Cognitive Appraisal Moderates the Vasovagal Response

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Introduction

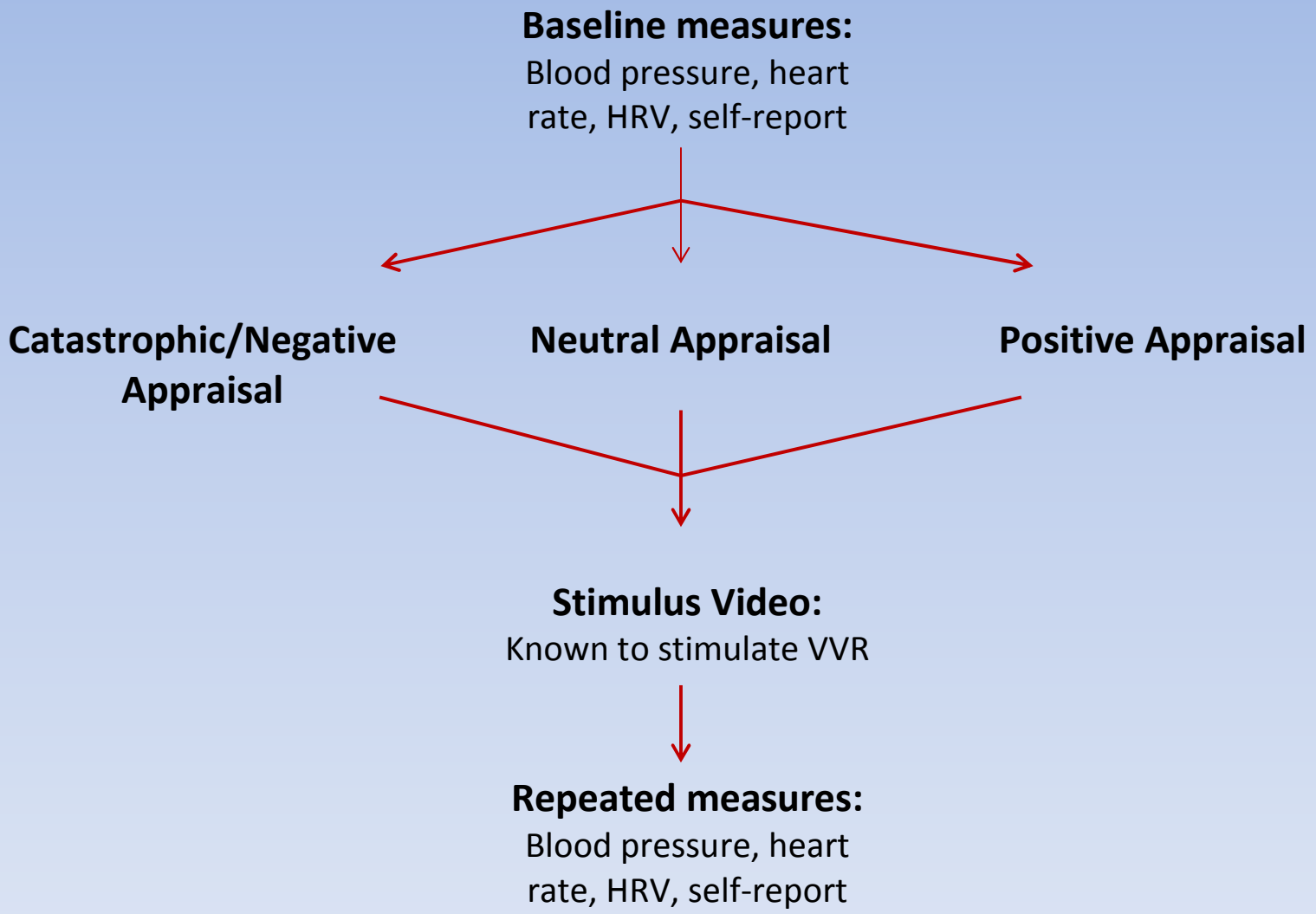
- Vasovagal reactions (VVR):
  - Most common cause of unconsciousness
  - One million evaluations for syncope every year
    - 3% of emergency department visits (Kapoor, 1992)
  - A common medical problem complicating and deterring people from various activities such as immunization, dental care, and blood donation

