

The Potential Moderating Role of Schizotypy on the Relationship Between Positive Mood Induction and Creativity

^{1,2}Luz H. Ospina and ^{1,2}Deborah J. Walder

¹The Graduate Center, The City University of New York

²Department of Psychology at Brooklyn College of The City University of New York

INTRODUCTION

Positive affect improves creativity (1-3), though not consistently. Recent studies suggest positive affect does not influence, or even impairs, creativity (4-6). Discrepancies may be due to differing conceptualizations of affect, neglect to consider or measure physiological arousal (to validate mood induction procedures), and variability in creativity measures.

Schizotypy, conceptualized as a subclinical form of psychosis (7), has also been linked with enhanced creativity (8-10). Research demonstrates that positive symptoms of psychosis are associated with improved creativity, while those related to negative symptoms are inversely associated (11, 12).

Schizotypy has been associated with an increased likelihood of experiencing negative, compared to positive, affect (13, 14). Also, schizotypal participants report significantly less pleasant mood in response to positive mood inductions, compared to controls (15-17). However, it remains unclear how the intensity (i.e., arousal) of induced affect influences both positive and negative affective experience and creativity as a function of schizotypal traits.

The current study aimed to elucidate the potential moderating role of schizotypal traits on the relationship between a positive mood-induction (with varying degrees of arousal) on creativity. Specifically, we aimed to:

1. Induce four mood states [neutral-low arousal (N-LA), positive-low arousal (P-LA), positive-moderate arousal (P-MA), positive-high arousal (P-HA)] and validate mood-induction procedure (MIP) efficacy by measuring subjective mood and objective arousal.
2. Assess the potential moderating influence of schizotypal traits on the relationship between the four positive mood-induction manipulation groups on creativity.

MATERIALS AND METHODS

Sample: 160 (80M/80F) undergraduate students ($M_{age}=21.24$, $SD=4.08$) participated in the study. Informed consent was obtained in accordance with Brooklyn College IRB policies and procedures.

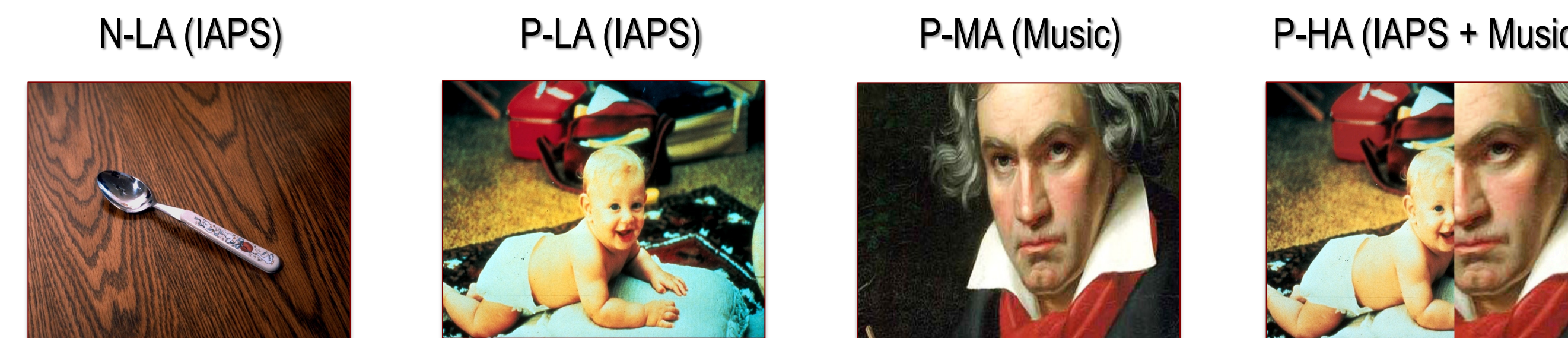
Procedures: After consent, participants were administered a brief interview to obtain basic demographic information, followed by connection to psychophysiological equipment, MIP administration and intermittent mood ratings.

Psychophysiological Measure: Arousal was assessed using changes in skin conductance level (SCL). Changes in SCL were recorded using two dry, bright-plated bipolar electrodes with Velcro attachment straps, and data were recorded using a commercially available hardware unit (18), and software, LabChart v.5 (18).

Mood Assessment: The SAM (19), a graphical depiction of valence and arousal, was administered immediately after psychophysiological equipment attachment and immediately after MIP.

