

ABSTRACT

We conducted a 2x2 within-subjects experiment of threat perceptions and self-defense intentions in ambiguous situations varying in both distal and proximal threat cues. A total of N=235 US adults were recruited on mTurk. Both gender and political orientation moderate the influence of distal and proximal threat cues on threat perception. Perceptions of imminent threat were strongly related to intentions to self-defense intentions and mediated all manipulated and individual difference variables, suggesting that lay self-defense intentions align with justifiable self-defense requirements. Empirical threat probability thresholds for intention to act in self-defense ranged between 0.64 and 0.74.

BACKGROUND

Individual's Use of Force in Self-Protection:

“... the use of force upon or toward another person is justifiable when the *actor believes* that such force is *immediately necessary* for the purpose of *protecting himself* against the use of unlawful force by such other person on the present occasion. (MPC §3.04)”

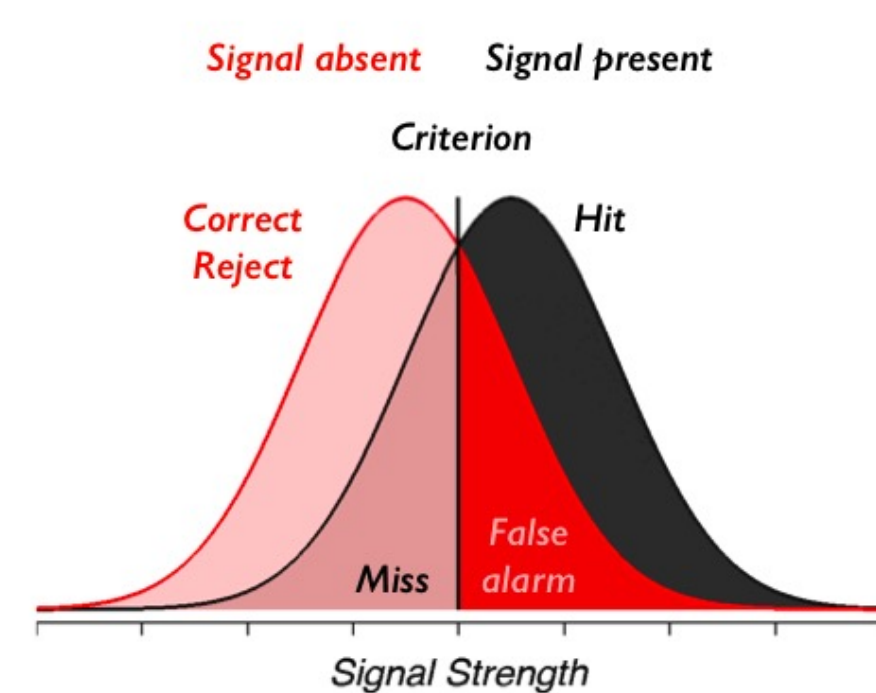
Threat Perception and Bayesian Updating:

H_a = event of concern (“this person will attack”)
 $H_{\sim a}$ = alternative possibility (“this person will not attack”)
 T = proximal threat cues

$$\frac{P(H_a|T)}{P(H_{\sim a}|T)} = \frac{P(T|H_a)}{P(T|H_{\sim a})} \times \frac{P(H_a)}{P(H_{\sim a})}$$

Posterior odds = Likelihood Ratio × Prior Odds
 Threat Uncertainty depends on Proximal Threat Cues, represented by the Likelihood Ratio and Prior Information

Preemptive Self-Defense as a Signal Detection Problem:



- Attackers and non-attackers generate cues leading to subjective perceptions of threat
- Distributions overlap, depending on the diagnosticity (d') of the threat cues (signal)
- Any Decision Rule leads to both False Alarms and Misses

Estimating the Threshold of Perceived Threat for Intent to Engage in Proactive Self Defense

