

# Society for Affective Science

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## Poster Schedule:

### Poster Session A

Thursday, April 9, 2015

6:00 p.m.-7:00 p.m.....	Assemble your poster
7:00 p.m.-8:30 p.m.....	Author present
8:30 p.m.-9:30 p.m.....	Take down your poster presentation

### Poster Session B

Friday, April 10, 2015

7:00 a.m.-8:00 a.m.....	Assemble your poster
8:00 a.m.-9:30 a.m.....	Author present
9:30 a.m.-5:00 p.m.....	Poster viewing
5:00 p.m.-6:00 p.m.....	Take down your poster presentation

### Poster Session C

Saturday, April 11, 2015

7:30 a.m.-8:30 a.m.....	Assemble your poster
8:30 a.m.-10:00 a.m.....	Author present
10:00 a.m.-3:00 p.m.....	Poster viewing
3:00 p.m.-4:00 p.m.....	Take down your poster presentation

## POSTER A-1

### REGULATING ANGER EXPERIENCE: THE BENEFITS OF DISTRACTION OVER RUMINATION, ACCEPTANCE, AND REAPPRAISAL

Meredith Zakon, Monica Li, Anna Rabasco, & Erin S. Sheets  
Colby College

*Descriptors: emotion regulation, anger, rumination*

When the memory of an emotional event is triggered, individuals employ different cognitive strategies to regulate their emotional response. Despite the importance of emotion regulation skills to healthy psychological functioning, there are relatively few studies that directly compare, in a controlled laboratory setting, the effectiveness of common regulation strategies in reducing anger and hostility. Rumination has been associated with increased negative affect and aggression, while reappraisal and distraction can reduce anger. These strategies have not previously been compared to acceptance of emotion as a distinct approach to anger regulation. The present study examined the effectiveness of five strategies—rumination, distraction, reappraisal, acceptance, and spontaneous regulation (control condition)—in regulating anger provoked by an interpersonal experience. Participants (N=130) recalled a recent anger-inducing memory and then were instructed to engage in one of five regulation strategies. Distraction facilitated the greatest reductions in hostility,  $F(10.78, 334.01) = 3.18, p < 0.001$ , and sadness,  $F(11.36, 352.21) = 2.03, p = 0.02$ . Acceptance of emotion was least effective in reducing anger while rumination increased sadness. The results remained significant when controlling for trait rumination, reappraisal, and avoidance of emotion.

The findings support selective use of distraction to de-escalate anger and aggression and caution the use of acceptance interventions when targeting anger rather than other negative affect states, such as sadness and anxiety.

Funding provided by Colby College.

## POSTER A-2

### EMOTION REGULATION IN CHILDREN: IMPLICATIONS FOR WELL-BEING

Matthew P. Somerville  
University of Cambridge

*Descriptors: emotion regulation, well-being, children*

Although emotion is central to most models of children's well-being, very few studies have looked at how well-being is related to the way in which children regulate their emotions. Using Gross' (1998) process model of emotion regulation, this study investigates the relationship between children's emotion regulation and subjective well-being. The study was carried out in 31 classrooms across 8 primary schools situated in low socioeconomic neighbourhoods of New Zealand. In Phase 1, 504 children (mean age = 9.91) completed questionnaires on their subjective well-being, emotion regulation ability, and emotion regulation strategy use. Based on responses from Phase 1, 33 children were selected for Phase 2, which involved video-recorded observations of emotion regulation strategy use in the classroom. Survey findings indicate that children's emotion regulation ability is positively associated with life satisfaction ( $r = .39$ ) and positive affect ( $r = .41$ ), and negatively associated with negative affect ( $r = -.50$ ). The self-report data also indicate that children who frequently use cognitive reappraisal strategy, experience more positive emotion ( $r = .29$ ) and are more satisfied with their lives ( $r = .22$ ) than children who use cognitive reappraisal less frequently. These findings will be discussed alongside an analysis of the emotion regulation observation data, allowing us to better understand how children differ in their use of particular emotion regulation strategies and the potential implications for their well-being.

## POSTER A-3

### EMOTIONAL INTELLIGENCE AND STRATEGIES OF ANGER REGULATION

Dorota Kobylinska<sup>1</sup>, & Magdalena Śmieja-Nęcka<sup>2</sup>  
<sup>1</sup>University of Warsaw, <sup>2</sup>Jagiellonian University

*Descriptors: emotional intelligence, reappraisal, suppression*

From our earlier correlational studies we have learned that the level of emotional intelligence (EI; measured by ability test) is related to using emotion regulation strategies: suppression and reappraisal (measured by Emotion Regulation Questionnaire). In the two present experiments we checked if EI is related to effectiveness of anger regulation. In the experiments, we induced anger by a movie clip ("My Bodyguard"). The level of emotions was measured before watching the clip by PANAS and after the clip by PANAS (explicit emotions) and IPANAT (implicit emotions). In Study 1 (97 participants) we checked if participants who had a goal of regulating their emotions (given directly or primed) differed from those without such goal and if it was mediated by the level of emotional intelligence or habitual use of suppression and reappraisal. In Study 2 (86 participants) we checked if reappraisal is a strategy spontaneously used by people with high level of EI, when they are not instructed to reappraise, or used more effectively when they are instructed (compared to those with low level of EI). The results show some interesting effects. The goal of regulating emotions changed anger regulation effectiveness more in people with high EI than with low EI, however the effect was opposite to expected ( $F(2,90)=6.4; p<0.01$ ), which can be explained by the fact that people with high level of emotional intelligence got even more angry as they were aware the state they are in works against their goal. Moreover effectiveness of reappraisal interacted with EI level ( $F(1,52)=4.73; p<0.05$ ).

