.33	.57	.36	.50	.01	.64	.62	.49	-.58	1.00				
12. Numb/Shock	.42	-.31	.38	.56	.52	.03	.67	.56	.59	-.55	.66	1.00			
13. BSI-Global Severity Index	.54	-.21	.41	.45	.52	.08	.70	.56	.61	-.43	.73	.74	1.00		
<b>Social</b>															
14. Ventilation	.28	.12	.16	.40	.20	.32	.40	.08	.46	.16	.02	.27	.17	1.00	
15. Social Conflict	.39	-.16	.41	.22	.19	.07	.33	.33	.28	-.09	.49	.41	.53	.12	1.00
<b>Other</b>															
16. Exposure to Fire	.18	.16	.18	.27	.25	.26	.17	.18	.31	-.01	.19	.19	.28	.20	.29
17. Lost home or not	.30	-.19	.17	.41	.26	.06	.28	.24	.26	-.19	.05	.24	.12	.25	.07
18. Age	-.18	.16	-.25	.01	-.20	-.26	-.02	-.08	-.06	.12	-.19	-.03	-.19	.17	-.37
19. Gender <sup>b</sup>	.25	.19	.28	.25	.28	.16	.24	.18	.12	-.01	.40	.28	.33	.07	.12
Mean	2.45	2.93	2.36	2.37	.49	3.34	1.96	1.87	2.31	3.09	2.07	1.61	.64	2.44	12.08
Standard Deviation	.83	.80	.83	1.00	.62	.66	.64	.67	.77	.74	.67	.74	.61	.84	4.08

a. Wave 1 N=83, Wave 2 N=74

b. Male=0, Female=1

Coefficients of .23+ are significant at the p<.05 level

Coefficients of .29+ are significant at the p<.01 level

Coefficients of .35+ are significant at the p<.001 level

Table 2. Hierarchical Regression Equations Predicting Wave 2 Distress from Age, Gender, Fire Exposure, Severity of Loss, Wave 1 Distress, and Wave 1 Temporal Disintegration

Predictor	Total R <sup>2</sup>	F(Total R <sup>2</sup> )	Change R <sup>2</sup>	F(Change R <sup>2</sup> )	Beta	sr <sup>2</sup>
<b>Block 1</b>						
Negative Affect					.03	.01
Emotional Functioning	.33	11.36***	.33	11.36***	.19	.04
SCL-90 Somatization					.19	.08
<b>Block 2</b>						
Age	.39	8.45***	.06	3.06*	-.11	.02
Gender					.23	.05
<b>Block 3</b>						
Fire Exposure	.41	6.48***	.02	1.34	.15	.02
Loss Severity					-.11	.01
<b>Block 4</b>						
Temporal Disintegration	.45	6.48***	.04	4.20*	.28	.04

\* p<.05, two-tailed; \*\* p<.01, two-tailed; \*\*\* p<.001, two-tailed



Table 3. Hierarchical Regression Equations Predicting Wave 2 Social Conflict from Age, Gender, Fire Exposure, Severity of Loss, Wave 1 Distress, Baseline Social Conflict, and Wave 1 Temporal Disintegration

Predictor	Total R <sup>2</sup>	F(Total R <sup>2</sup> )	Change R <sup>2</sup>	F(Change R <sup>2</sup> )	Beta	sr <sup>2</sup>
<b>Block 1</b>						
Negative Affect					.20	.08
Emotional Functioning					-.06	.00
SCL-90 Somatization					-.22	.00
Baseline Social Conflict	.25	5.70***	.25	5.70**	.23	.07
<b>Block 2</b>						
Age	.34	5.58***	.09	4.25*	-.27	.08
Gender					.14	.01
<b>Block 3</b>						
Fire Exposure	.36	4.48***	.02	1.11	.17	.02
Loss Severity					.01	.00
<b>Block 4</b>						
Temporal Disintegration	.40	4.60***	.04	3.91*	.29	.04

\* p<.05, two-tailed; \*\* p<.01, two-tailed; \*\*\* p<.001, two-tailed