Introduction

- Importance of cognitive and emotional factors
  - Hyper-vigilance
  - Panic:
    - Catastrophic misinterpretation/appraisal → hyper-vigilance → increased arousal
- Objective: to examine role of cognitive appraisal in VVR

Method

- Participants:
  - 86 young and healthy volunteers
- Materials:
  - Stimulus video:
    - Surgical education videos, known to stimulate VVR
  - Questionnaires:
    - *Medical Fears Survey (MFS)*
    - *Spielberger State Anxiety Inventory (STAI-Y)*
    - *Disgust Scale –Revised (DS-R)*
    - *Blood Donation Reactions Inventory (BDRI)*
  - ECG was used for heart-rate variability (HRV) to measure sympathetic and parasympathetic nervous system activity
  - Blood pressure (BP) readings were also taken


Baseline measures:
Blood pressure, heart rate, HRV, self-report
Catastrophic/Negative Appraisal
Neutral Appraisal
Positive Appraisal
Stimulus Video:
Known to stimulate VVR
Repeated measures:
Blood pressure, heart rate, HRV, self-report

Data Analyses

- Effects of cognitive appraisal on *Blood Donation Reaction Inventory* (BDRI) symptoms, anxiety, and physiological measures
  - One-way ANCOVAs with known predictors such as age, sex, fainting history, the MFS mutilation subscale, and baseline values entered as covariates

- DS-R subscales and the MFS items
  - Two separate stepwise regressions to predict VVR symptoms, along with other known predictors forced into the equation first