Financial support: grant MNiSW number N N106 051139.

## POSTER A-4

### GOALS IN BIPOLAR I DISORDER: BIG DREAMS PREDICT MORE MANIA

Jordan Tharp<sup>1</sup>, Sheri L. Johnson<sup>1</sup>, Sunghoon Sinclair<sup>2</sup>, & Sant Kumar<sup>1</sup>  
<sup>1</sup>University of California, Berkeley, <sup>2</sup>University of Miami

*Descriptors: bipolar disorder, goal striving, arousal*

Bipolar disorder (BP) is related to heightened behavioral responsiveness of the reward system, and this predicts the onset and course of disorder. This heightened reward sensitivity appears to be expressed in the way that people with BP set and value their life goals, but life goals have largely been examined through narrow self-report indices. The purpose of this study was to assess goals that people with BP expressed in an open-ended format, and whether goal imagination was accompanied by greater arousal, as indexed through psychophysiological and acoustic indices. We further examined whether goal characteristics and related arousal predicted BP symptoms at 6-month follow-up. 52 individuals with BP I in remission (assessed by SCID) and 49 well-matched controls completed the directed imagination task. Heart rate (HR) and skin conductance (SC) responses were gathered as indices of sympathetic arousal and Praat analyses assessed vocal pitch and intensity as people discussed their goals. The BP group also completed standardized structured symptom severity interviews at a 6-month follow-up interview. Although psychophysiological and acoustic indices of arousal neither differentiated the BP group nor predicted symptoms, descriptions of difficult to achieve goals were more common within those with BP, and predicted more severe mania over time, partial  $r$  controlling for baseline mania = .38,  $p = .04$ . Highly ambitious goals seem to predict increased mania and could be a useful target for clinical intervention.

## POSTER A-5

### THE RELATIONSHIP BETWEEN EMOTION REGULATION INSIGHT AND SYMPTOMS OF POSTTRAUMATIC STRESS

Sydney Timmer-Murillo, Samantha Chesney, & Nakia Gordon  
Marquette University

*Descriptors: emotion regulation, post-traumatic stress*

Emotion regulation (ER) plays a significant role in mental health and daily functioning. Ineffective ER, evident in psychopathology including posttraumatic stress (PTS), may reflect the inability to identify and make use of adaptive ER strategies. This study examined individuals' ability to identify the ER strategies they typically implement in conjunction with PTS symptom severity. Participants (N=100) were given the definitions of six ER strategies (cognitive reappraisal, suppression, rumination, acceptance, problem solving, and cognitive avoidance) and asked how often they believed they used each one. Then, they completed validated measures of ER (e.g., ERQ, DERS) and PTS. Multiple regression analyses examined the consistency between perceived ER strategy use and questionnaire-based ER strategy use. For the low PTS group, Perceived Use reliably predicted use of reappraisal,  $F(1,28)=7.204$ ,  $p=.012$ , suppression,  $F(1,28)=17.317$ ,  $p<.001$ , and rumination,  $F(1,28)=19.382$ ,  $p<.001$ . However, individuals with high PTS did not reliably identify any ER strategy, as reflected by the null relationship between Perceived Use and Questionnaire-based Use. Interestingly, the use of each of these strategies was comparable across the two groups. Findings support previous research that indicates self-awareness improves regulatory ability. Even though scores on questionnaires were similar, the insight that the low PTS group had about the strategies they use may result in greater resilience to PTS. Further work with experimental designs could assist in delineating these possibilities.

## POSTER A-6

### SOURCES OF VARIATION IN EMOTIONAL AWARENESS: AGE, GENDER, AND SOCIOECONOMIC STATUS

Annette M. Mankus<sup>1</sup>, Matthew T. Boden<sup>2</sup>, & Renee J. Thompson<sup>1</sup>

<sup>1</sup>Washington University in St. Louis, <sup>2</sup>Center for Innovation to Implementation, VA Palo Alto Health Care System

*Descriptors: emotional awareness, emotional clarity, attention to emotion*

Emotional awareness includes five interrelated yet distinguishable facets: type clarity, source clarity, voluntary attention to emotion, involuntary attention to emotion, and emotional differentiation. Socialization and developmental processes over the lifespan contribute to people's emotional dispositions; yet little is known about how key demographic characteristics relate to individual differences in emotional awareness. We examined how age, gender, and socioeconomic status (SES) were associated with facets of emotional awareness in a large representative US sample (N = 919; 66.8% female; mean age = 35.4 years; SD = 13.1). Age was positively related to type clarity and negatively related to involuntary attention to emotion. Compared to male participants, female participants reported higher voluntary attention to emotion, involuntary attention to emotion, and emotional differentiation. Indicators of SES were positively associated with type clarity. In addition, higher levels of education completion were associated with greater emotional differentiation. These associations were found when statistically adjusting for variance shared among the facets of emotional awareness. The results indicate that demographic characteristics are associated with variation in emotional awareness and should be taken into consideration when examining emotional awareness. Future research should examine these demographic characteristics longitudinally in order to clarify how individual variation in emotional awareness develops across the lifespan.

