



## Motivational Priming Predicts How Noxious Unconditioned Stimuli Influence Affective Reactions to Emotional Pictures

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### ABSTRACT

Motivational priming theory (MPT) and preparedness theory generate competing hypotheses about the impact of an aversive US on responses to an affective foreground. MPT predicts the aversive US will facilitate negative emotional reactions to unpleasant pictures and inhibit positive emotional reactions to pleasant pictures. Preparedness theory predicts an aversive US will increase negative emotional reactions to unpleasant pictures, but will not impact responses to pleasant pictures. The present study (N = 125) compared these competing hypotheses by assessing how noxious shocks and non-noxious noises influence responses to emotional pictures. Following each picture, participants rated how the picture made them feel using the Self Assessment Manikin. Results supported MPT - noxious USs, but not non-noxious USs, facilitated negative emotional reactions to unpleasant pictures and inhibited positive emotional reactions to pleasant pictures.

### KEYWORDS

Affect; Noxious Stimulation; Emotional Picture Ratings; Motivational Priming Theory; Preparedness Theory

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### References

- [1] Benning, S. D., Patrick, C. J., & Lang, A. R. (2004). Emotional modulation of the post-auricular reflex. *Psychophysiology*, 41, 426-432. doi:10.1111/j.1469-8986.00160.x
- [2] Bradley, M. M., Codispoti, M., Cuthbert, B. N., & Lang, P. J. (2001). Emotion and motivation I: Defensive and appetitive reactions in picture processing. *Emotion*, 1, 276-298. doi:10.1037/1528-3542.1.3.276
- [3] Bradley, M. M., Codispoti, M., Sabatinelli, D., & Lang, P. J. (2001). Emotion and motivation II: Sex differences in picture processing. *Emotion*, 1, 300-319. doi:10.1037/1528-3542.1.3.300
- [4] Bradley, M. M., & Lang, P. J. (1994). Measuring emotion: The Self-Assessment Manikin and the semantic differential. *Journal of Behavior Therapy and Experimental Psychiatry*, 25, 49-59. doi:10.1016/0005-7916(94)90063-9
- [5] Bresin, K., Gordon, K. H., Bender, T. W., Gordon, L. J., & Joiner, T. E. (2010). NO pain, no change: Reductions in prior negative affect following physical pain. *Motivation & Emotion*, 34, 280-287. doi:10.1007/s11031-010-9168-7
- [6] Chan, C. W., & Dallaire, M. (1989). Subjective pain sensation is linearly correlated with the flexion reflex in man. *Brain Research*, 479, 145-150. doi:10.1016/0006-8993(89)91344-9
- [7] CSEA (1999). The international affective picture system: Digitized photographs. Gainesville, FL: University of Florida, The Center for Research in Psychophysiology.
- [8] Cuthbert, B. N., Bradley, M. M., & Lang, P. J. (1996). Probing picture perception: Activation and

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emotion. *Psychophysiology*, 33, 103-111. doi:10.1111/j.1469-8986.1996.tb02114.x