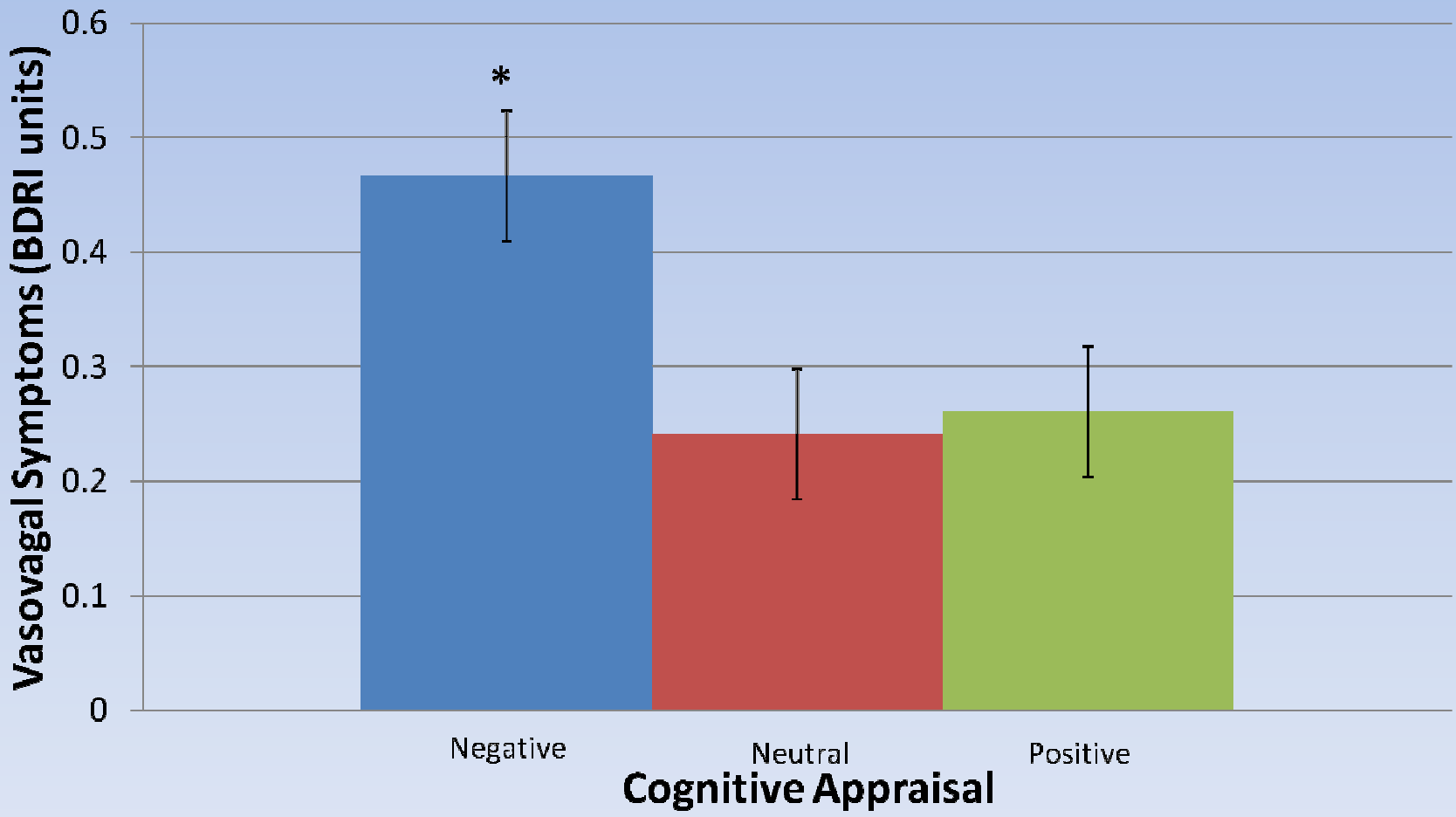
Data Analyses

- According to a recent factor analysis, the BDRI has four items that capture the main experience of VVR: dizziness, weakness, faintness, and light-headedness (France et al., 2008)
  - Ratings of these items were summed and log-transformed to normalize the data