## POSTER A-7

### PSYCHOPHYSIOLOGICAL REACTIVITY TO AFFECTIVE PICTURES IN OEF/OIF VETERANS WITH PTSD

Craig A. Marquardt<sup>1</sup>, Daniel J. Goldman<sup>2</sup>, & Scott R. Sponheim<sup>3</sup>

<sup>1</sup>University of Minnesota, <sup>2</sup>Midwestern Neuropsychology, <sup>3</sup>Minneapolis VAHCS

*Descriptors: PTSD, psychophysiology*

Post-traumatic Stress Disorder (PTSD) is defined by the presence of persistent re-experiencing of past traumatic events, avoidance of trauma reminders, dysphoric mood, and hyperarousal. The presence of these symptoms is firmly established, but questions remain about the heterogeneity of their presentation and the biological manifestations of each during affective processing. The present study examined the peripheral psychophysiological reactivity of a cross-sectional sample of OEF/OIF veterans to standardized affective images (i.e., IAPS) as well as to novel, unstandardized aversive images of relevance to the veterans' combat experience (e.g., enemy combatants, roadside bombs, etc.). When exposed to combat images, individuals receiving the highest severity ratings for avoidance symptoms exhibited the least heart rate deceleration/orientation response ( $r = .31$ ,  $n = 73$ ) while simultaneously exhibiting the greatest skin conductance response (SCR;  $r = .35$ ,  $n = 63$ ). This relationship points toward two possible biological correlates of disrupted trauma-relevant emotion regulation and maladaptive compensatory avoidance experienced of many combat veterans post-deployment.

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## POSTER A-8

### ATYPICAL MIMICRY OF EMOTIONAL FACIAL EXPRESSIONS IN BEHAVIORAL VARIANT FRONTOTEMPORAL DEMENTIA

Alice Y. Hua, Jessica J. Zakrzewski, Bruce L. Miller, Howard J. Rosen, & Virginia E. Sturm

Memory and Aging Center, Department of Neurology, University of California, San Francisco

*Descriptors: emotion, electromyography, frontotemporal dementia*

Behavioral variant frontotemporal dementia (bvFTD) is a neurodegenerative disease that impacts emotion and social behavior. Whether there is impairment in emotional empathy, the ability to simulate the affective states of others through autonomic and behavioral mirroring mechanisms, in bvFTD is not well understood. We assessed facial mimicry, a form of emotional empathy, in 19 patients with bvFTD and 20 healthy controls. Participants viewed 10 videos in which a target displayed a neutral expression or a positive, negative, or self-conscious emotion while we measured corrugator supercilli (an index of negative emotional behavior) and zygomaticus major (an index of positive emotional behavior) facial muscle activity. We examined corrugator and zygomaticus responses during 2 seconds in which the target's face moved from a neutral baseline face to an emotional expression. Repeated measures mixed model analyses of covariance (controlling for sex and age) revealed a main effect of diagnosis on zygomaticus activity ( $p < .01$ ). No differences between the diagnostic groups were found in corrugator activity. Follow-up analyses of the individual videos found that patients with bvFTD showed larger zygomaticus responses than the healthy controls to the disgusted, proud, embarrassed, and happy expressions ( $p < .05$ ). These findings offer preliminary evidence that emotional empathy is altered in bvFTD. Our results suggest that empathy deficits in bvFTD may arise due to abnormal mimicry responses characterized by indiscriminate positive facial responses to all emotions regardless of valence.

## POSTER A-9

### THE INFLUENCE OF INDUCED AND DISPOSITIONAL POSITIVE AFFECT ON WORKING MEMORY

Rooks D. Joshua & Jha P. Amishi  
University of Miami

*Descriptors: positive affect, working memory, cognitive control*

There is evidence that induced positive affect (PA) may have beneficial effects on cognition (Ashby, Isen & Turken, 1999). Yet, it is unknown whether dispositional PA may moderate such effects. The current study examined the influence of both induced mood and dispositional PA on working memory in a delayed-recognition task. Mood was induced by music clips and autobiographical memories, and verified via manikin affect ratings pre-post induction. Dispositional PA was indexed via the positive and negative affect schedule. Motivated by the proposed relationship between dopamine and PA, and evidence of dopamine's action on cognitive control (Cools & D'Esposito, 2011), we hypothesize that dispositional and induced PA may result in an inverted-U pattern of task performance (% correct), with high PA in both dispositional and induction (high/high) as well as low PA in both dispositional and induced PA (low/low) corresponding with lowest performance. While moderate levels of PA, as a function of high dispositional and low induction PA (high/low) or low dispositional and high induction PA (low/high), corresponding with highest performance. This hypothesis was assessed using a regression analysis, testing the effect of induced mood on performance, moderated by dispositional PA. In line with our hypothesis, results suggest a significant interaction between dispositional and induced PA. High PA via mood induction predicted poorer performance among those with high dispositional PA. However, high positive mood induction predicted improved performance among those with low dispositional PA.