- [9] De Wied, M., & Verbaten, M. N. (2001). Affective pictures processing, attention, and pain tolerance. *Pain*, 90, 163-172. doi:10.1016/S0304-3959(00)00400-0
- [10] France, C. R., Rhudy, J. L., & McGlone, S. (2009). Using normalized EMG to define the Nociceptive Flexion Reflex (NFR) threshold: Further evaluation of standardized scoring criteria. *Pain*, 145, 211-218. doi:10.1016/j.pain.2009.06.022
- [11] Greenwald, M. K., Bradley, M. M., Cuthbert, B. N., & Lang, P. J. (1998). Startle potentiation: Shock sensitization, aversive learning, and affective picture modulation. *Behavioral Neuroscience*, 112, 1069-1079. doi:10.1037/0735-7044.112.5.1069
- [12] Grillon, C., Ameli, R., Merikangas, K., Woods, S. W., & Davis, M. (1993). Measuring the time course of anticipatory anxiety using the fear-potentiated startle reflex. *Psychophysiology*, 30, 340-346. doi:10.1111/j.1469-8986.1993.tb02055.x
- [13] Grillon, C., Ameli, R., Woods, S. W., & Merikangas, K. (1991). Fear-potentiated startle in humans: Effects of anticipatory anxiety on the acoustic blink reflex. *Psychophysiology*, 28, 588. doi:10.1111/j.1469-8986.1991.tb01999.x
- [14] Guieu, R., Blin, P., Pouget, J., & Serratrice, G. (1992). High level sportsmen and nociceptive flexion reflex of the lower limb. *Canadian Journal of Neuroscience*, 19, 69-71.
- [15] Hawk, L. W., & Cook III, E. W. (1997). Affective modulation of tactile startle. *Psychophysiology*, 34, 23. doi:10.1111/j.1469-8986.1997.tb02412.x
- [16] Hollin, G. J. S., & Derbyshire, S. W. G. (2009). Cold pressor pain reduces phobic fear but fear does not reduce pain. *The Journal of Pain*, 10, 1058-1064. doi:10.1016/j.jpain.2009.03.015
- [17] Jansen, D. M., & Frijda, N. H. (1994). Modulation of the acoustic startle response by film-induced fear and sexual arousal. *Psychophysiology*, 31, 565-571. doi:10.1111/j.1469-8986.1994.tb02349.x
- [18] Kroenke, K., Wu, J., Bair, M. J., Krebs, E. E., Damush, T. M., & Tu, W. (2011). Reciprocal relationship between pain and depression: A 12-month longitudinal analysis in primary care. *Journal of Pain*, 12, 964-973. doi:10.1016/j.jpain.2011.03.003
- [19] Lang, P. J. (1995). The emotion probe: Studies of motivation and attention. *American Psychologist*, 50, 372-385. doi:10.1037/0003-066X.50.5.372
- [20] Lang, P. J., Bradley, M. M., & Cuthbert, B. (2005). The International Affective Picture System (IAPS): Affective ratings of pictures and instruction manual. Technical Report A-6. Gainesville, FL: University of Florida.
- [21] Lang, P. J., Bradley, M. M., & Cuthbert, B. N. (1990). Emotion, attention, and the startle reflex. *Psychological Review*, 97, 377-395. doi:10.1037/0033-295X.97.3.377
- [22] Lang, P. J., Bradley, M. M., & Cuthbert, B. N. (1999). International affective picture system (IAPS): Instruction manual and affective ratings. Technical Report A-4. Gainesville, FL: The Center for Research in Psychophysiology, University of Florida.
- [23] Meagher, M. W., Arnaud, R. C., & Rhudy, J. L. (2001). Pain and emotion: Effects of affective picture modulation. *Psychosomatic Medicine*, 63, 79-90.
- [24] Ohman, A., & Dimberg, U. (1978). Facial expressions as conditioned stimuli for electrodermal responses: A case of "preparedness"? *Journal of Personality & Social Psychology*, 36, 1251-1258. doi:10.1037/0022-3514.36.11.1251
- [25] Ohman, A., & Soares, J. J. F. (1993). On the automatic nature of phobic fear: Conditioned electrodermal responses to masked fear-relevant stimuli. *Journal of Abnormal Psychology*, 102, 121-132. doi:10.1037/0021-843X.102.1.121
- [26] Peterson, C., Maier, S. F., & Seligman, M. E. P. (1993). Learned Helplessness: A theory for age of personal control. New York, NY: Oxford University Press.
- [27] Rhudy, J. L., Bartley, E. J., Williams, A. E., McCabe, K. M., Chandler, M. C., Russell, J. L. et al. (2010). Are there sex differences in affective modulation of spinal nociception and pain? *The Journal of Pain*, 11, 1429-1441. doi:10.1016/j.jpain.2010.04.003
- [28] Rhudy, J. L., & France, C. R. (2007). Defining the nociceptive flexion reflex (NFR) threshold in human

- [29] Rhudy, J. L., Williams, A. E., McCabe, K. M., Nguyen, M. A., & Rambo, P. L. (2005). Affective modulation of nociception at spinal and supraspinal levels. *Psychophysiology*, 42, 579-587.
- [30] Rhudy, J. L., Williams, A. E., McCabe, K. M., Rambo, P. L., & Russell, J. L. (2006). Emotional modulation of spinal nociception and pain: The impact of predictable noxious stimulation. *Pain*, 126, 221-233.  
doi:10.1016/j.pain.2006.06.027
- [31] Rhudy, J. L., Williams, A. E., McCabe, K. M., Russell, J. L., & Maynard, L. J. (2008). Emotional control of nociceptive reactions (ECON): Do affective valence and arousal play a role? *Pain*, 136, 250-261.  
doi:10.1016/j.pain.2007.06.031
- [32] Sandrini, G., Milanov, I., Willer, J. C., Alfonsi, E., Moglia, A., & Nappi, G. (1999). Different effect of high doses of naloxone on spinal reflexes in normal subjects and chronic paraplegic patients. *Neuroscience Letters*, 261, 5-8. doi:10.1016/S0304-3940(98)01000-3
- [33] Sandrini, G., Serrao, M., Rossi, P., Romaniello, A., Cruccu, G., & Willer, J. C. (2005). The lower limb flexion reflex in humans. *Progress in Neurobiology*, 77, 353-395.  
doi:10.1016/j.pneurobio.2005.11.003
- [34] Schupp, H. T., Cuthbert, B. N., Bradley, M. M., & Birbaumer, N. (1997). Probe P3 and blinks: Two measures of affective startle modulation. *Psychophysiology*, 34, 1-6. doi:10.1111/j.1469-8986.1997.tb02409.x
- [35] Seligman, M. E. (1970). On the generality of the laws of learning. *Psychological Review*, 77, 406-418.  
doi:10.1037/h0029790
- [36] Seligman, M. E. (1971). Phobias and preparedness. *Behavior Therapy*, 2, 307-320.  
doi:10.1016/S0005-7894(71)80064-3
- [37] Vrana, S. R., Spence, E. L., & Lang, P. J. (1988). The startle probe response: A new measure of emotion? *Journal of Abnormal Psychology*, 97, 487-491. doi:10.1037/0021-843X.97.4.487
- [38] Williams, A. E., & Rhudy, J. L. (2007). The influence of conditioned fear on human pain thresholds: Does preparedness play a role. *The Journal of Pain*, 8, 598-606. doi:10.1016/j.jpain.2007.03.004