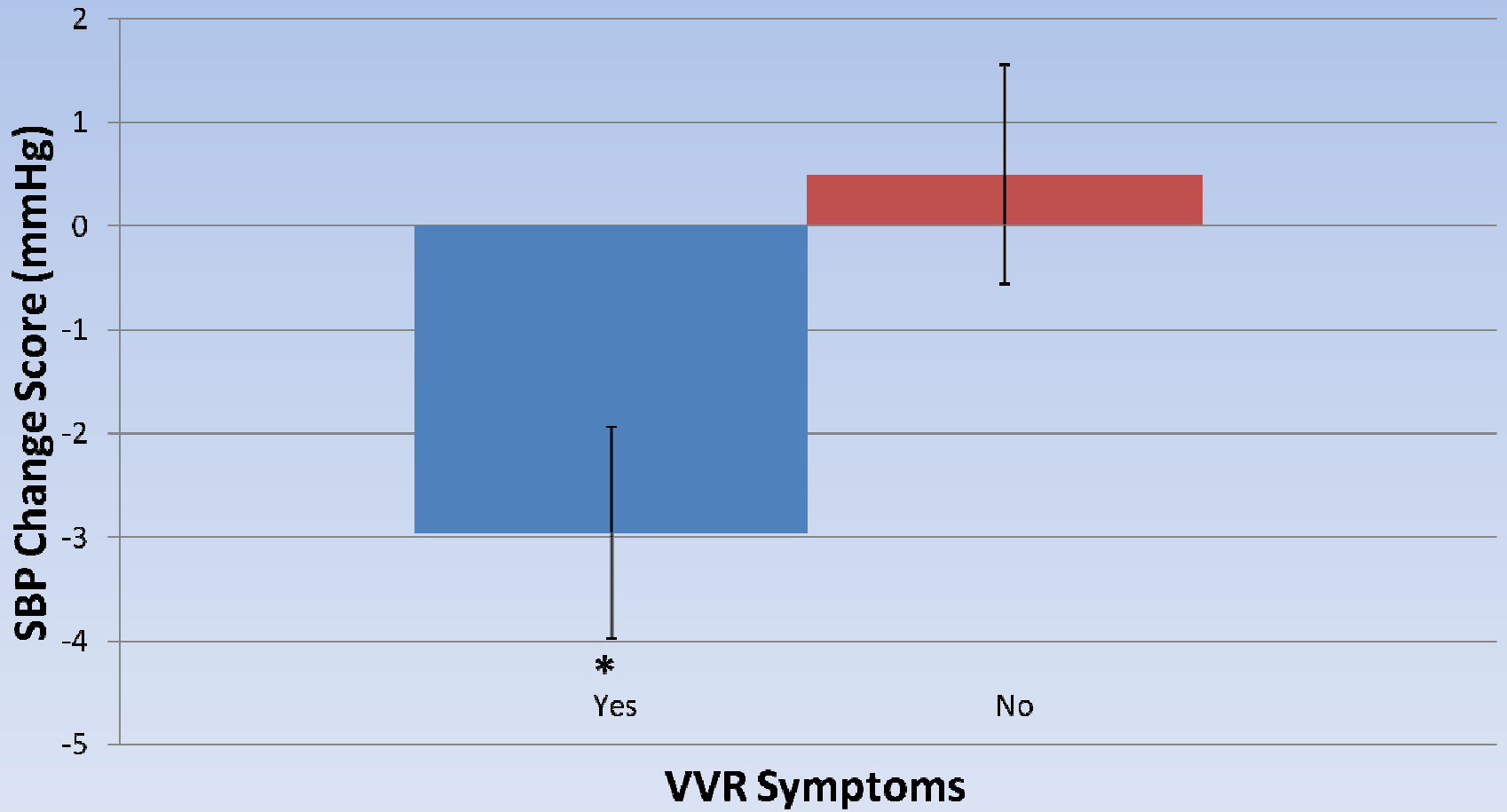
Results: BDRI

- A significant effect of appraisal on BDRI symptoms ($F(1,79) = 5.701$, $p = .005$)
  - Catastrophic ($M = .476$) resulted in higher BDRI symptoms than positive ($M = .276$) or neutral ($M = .225$) appraisals

The Effect of Cognitive Appraisal on Self-Reported Vasovagal Symptoms



BDRI & SBP



Results: Physiological Measures

- Baseline-Stress Change:
  - Both high ($t(70) = 3.970$, $p < .001$) and low ($t(69) = 2.303$, $p = .024$) frequency HRV increased during the video
  - HR significantly decreased ($t(81) = 7.834$, $p < .001$) while SBP and DBP showed no change