## POSTER A-10

### VAGAL TONE IS QUADRATICALLY LINKED TO PROSOCIALITY IN EARLY CHILDHOOD

Jonas G. Miller & Paul D. Hastings  
University of California, Davis

*Descriptors: development, prosociality, vagal tone*

Children's propensity for kindness is rooted in their biology. Cardiac vagal tone may be one biological mechanism underlying children's prosociality (Hastings & Miller, 2014). Recent work with adults showed a quadratic relation between vagal tone and prosocial traits (Kogan et al., 2014), suggesting that moderate levels of physiological arousal support caring for others in need. To examine whether this association might exist in early childhood, we measured respiratory sinus arrhythmia (RSA) at rest and collected three measures of prosociality in two different samples. Children's resting RSA at 3.5 years of age quadratically predicted their observed prosocial responses towards an adult feigning injury (linear  $\beta = 1.95$ ,  $p = .06$ ; quadratic  $\beta = -.17$ ,  $p = .05$ ), and size of donations towards sick children in a modified dictator game (linear  $\beta = 2.82$ ,  $p < .05$ ; quadratic  $\beta = -.23$ ,  $p < .05$ ), six months later ( $N = 83$ ). In a sample of 4-6 year olds ( $N = 180$ ), children's resting RSA was quadratically related to their self-reported proneness to help and feel concern for others in need (linear  $\beta = .23$ ,  $p < .01$ ; quadratic  $\beta = -.02$ ,  $p < .01$ ). Across all analyses, moderate resting RSA was associated with more prosociality; RSA that was lower or higher was linked to less prosociality. These findings suggest that across development, moderate resting vagal tone may represent an optimal balance that helps people to notice and react to the needs of others, but to not be emotionally overwhelmed by them.

## POSTER A-11

### AGE-RELATED POSITIVITY EFFECT IN MEMORY FOR SOCIAL EXCHANGE

Atsunobu Suzuki  
Nagoya University

*Descriptors: aging, positivity effect, distrust*

The positivity effect refers to older adults' tendency to prioritize positive over negative information in cognitive processing. It remains unclear if the effect extends into situations where negative information is relevant. The present study thus examined older adults' memory for social exchange, that is, memory for cooperators and cheaters; remembering cheaters (i.e., negative information) is arguably important in this setting. Thirty-six older (65-79 years of age) and thirty-six younger adults (19-30 years of age) participated in the experiment. The participants played an investment game, wherein they learned to discriminate between cooperators and cheaters, who respectively repaid and embezzled the money invested in them. A three-way mixed analysis of variance on memory accuracy (hit rates minus false-alarm rates) with the factors Age Group (older, younger), Investee Trait (cooperators, cheaters), and Investee Facial Trustworthiness (high, low) revealed a significant interaction between Age Group and Investee Trait,  $F(1, 70) = 10.382$ ,  $p = .002$ . Post-hoc analyses showed that older participants had significantly less accurate memory for cheaters ( $M = .278$ ) than cooperators ( $M = .382$ ),  $F(1, 35) = 12.963$ ,  $p = 0.001$ ; such an effect of Investee Trait was not significant in younger participants,  $F(1, 35) = .137$ ,  $p = .714$ . The results indicate that the positivity effect can be observed even when negative information is relevant. Older adults' inaccurate memory for cheaters may increase their vulnerability to fraud.

## POSTER A-12

### MAJOR DEPRESSIVE DISORDER AND INFLAMMATION: THE ROLE OF VARIABILITY IN NEGATIVE AFFECT

Renee J. Thompson<sup>1</sup>, Jutta Mata<sup>2</sup>, & Ian H. Gotlib<sup>3</sup>

<sup>1</sup>Washington University in St. Louis, <sup>2</sup>University of Basel, <sup>3</sup>Stanford University

*Descriptors: depression, emotional instability, inflammation*

Researchers have posited that low-grade systemic inflammation may underlie the relation between Major Depressive Disorder (MDD) and physical health problems. We know little, however, about which specific aspects of MDD might be associated with inflammation. In this study we examined whether variability in negative affect (NA) in MDD is associated with increased levels of interleukin-6 (IL-6), a cytokine that has been implicated in social stress. Forty-two adults with MDD and 28 healthy controls (CTLs) provided blood samples and completed a week-long experience sampling protocol during which they reported levels of NA. Levels of IL-6 were assessed using Meso Scale Discovery electrochemiluminescence assay. The MDD group reported higher mean levels and greater variability of NA than did the CTL group. Although the two groups did not differ in levels of IL-6, group status moderated the relation between IL-6 and variability in NA. Specifically, even after controlling for mean levels of NA, NA variability was positively related to levels of IL-6 in the MDD, but not in the CTL, participants. Future research should examine whether NA variability is itself a stressor, or alternatively, reflects the effects of a third variable such as greater life stress or poorer emotion regulation in stressful situations.

This research was supported by National Institute of Mental Health Grants F32 MH091831 and MH59259 and Deutsche Forschungsgemeinschaft fellowship Wi3496/4-1.