Aili Qiao, Matthew Baucum, and Richard John

METHOD

Research Design

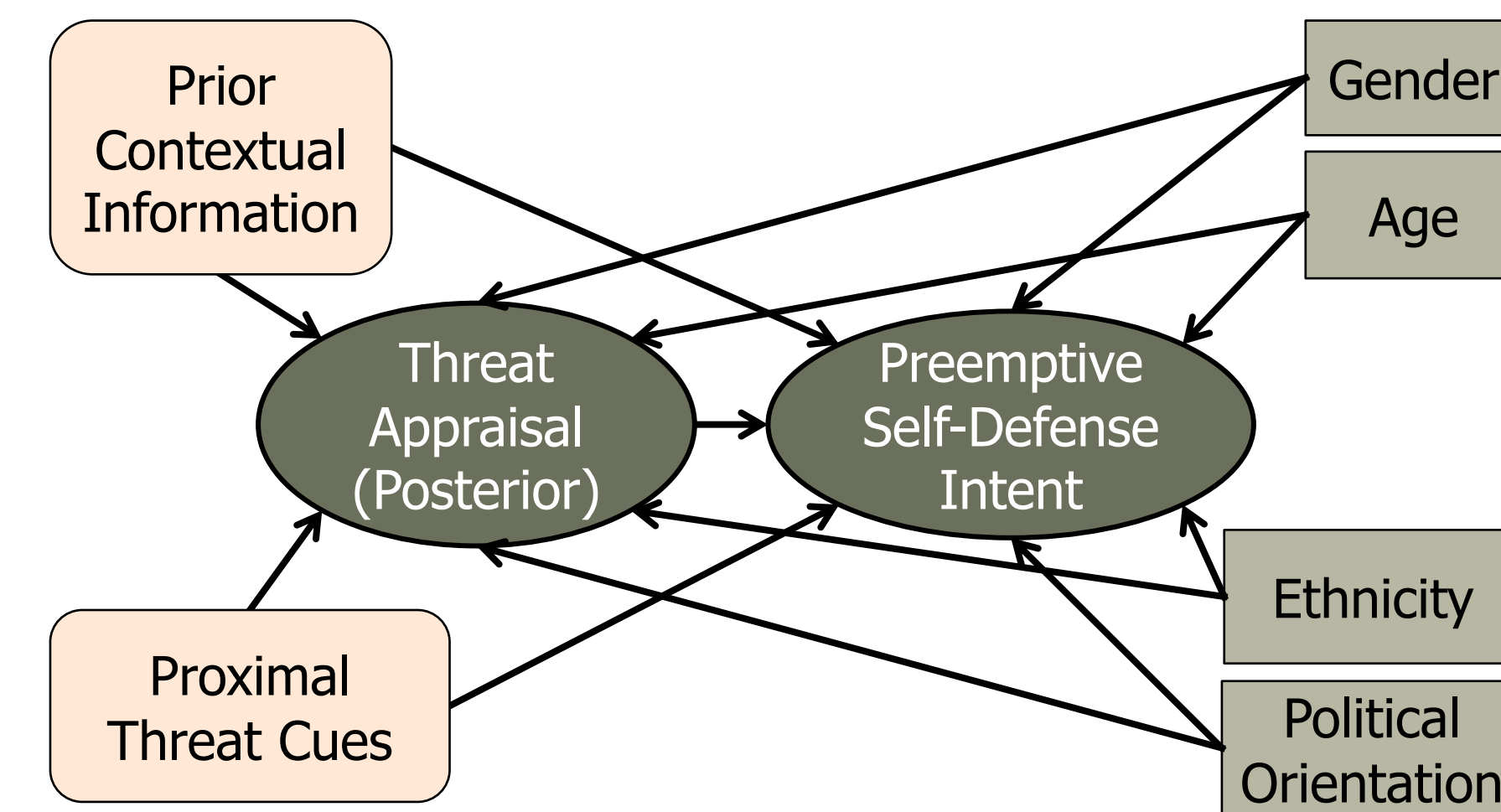
Participants read 4 brief Threat Scenarios (Relative Cost of Errors and Cue Diagnosticity (d') Heterogeneity) Prior Information (2) × Proximal Threat Cues (2) Manipulated and Counterbalanced Across Scenarios (4 versions of each scenario)

Participants

Mturkers (N = 235, mean age = 36.8)

