AROUSAL BIAS: IF IT LOOKS BAD, DOES IT FEEL BAD?  
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INTRODUCTION

In this study, we explored how evaluative differences when rating emotional stimuli translates into differences in physiological defensive reactivity and/or threshold of activation. In general, people’s ratings of pleasant and arousing are linearly uncorrelated but show a quadratic correlation, with both pleasant and unpleasant pictures rated as higher in arousal (indicating greater activation), compared to neutral pictures.

We examined an individual difference factor of “arousal bias,” that is, the tendency for some people to associate greater arousal with unpleasant stimuli, and others to associate arousal with pleasant content. Will a person who tends to categorize unpleasant stimuli in the environment as more arousing than pleasant events, differ from those who primarily find pleasant situations arousing?

METHOD

Participants were 60 students; 56 pictures were selected from the IAPS (Lang et al., 1999) and were chosen to comprise 3 levels of arousal (low, moderate, high) for pleasant and unpleasant content.

• Participants rated 60 neutral, pleasant, and unpleasant pictures.

• Corrugator EMG, skin conductance, and heart rate activity were measured during picture viewing; acoustic startle probes were presented during each picture. Following a 5-s picture presentation, the participant rated each picture on the dimensions of pleasure and arousal.

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For each individual, the linear correlation between pleasure and arousal ratings was computed.

CORRUGATOR EMG

For corrugator EMG activity, a main effect of picture valence was observed (p = .046). The Independent Group exhibited increased corrugator activity when viewing unpleasant pictures (main effect of valence, p = .005; linear trend, p = .002). The Negative Bias Group showed increased activity to both pleasant and unpleasant pictures (main arousal effect, p = .045; quadratic trend, p = .003). For the Positive Bias Group, corrugator EMG activity did not significantly differ when viewing emotional and neutral pictures.

For heart rate, a main effect of valence indicated more cardiac deceleration when viewing unpleasant pictures. For SCR a main effect of picture valence was observed (p = .028), with larger SCRs to unpleasant pictures (main valence effect). There were no significant effects of BIAS on either measure.

CONCLUSIONS

These findings suggest that individual differences in “arousal bias” modulate physiological reactions to affective content. Measures of physiological orienting (e.g., heart rate and skin conductance responses) suggest there were no group differences in sensory unmasking during picture processing. However, evaluative judgments and physiological measures indicated greater defensive activation for Negative Bias and Independent participants when viewing unpleasant content whereas Positive Bias individuals did not show defensive activation to the same content nor did they rate these materials as arousing. On the average, negative bias and individual participants responded similarly.

However, negative bias participants were more likely to rate the unpleasant pictures as more arousing and they also displayed negative facial emotions to pleasant content. These data are consistent with a recent study by Shan et al. (2002) who found increased corrugator activity when dysphoric participants viewed pleasant faces.

Taken together, these findings have implications for assessment and treatment in clinical populations (e.g., patients who endorse “negative cognitive distortions”), particularly in terms of physiological reactivity to unpleasant environmental events. Conversely, those individuals who view emotional content as less arousing may be less defensively engaged and thus “blunted” in their physiological reactions.

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