Results: Physiological Measures

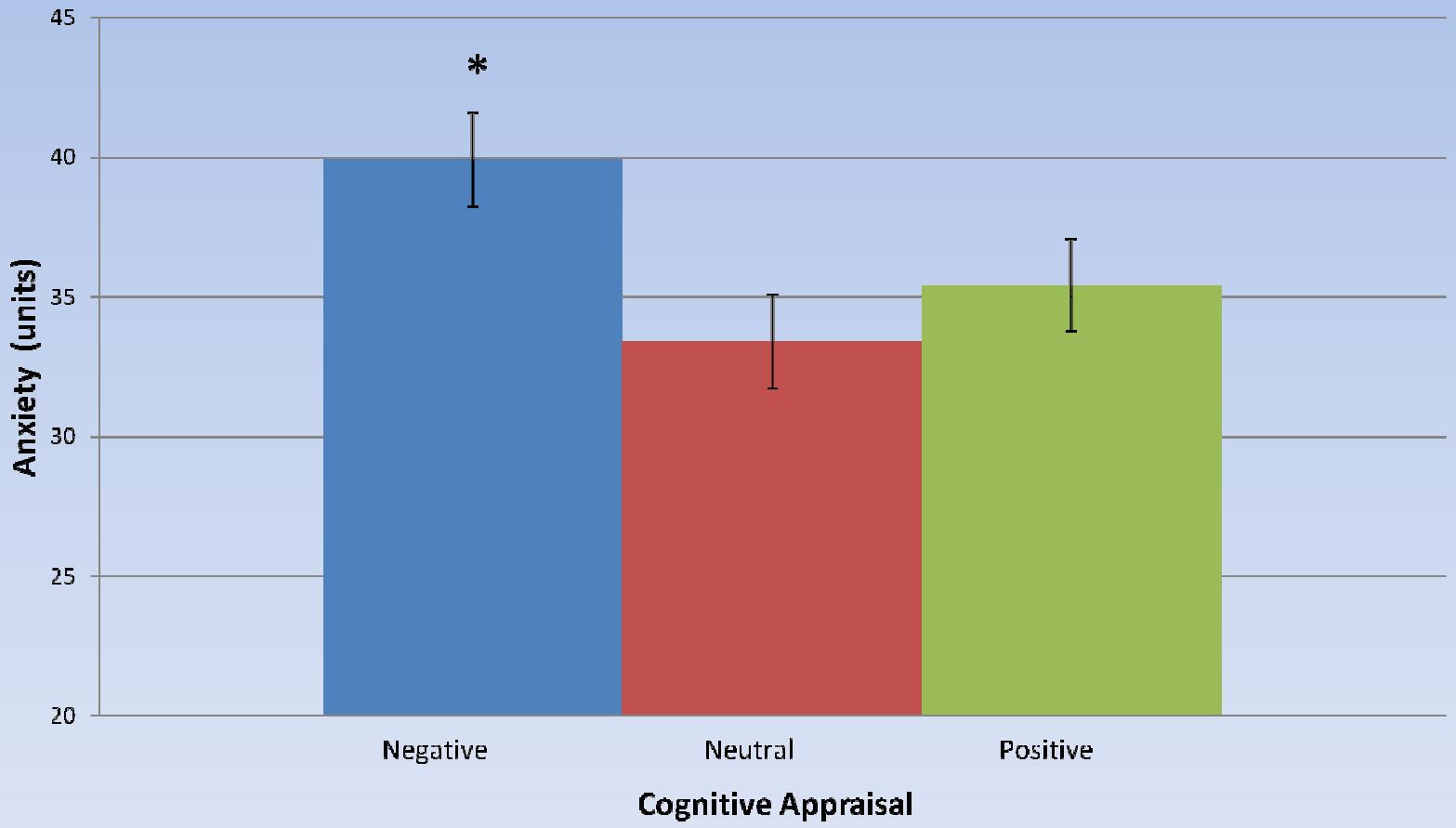
- There were no significant effects of appraisal in the ANCOVA of HF HRV, LF HRV, or the LF/HF ratio

- There were no significant effects of appraisal on HR, SBP, or DBP change

Results: Anxiety

- A significant effect of appraisal on anxiety symptoms ($F(1,78) = 3.855$, $p = .025$)
  - Catastrophic ($M = 39.9$) resulted in higher BDRI symptoms than positive ($M = 35.4$) or neutral ($M = 33.4$) appraisals

The Effect of Cognitive Appraisal on Self-Reported Anxiety



Results

- Higher scores on the DS-R animal reminder subscale predicted significantly greater self-reported symptoms on the BDRI (*partial r* = .406, $p < .001$)

- The primary MFS fear predictor of BDRI score was "observing a surgical amputation" (*partial r* = .483, $p < .01$) followed by "seeing a large bottle of your own blood" (*partial r* = .331, $p < .01$).

Discussion

- This study provides some of the first experimental evidence of the role of cognition in VVR
- Cognitive appraisal moderates vasovagal symptoms, as reported on the BDRI, while anxiety symptoms are also affected
- Animal reminder disgust and blood-related fears appear to play an important role

Discussion

- The effect of appraisal on VVR is mediated by anxiety, possibly by a hyper awareness of physiological activity (hyper-vigilance)

Discussion

- Simple and very brief interventions may have an important impact on VVR

- Future studies may benefit from examining cognitive appraisal under real medical interventions and with phobic populations.
  - Under such conditions, physiological changes may become more pronounced

Thank You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