Response Variables

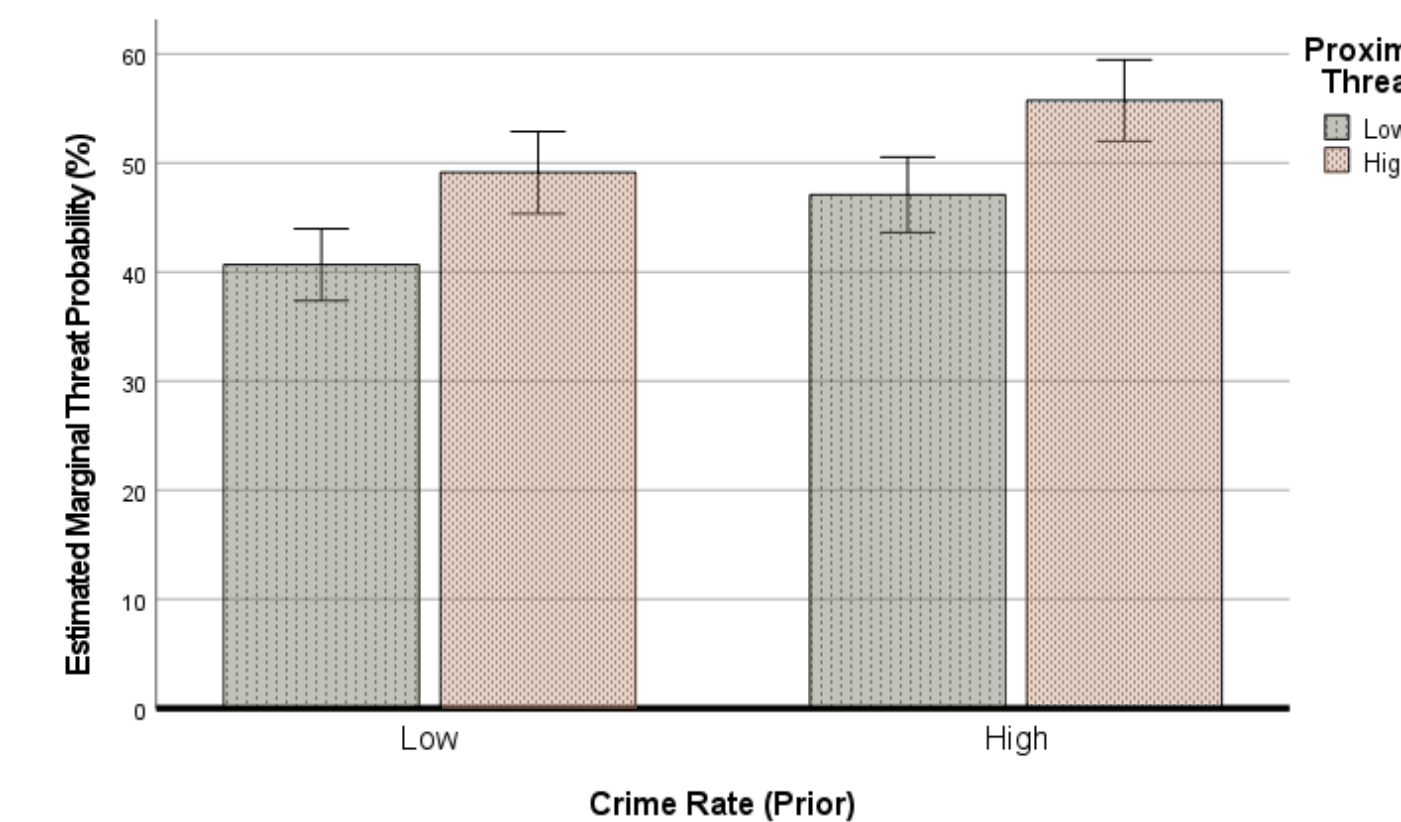
- Threat Uncertainty
 - Likelihood of an imminent attack, 0-100%
- Binary Preemptive Self-Defense
 - Yes/No
- Response Order Counterbalanced



	Scenario A	Scenario B	Scenario C	Scenario D
Premise	Followed in parking garage	Approached from behind at ATM at night	Approached in neighborhood at night	Followed to hotel at night
Self-defense method	Pepper spray	Shove to ground	Strike with steel object	Throw small rock
Prior Context Information Manipulation	Low/high crime neighborhood	Low/high crime neighborhood	Low/high crime neighborhood	Low/high crime neighborhood
Proximal Threat Cues Manipulation	Other cars in garage (yes/no)	Other ATM's available (no/yes)	Other houses nearby that person could be walking to (yes/no)	Resembles someone who followed you earlier (no/yes)