## POSTER A-13

### VISION-EMOTION INTERACTIONS DURING EMOTION REAPPRAISAL IN INDIVIDUALS WITH EXTERNALIZING PSYCHOPATHOLOGY

Allison J. Lake, Peter R. Finn, & Thomas W. James  
Indiana University

*Descriptors: externalizing psychopathology, emotion regulation*

Externalizing psychopathology (EXT) reflects the covariance of multiple psychopathologies characterized by high levels of disinhibition including substance use and antisocial disorders. In addition to disadvantageous decision-making and behavioral undercontrol, individuals with EXT also demonstrate poor regulation of emotion. Importantly, emotion dysregulation among these individuals is associated with increased impulsivity and substance use. Reappraisal is an effective emotion regulation strategy that is primarily thought to involve complex interactions between cognitive and affective brain regions; however, it is unclear whether emotion regulation deficits among individuals with EXT are due primarily to inadequate recruitment of prefrontal control regions or, alternatively, poor modulation of affective regions. To investigate this, the present study examined BOLD activation in individuals with high or low EXT in a reappraisal paradigm. fMRI results indicated that EXT was associated with hyper-activation of the amygdala during both negative emotion maintenance and reappraisal. Importantly, and in contrast to traditional reappraisal models, high EXT was also associated with increased activation in the lateral occipital cortex (LOC) during maintenance but not reappraisal. To the extent that other data suggest that amygdala-LOC activation are highly correlated, these results indicate only a partial modulation of a visual-affective system among individuals with EXT during reappraisal. Further, emotion reappraisal may be useful but not adequate to control negative emotion among individuals with EXT.

NIH/NIAAA RO1 AA13650 to P.R.F.; NIDA T32 DA024628 to A.J.L.

## POSTER A-14

### HOW DOES ETHNIC DISCRIMINATION RELATE TO RISK FOR DEPRESSION THROUGH NEURAL REACTIVITY TO SOCIAL EXCLUSION?

Roberta A. Schriber, Catherine Fassbender, Emilio Ferrer, Rand D. Conger, Richard W. Robins, Paul D. Hastings, & Amanda E. Guyer  
University of California, Davis

*Descriptors: social exclusion, adolescence, fMRI*

Adolescence is a period of vulnerability to depression, and adolescents of Mexican origin show particularly high rates of depression. A contributing factor could be ethnic discrimination. Despite its perniciousness, the experience of being discriminated against is rarely studied with regard to brain-behavior links, and no work has investigated how one's history with discrimination relates to neural sensitivity to being socially excluded. We investigated the interrelations among history of discrimination, neural and emotional response to social exclusion, and depressive symptoms. 177 Mexican-origin adolescents (53% female) followed from late childhood (age 10) to late adolescence (age 17) as part of the California Families Project reported on their perceptions of discrimination against Latinos and depressive symptoms annually. At age 16-17, neural response to being socially excluded from a virtual game of catch, Cyberball, was measured using fMRI, and participants reported their subjective distress to this exclusion. Past and currently experienced ethnic discrimination were associated with current depression and distress. Neuroimaging data revealed rejection-related activity in a network of brain regions previously implicated in distress and its regulation. Of these, activation of the subgenual anterior cingulate cortex (subACC), a region related to emotional reactivity and mood disorders, was sensitive to history of discrimination, but more discrimination was associated with less subACC response to rejection, suggesting blunted reactivity. Gender effects are also discussed.

## POSTER A-15

### DO CULTURAL IDEALS ABOUT EMOTION INFLUENCE GIVING TO OTHERS?

BoKyung Park, Jeanne L. Tsai, & Brian Knutson  
Stanford

*Descriptors: ideal affect, giving, dictator game*

How does culture shape decisions to give to others? Surprisingly few studies have examined psychological mechanisms of cultural variation in giving. We suggest that givers' cultural values and receivers' affective expressions will jointly determine giving. Specifically, givers should favor receivers whose expressed affect matches culturally valued affective states ('ideal affect'). In Study 1, we tested these predictions by pairing 91 European Americans (EA) and 71 Koreans (KR) with computer-generated receivers displaying an excited or calm smile in a dictator game. Since EA value excitement more and calm less than KR, we predicted that EA would give more money to excited (vs. calm) receivers than KR. Participants were asked to decide how much to give to different receivers. After the games, we assessed their ideal affect and actual affect (how much they actually felt various states). As predicted, EA offered more to excited (vs. calm) receivers, whereas KR offered more to calm (vs. excited) receivers,  $F(1,158) = 185.65, p < .001$ . This difference was mediated by participants' ideal excitement; across the cultures, controlling for their actual excitement, higher ideal excitement predicted higher offers to excited (vs. calm) receivers. In Study 2, 54 EA and 57 KR played the same dictator game with more realistic-looking receivers. Replicating Study 1, EA gave more money to excited (vs. calm) receivers than KR,  $F(1,107) = 9.57, p = .003$ . Together, these findings suggest that people decide to give based on a match between their ideal affect and receivers' expressed affect.

## POSTER A-16

### AUTONOMIC CONTEXT INSENSITIVITY AND VULNERABILITY TO DEPRESSION AND ANXIETY IN THE CONTEXT OF ENVIRONMENTAL STRESS: A MULTI-WAVE STUDY

Jonathan P. Stange<sup>1</sup>, Jessica L. Hamilton<sup>1</sup>, Christine Yim<sup>1</sup>, David M. Fresco<sup>2</sup>, & Lauren B. Alloy<sup>1</sup>

<sup>1</sup>Temple University, <sup>2</sup>Kent State University

*Descriptors: emotion context insensitivity, emotional disorders, life stress*

Emotion context insensitivity characterizes emotional disorders and is evidenced by a lack of contextually-appropriate autonomic reactivity. However, whether such autonomic inflexibility could confer vulnerability to depression and anxiety in the context of environmental stress has not been studied. In the present study, peripheral measures of sympathetic and parasympathetic reactivity (skin conductance level [SCL] and respiratory sinus arrhythmia [RSA], respectively) were evaluated among 102 university students who completed a dysphoric emotion induction. Participants completed measures of symptoms and negative life events every three weeks for twelve weeks as well as a contextual stress interview. Preliminary regression analyses with the first follow-up wave indicated that controlling for baseline symptoms, SCL reactivity interacted with life events to predict prospective symptoms of depression and anxiety ( $p < .05$ ). Planned re-analysis with HLM using all waves of follow-up will allow for idiographic assessment of interactions between environmental stress and autonomic reactivity. These results provide evidence that the lack of contextually-appropriate autonomic reactivity may confer vulnerability to depression and anxiety under conditions of environmental stress.