MATERIALS AND METHODS (cont)

Mood Induction Paradigm (20): After first SAM assessment, participants were randomly assigned to one of four mood-induction conditions (using images from the International Affective Picture System ([IAPS], 21) and/or a musical excerpt (20, 22):



Cognitive Measures: After the MIP, participants were administered the SAM, then:

- A brief creativity task [Remote Associates Test (RAT)](23)
- Two verbal fluency tasks [phonemic (24) and alternation of phonemic and semantic (6)]
- To account for potential order effects, fluency tasks and creativity were counterbalanced

• **Schizotypal Measure:** The Schizotypal Personality Questionnaire-Brief [SPQ-B (25)] is a 22-item self-report measure of schizotypal traits that yields four subscales:

1. *Cognitive-Perceptual (SPQ-CP):* positive psychotic-like symptoms
2. *Interpersonal (SPQ-I):* negative psychotic-like symptoms
3. *Disorganized (SPQ-D):* disorganized symptoms
4. *Total (SPQ-Total):* overall symptoms

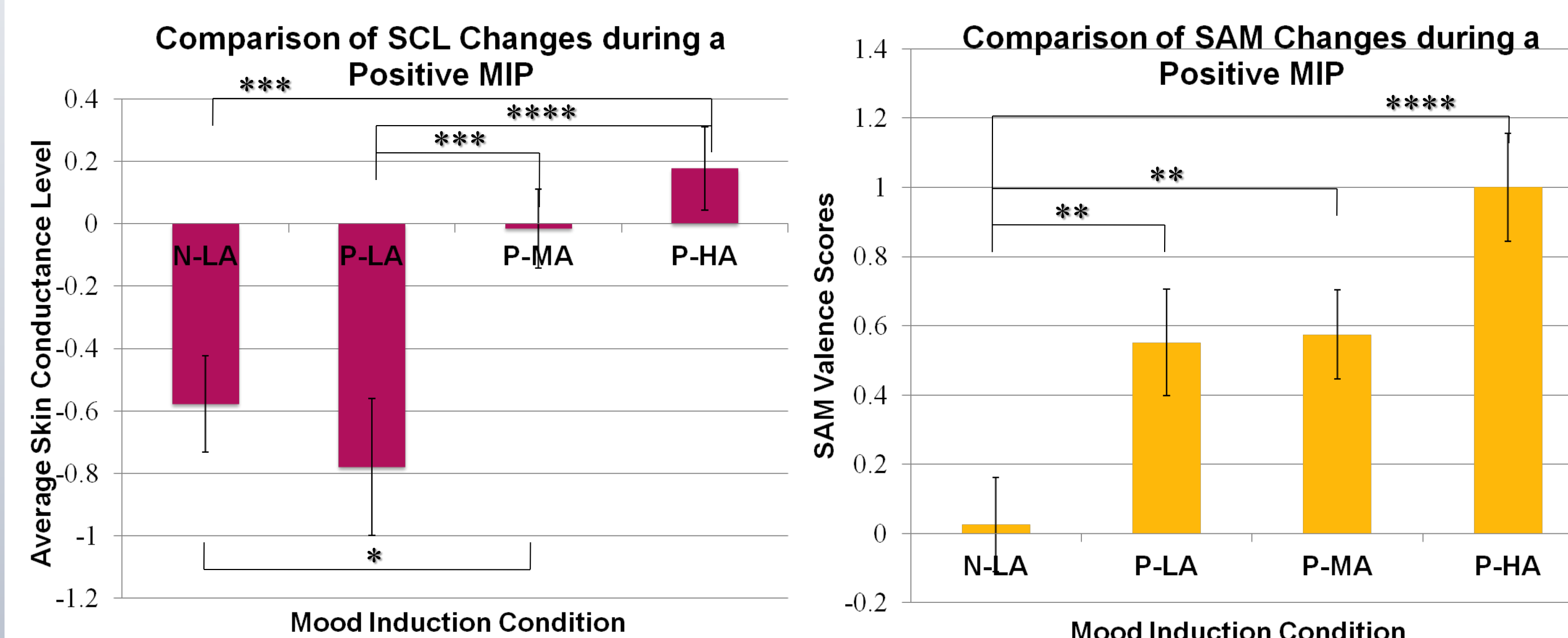
Data Analyses:

- Chi-square and Kruskal-Wallis tests were used to assess MIP group differences on demographics.
- One-way ANOVAs were used to assess mood group differences in SC and SAM change scores
 - SCL Change Score = Average SC level across the 5-sec period prior to MIP onset subtracted from the average SC level across the 70-sec MIP period (post-MIP).
 - SAM Change Score = SAM score prior to MIP onset subtracted from SAM score post-MIP.
- Two-way ANOVAs were employed to assess the interaction effect of schizotypal traits with MIP group on creativity performance. Scores from the top and bottom 25th percentiles for all schizotypal subscales were used to categorize high and low schizotypal subscale scorers, respectively.
- Order of task administration was used as a covariate. Post Hoc analyses used the Tukey Criterion.

RESULTS

Demographics: There were no significant differences in age, gender, ethnicity, education, primary language or handedness across the four mood-induction groups.