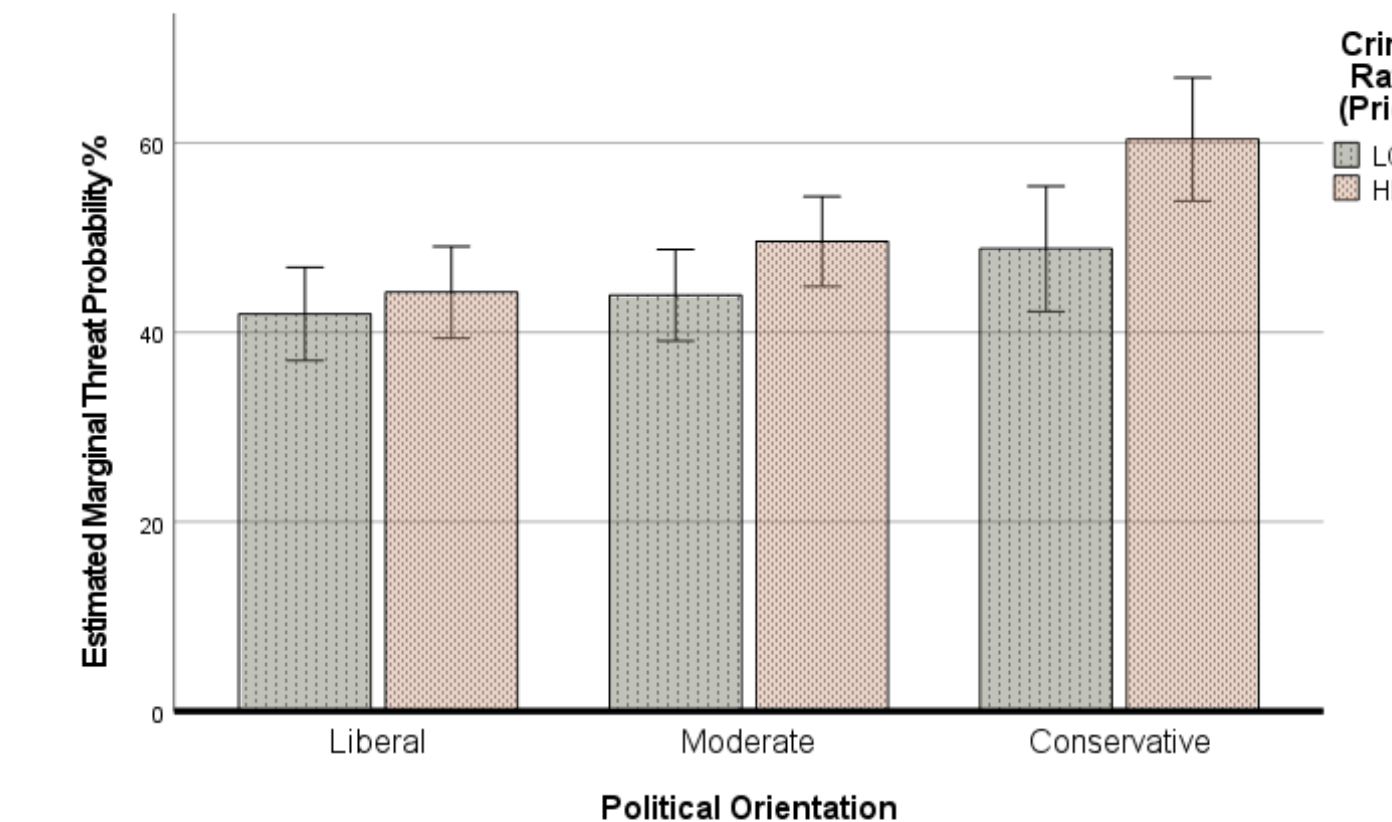
RESULTS

Threat Uncertainty (Posterior) Influenced by Prior Information & Proximal Threat Cues (LR)