This research was supported by grants to Jonathan P. Stange from the National Institute of Mental Health (F31MH099761), the Association for Psychological Science, and the American Psychological Foundation.

## POSTER A-17

### THE ROLE OF INFANT CARDIAC VAGAL TONE AND MATERNAL DEPRESSION IN MOTHER-INFANT INTERACTIONS

Helena Rose N. Karnilowicz, Sara F. Waters, & Wendy B. Mendes  
University of California, San Francisco

*Descriptors: maternal depression, infant cardiac vagal tone, mother-infant interactions*

The development of infants' physiological and behavioral regulation is largely shaped by their mothers' responsiveness. Maternal depression disrupts this process by potentially dampening activation in response to infant cues. The role of individual differences in infant cardiac vagal tone, associated with temperamental reactivity, is less well known. Fifty mothers ( $M_{age}=33.26$ ,  $SD=5.05$ ) and their 11-14 month old infants ( $M_{age}=13.12$ ,  $SD=1.28$ , 40% girls) were recruited from the general community. Mothers' depression symptoms were assessed via the Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977) and infants' cardiac vagal tone was measured via resting respiratory sinus arrhythmia (RSA). Independent coders rated dyadic engagement during mother-child free play ( $ICC=.91$ ). Regression analyses were used to analyze the effects of maternal depression and infant cardiac vagal tone on dyadic engagement, with maternal education level as a covariate. Both maternal depression ( $\beta = -.46$ ,  $p=.005$ ) and infant cardiac vagal tone ( $\beta = -.28$ ,  $p=.046$ ) predicted dyadic engagement, but these effects were moderated by a significant interaction effect ( $\beta = -.37$ ,  $p=.016$ ). Maternal depression was negatively associated with dyadic engagement only for those infants with high cardiac vagal tone. Infants with lower vagal tone did not demonstrate this relationship. These findings highlight the unique and concomitant influence of individual differences in infant cardiac vagal tone and maternal depression on mother-infant interactions.

## POSTER A-18

### AN EVOLUTIONARY EXPLORATION OF DEPRESSION: THE RELATIONSHIP BETWEEN ADVERSE LIFE EVENTS AND PATTERNS OF DEPRESSIVE SYMPTOMS

Alissa A. Maitino, Irwin S. Rosenfarb, & Dale N. Glaser  
California School of Professional Psychology, San Diego

*Descriptors: evolutionary, depression, stress*

Symptom profiles of depression vary both between individuals, and across episodes in the same individual. Variation across episodes in the same individual is more pronounced across noncontiguous episodes, suggesting that temporary state factors may influence the symptom profile expressed during an episode. Grounded in evolutionary theory, the situation-symptom congruence (SSC) hypothesis argues that different adverse situations should give rise to depressive symptom patterns that increase the ability to cope with the adaptive challenges present in the situation. Recent research supports the SSC hypothesis but has significant limitations (e.g., retrospective design, and mostly between-subject analyses). The present study tested the SSC hypothesis using an alternative methodology (e.g., prospective design, and both within- and between-subject analyses) that addressed these limitations. Over nine days, 265 depressed and nondepressed adults completed daily measures assessing depressive symptoms and adverse life events (ALEs). The authors performed multilevel modeling and correlational analyses to test the SSC hypothesis, and examine the consistency of results for nondepressed and depressed participants. Five of six ALEs were associated with symptoms consistent with the SSC hypothesis. ALE-symptom associations for nondepressed and depressed participants were largely consistent. These findings support the hypothesis that different adverse situations give rise to depressive symptom patterns that increase the ability to cope with the adaptive challenges present in the situation.

## POSTER A-19

### SHORT ALLELES, BIGGER SMILES? EFFECTS OF 5-HTTLPR ON POSITIVE EMOTIONAL BEHAVIORS

Sandy J. Lwi<sup>1</sup>, Claudia M. Haase<sup>2</sup>, Ursula Beermann<sup>3</sup>, Laura R. Saslow<sup>4</sup>, Michelle N. Shiota<sup>5</sup>, Sarina R. Saturn<sup>6</sup>, James J. Casey<sup>1</sup>, Nguyen K. Nguyen<sup>1</sup>, Dacher Keltner<sup>1</sup>, & Robert W. Levenson<sup>1</sup>

<sup>1</sup>UC Berkeley, <sup>2</sup>Northwestern University, <sup>3</sup>University of Geneva, <sup>4</sup>UC San Francisco, <sup>5</sup>Arizona State University, <sup>6</sup>Oregon State University