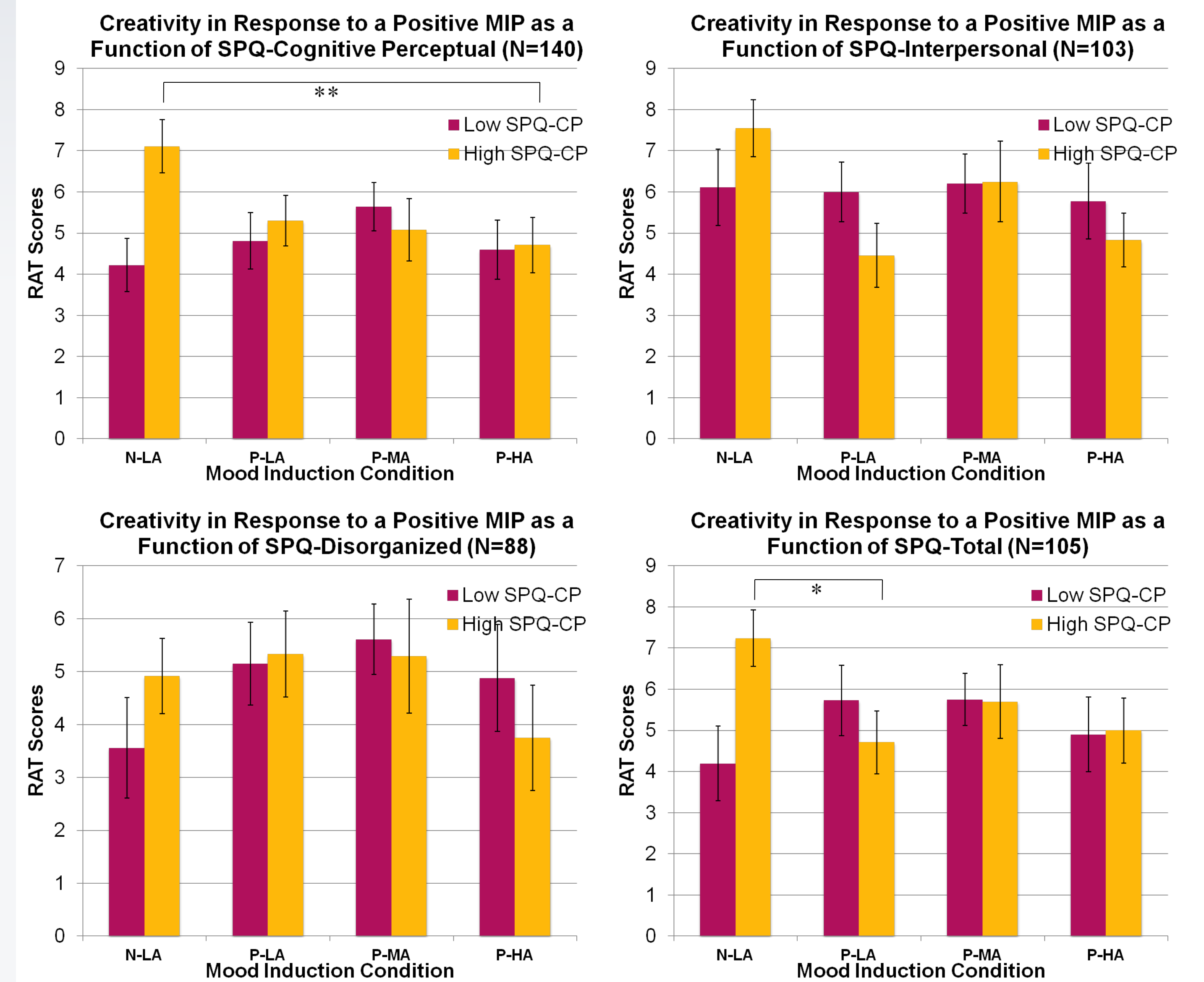
MIP Efficacy:



Note: * $p<.10$, ** $p<.05$, *** $p<.01$, **** $p<.001$, ns=not significant. All tests were two-tailed.

RESULTS (cont)

Mood Condition by Schizotypal Subscale Interactions on Creativity: Post Hoc Results ^a



Note: * $p<.1$, ** $p<.05$, *** $p<.01$, **** $p<.001$, ns=not significant. All tests were two-tailed. Order of task administration was included as a covariate, which was significant for all analyses ($p<.01$) except SPQ-D ($p=.07$). ^a Post hoc tests for trend-level interactions between MIP*SPQ-CP ($p=.06$) and MIP*SPQ-Tot ($p=.09$) were adjusted with the Bonferroni

CONCLUSIONS

- The MIP successfully elicited changes in physiological arousal, as demonstrated by significant overall group differences in SC change. Specifically, SC was lower in P-LA than P-MA and P-HA, and N-LA was lower than P-HA at trend level.
- The MIP also elicited changes in subjective mood in the expected direction; participants in the positive mood groups reported significantly greater (i.e., happier) subjective valence scores compared to individuals in the neutral group.
- The SPQ-CP subscale was demonstrated to moderate the influence of the positive MIP on creativity performance. Specifically, while there were no differences in RAT scores between the four mood conditions for low SPQ-CP scorers, high SPQ-CP scorers in the N-LA group outperformed those in the P-HA group. Also, high SPQ-Total scorers in the N-LA group outperformed those in the P-LA group, at trend level; no mood group differences were found for low SPQ-Total scorers.
- Results suggest that the relationship between positive affect (with varying arousal levels) and creativity may be moderated by psychotic-like and overall schizotypal traits, such that high SPQ scorers do not benefit creatively from a positive mood induction, compared to low SPQ scorers.

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