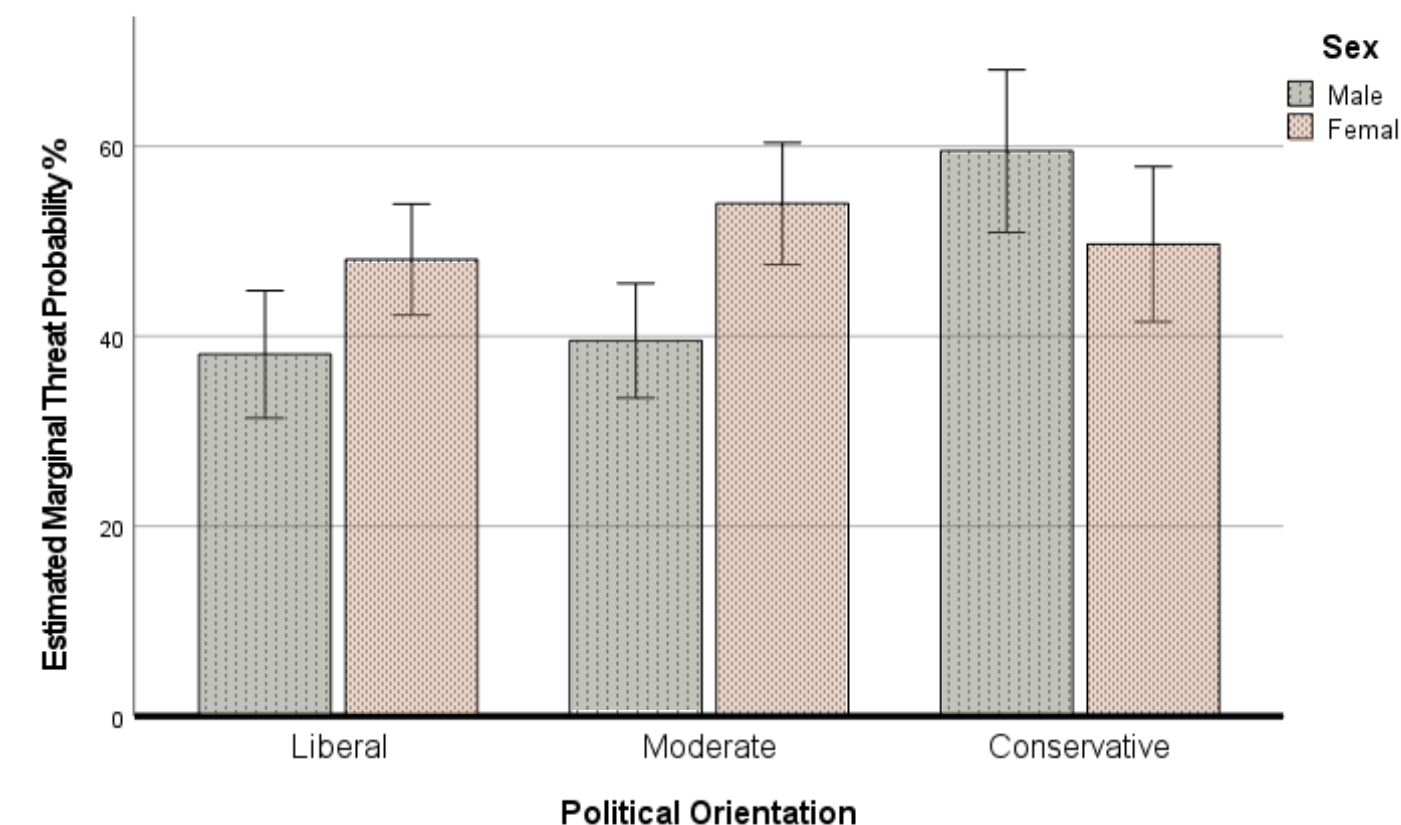
Prior ($p < .001$); Proximal Threat ($p < .001$)

Political Orientation Moderates Influence of Prior Information on Threat Uncertainty (Posterior)