*Descriptors: genetic polymorphisms, 5-HTTLPR, positive emotional behaviors*

The short allele of the 5-HTTLPR polymorphism of the serotonin transporter gene may be a plasticity factor, with short-allele carriers suffering most in negative conditions but benefiting most in positive conditions. Many studies have documented heightened negative emotional reactivity in short-allele carriers, but studies of positive emotional reactivity have been rare. Moreover, studies of positive emotional reactivity have rarely assessed objectively coded positive emotional behavior across multiple contexts. To address this gap, we conducted three studies with independent participant samples to examine the association between the short allele of 5-HTTLPR and positive emotional behavior. In Study 1, 128 young adults watched still cartoons. In Study 2, 93 young, middle-aged, and older adults watched a thematically ambiguous film. In Study 3, 115 middle-aged and older spouses discussed an area of marital conflict. Behaviors were coded using the Facial Action Coding system, and behaviors comprising of action units 6 (cheek raiser, lid compressor) and 12 (lip corner raiser) were considered positive. Aggregating across studies, the short allele of 5-HTTLPR predicted heightened positive emotional behaviors ( $B = .21$ ,  $SE(B) = .08$ , 95% CI [.06, .37],  $\beta = .15$   $p = .006$ ,  $R^2 = .02$ ). This effect was not moderated by participants' age, gender, ethnicity, depressive symptoms, or study. These findings are consistent with the short allele of 5-HTTLPR functioning as an emotion amplifier, which may confer heightened susceptibility to environmental conditions.

## POSTER A-20

### THE PSYCHOLOGICAL STRUCTURE OF HUMILITY

Aaron C. Weidman<sup>1</sup>, Joey T. Cheng<sup>2</sup>, & Jessica L. Tracy<sup>1</sup>

<sup>1</sup>University of British Columbia, <sup>2</sup>University of California, Irvine

*Descriptors: humility, measurement, scale development*

Religious scholars, philosophers, and psychologists have long considered humility an important emotion. It is central to modesty and prosociality more generally, and, somewhat paradoxically, may be experienced in response to both success and failure. Yet, no studies have systematically explored the psychological structure of this emotion, leaving open the question: what exactly is humility? To address this gap in knowledge, the present research provided the first comprehensive, bottom-up examination of the content and psychological structure of humility. Across four multi-method studies ( $N_s = 140, 192, 267$ , and  $270$ ) using cluster analyses of semantic similarity ratings, and exploratory and confirmatory factor analysis of state and trait emotional experiences, evidence for two largely independent humility factors consistently emerged. The first, which we labeled appreciative humility, is comprised of items like considerate, generous, and understanding, and is positively correlated with authentic pride, agreeableness, expressions of gratitude, and seeing oneself as moral ( $r_s = .18-.72$ ). The second factor, labeled self-abasing humility, is comprised of items like meek, submissive, and worthless, and is positively correlated with shame, neuroticism, social withdrawal, and low self-esteem ( $r_s = .24-.46$ ). Based on these results, we developed and validated brief six-item scales that can be used to reliably measure each humility dimension. Together, these findings elucidate the content and structure of humility, and provide a novel instrument for measuring humility in future work.

## POSTER A-21

### DEVELOPMENT OF THE EMOTION REGULATION ENVIRONMENT AND GUIDANCE SCALE FOR ADOLESCENTS (ERECS-A): A QUALITATIVE STUDY OF ADOLESCENT EMOTION REGULATION SUPPORT

Tamiko B. Younge<sup>1</sup>, Amand Houston-Hamilton<sup>2</sup>, & Kaja Z. LeWinn<sup>2</sup>  
UCSF, School of Medicine, <sup>2</sup>UCSF, Department of Psychiatry

*Descriptors: adolescent, social support, measure development*

Emotion regulation (ER) describes one's ability to influence the experience and expression of affect and contributes to healthy adolescent development. However, few studies have examined the extent to which youth learn ER from individuals outside the family (e.g., adults in school or community). We used focus groups and interviews with adolescents to develop EREGS-A, a quantitative measure of ER modeling and advising from adults. We recruited adolescents from local public and private high schools to participate in focus groups about social engagement and in interviews to review EREGS-A drafts. Using grounded theory, focus groups were coded for social support functions (e.g., cognitive guidance, emotional support, and socializing). We developed items based on findings from focus groups and theoretical models of ER strategies. Adolescents reviewed measure drafts in 1-on-1 interviews. 39 adolescents (ages 14-18 years) participated. Focus groups revealed that adult family members and adults in school provided cognitive guidance for adolescents whereas peers primarily provided emotional support. Reviewing drafts of the measure, interviewees reported answering questions about one person was easier than answering the same questions for a group of people (e.g., teachers). Our findings suggest adolescents utilize a variety of social support functions and confirm the face and content validity of the EREGS-A. The measure will be used in a validation and reliability study, and will inform interventions and future research to support youth ER development in school and community settings.