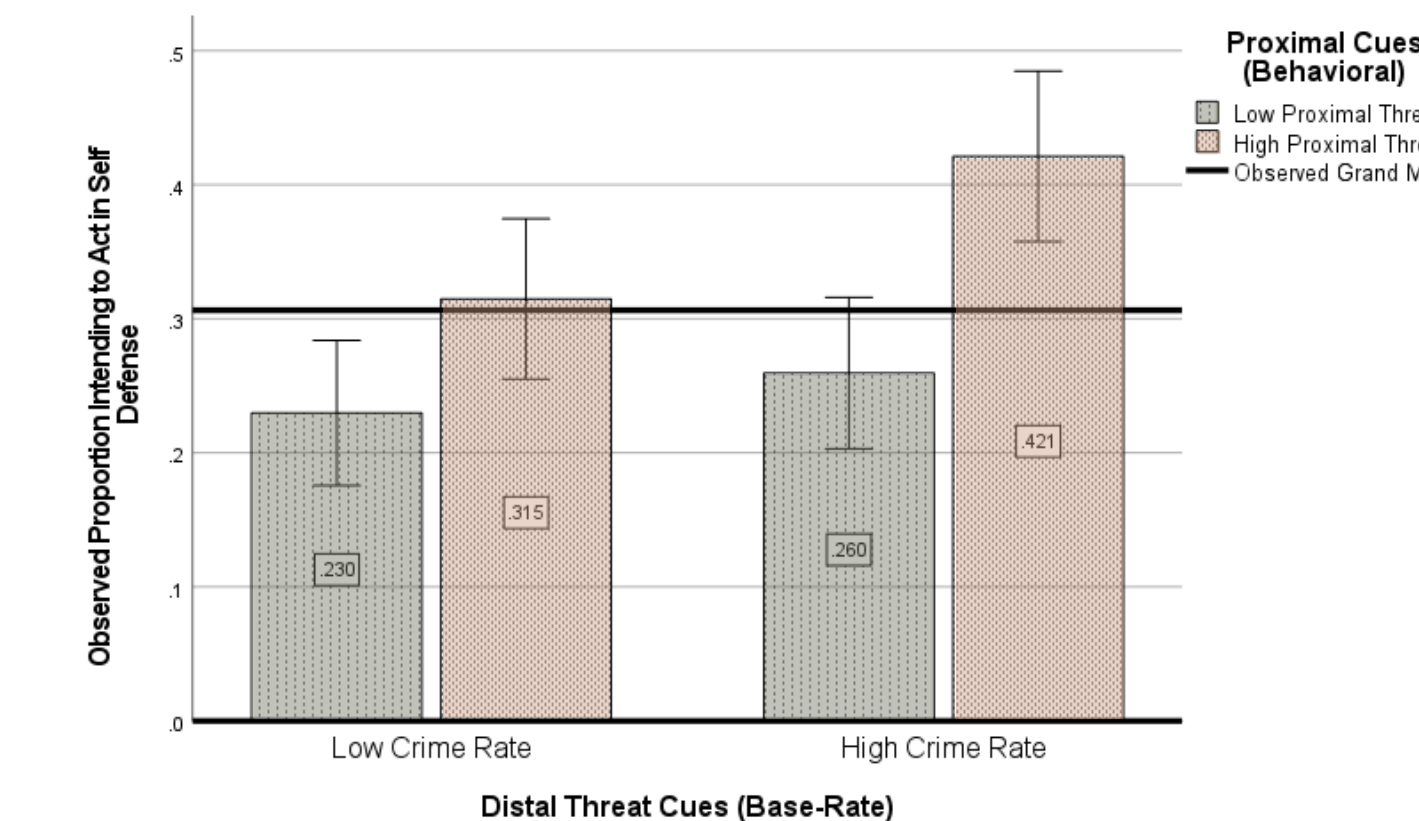
Prior × Political Orientation ($p < .01$)

Influence of Political Orientation on Threat Perception Contingent on Sex



Political Orientation × Sex ($p < .05$)

Preemptive Self-Defense (Binary)



Prior Information: No sig. effect
 Proximal Threat (LR) ($p = .025$): Low=22.9%, High=36.6%
 Sex ($p = .057$): Female=32.7%, Male=26.2%
 Interaction ($p = .015$)

CONCLUSION

- 1) Threat Uncertainty (Posterior)
 - Sensitive to Proximal Threat Cues & Crime Rate (Prior)
 - Use of Prior Depends on Political Orientation
 - Females > Males; Males > Females for Conservatives
- 2) Preemptive Self-Defense Influenced by Proximal Threat Cues & Crime Rate (Prior)
- 3) Effects of Proximal Threat Cues and Crime Rate Mediated by Threat Perception
- 4) Intent to Act Threshold Depends on both Proximal Threat and Crime Rate and Scenario
- 5) Thresholds lower for High Prior + High Proximal Threat
 - Should depend only on Prior Information
 - Should be independent of Proximal Threat
- 6) Thresholds lower dependent on Scenario
 - Hotel Scenario employed least harmful Self-Defense Tactic (Throw small rock),
 - Reduction in Cost of a False Alarm

Our findings suggest that perceived threat depends on both base-rates and on immediate environmental cues across a range of ambiguous scenarios. Biases in threat perception, likely based on past experiences, are identified for gender. Biases were also identified related to political orientation are likely the result of differences in world view.

DISCUSSION

While a legally justifiable act of self-defense has a three-pronged requirement, the current study focused exclusively on the assessment of imminence – i.e., how individuals perceive threat cues in the context of self-defense. Our benchmarks of interests included the base rate of threat of the environment (i.e., neighborhood crime rate) and the more proximal information that reveals the threat in the possible attacker (i.e., possible attacker's behavior). Thus, the current study examined the relationship between base rate probability of harm, proximal probability of harm, and the intent to engage in self-protective behavior.

Limitations

- Assessed only the *intention* to engage in self-defense action
- Assessed perceived threat probability using *single item* only
- Limited to only *four* threat scenarios
- Limited to only *four* self-defense actions
- Prior context manipulation limited to *two levels* of historical crime-rate only
- Proximal threat cue manipulation limited to *presence or absence* of scenario specific cues only