## POSTER A-22

### PROFILES OF EMOTION REGULATION: ESTABLISHING PATTERNS OF REGULATION IN POSTTRAUMATIC STRESS

Samantha A. Chesney & Nakia S. Gordon  
Marquette University

*Descriptors: emotion regulation, posttraumatic stress, regulatory profiles*

Emotion dysregulation can occur when emotion regulation (ER) strategies maintain pathology or impair functioning. Investigating the ways multiple ER strategies interact to affect posttraumatic stress (PTS) severity may improve current treatments. The current study assessed the use of six ER strategies in 100 community participants and used hierarchical cluster analysis to identify four regulatory profiles. The "Adaptive" cluster used high levels of traditionally adaptive strategies (acceptance, cognitive reappraisal, problem solving) and low levels of traditionally maladaptive strategies (avoidance, expressive suppression, rumination). The "Active" cluster reported little use of expressive suppression and moderate use of all other strategies. The "Detached" cluster reported high expressive suppression, low problem solving, and moderate levels of each other strategy. The "Maladaptive" cluster reported low levels of adaptive strategies and high levels of maladaptive strategies. Notably, these profiles were able to distinguish participants according to PTS severity. Multiple regression analysis indicated that an individual's ER profile significantly predicted PTS,  $R^2 = .20$ ,  $F(1, 97) = 23.38$ ,  $p < .001$ . Follow-up analyses indicated that PTS was incrementally higher in each profile: mild PTS for "Adaptive", mild-moderate PTS for "Active", moderate-severe PTS for "Detached", and severe PTS for "Maladaptive",  $F(3,96) = 8.63$ ,  $p < .001$ , partial eta squared = .21. Thus, these results indicate four meaningful ER profiles that could inform trauma-focused psychotherapies.

## POSTER A-23

### THE INTRINSIC HUMAN BRAIN ARCHITECTURE DOES NOT REVEAL SPECIFIC NETWORKS FOR EACH "BASIC" EMOTION

Alexandra Touroutoglou<sup>1</sup>, Kristen A. Lindquist<sup>2</sup>, Bradford C. Dickerson<sup>1</sup>, & Lisa Barrett<sup>3</sup>

<sup>1</sup>Harvard Medical School, <sup>2</sup>University of North Carolina, <sup>3</sup>Northeastern University

*Descriptors: resting state connectivity, basic emotions*

Popular scientific models of emotion hypothesize that happiness, sadness, anger, disgust, and fear arise from innate, anatomically constrained neural modules in the brain (Panksepp, 1998). An alternative approach, the constructionist view of emotion, hypothesizes that emotions are constructed from the interaction of domain-general, core systems within the brain (Barrett, 2006; 2012). We tested the two competing models for the brain basis of emotion using resting-state functional connectivity magnetic resonance imaging (rs-fcMRI). Meta-analytic peaks of discrete emotion categories (Vytal & Hamann, 2011) were used as seeds to generate whole-brain rs-fcMRI maps. We compared the rs-fcMRI maps within and between emotion categories by calculating the spatial similarity between every pair of rs-fcMRI maps. Results showed very low similarity between rs-fcMRI maps within each emotion-category. Instead, a set of canonical resting-state networks corresponding to critical brain functions (i.e., episodic memory, executive function, and salience detection) accounted for variance in the derived rs-fcMRI maps. Critically, the rs-fcMRI maps anchored by seeds that are commonly considered to be specifically related to distinct emotions (i.e., amygdala for fear, insula for disgust, orbitofrontal cortex for anger) were all found to converge in regions of the canonical salience network (Seeley et al., 2007). These results indicate that specific networks for each emotion do not exist within the intrinsic architecture of the human brain. Instead, consistent with the constructionist view of emotion, our findings show that emotions emerge from large-scale networks that interact to produce a variety of psychological processes, including, but not limited to, affective experience.

## POSTER A-24

### TASK-EVOKED BRAIN ACTIVITY AFTER NEGATIVE INDUCTION PREDICTS ENHANCEMENT OF MEMORY FOR NEUTRAL MATERIAL

Morenikeji Adebayo<sup>1</sup>, Joseph Andreano<sup>1</sup>, Alexandra Touroutoglou<sup>1</sup>, Bradford Dickerson<sup>1</sup>, & Lisa Feldman Barrett<sup>2</sup>

<sup>1</sup>Harvard Medical School & Massachusetts General Hospital, <sup>2</sup>Northeastern University, Harvard Medical School & Massachusetts General Hospital

*Descriptors: affective salience, memory, task-evoked brain activity*

Previous research has shown that activity in regions of the salience network (SN) during the encoding of negative stimuli predicts successful subsequent memory (LaBar & Cabeza, 2006). Behavioral experiments have also shown that arousing experiences temporally adjacent to the encoding of neutral stimuli enhance memory (Anderson et al., 2006). We tested the hypothesis that task-related activation of salience regions during a negative affect induction would predict enhancement of memory for neutral material on an encoding task immediately following induction. 41 young adults each completed 2 scan sessions, approximately 1 week apart. In the 1st session participants underwent a negative affect induction, then completed a neutral paired associate memory task. The 2nd session was identical, except a neutral affect induction was used. We computed an index of memory enhancement,  $\Delta d'$ , and measured SN reactivity by contrasting activity during negative vs. neutral affect induction. Linear regression was used to examine the relationship between salience reactivity and  $\Delta d'$  due to affect. A significant relationship between induction activity and  $\Delta d'$  was found in 2 major SN nodes (anterior insula & anterior cingulate cortex). A similar trend approaching significance was also observed in the amygdala. These findings confirm previous research that shows the motivational relevance of neutral material can be enhanced by affect. They are the first to demonstrate that activity in the SN during affect induction, prior to encoding, predicts the magnitude of neutral memory enhancement.

NIH-NIA National Institute on Aging 5R01AG030311-08 Neural Mechanisms of Affective Salience in Aging.

## POSTER A-25

### REWARD AND PUNISHMENT SENSITIVITY IN EMOTION PERCEPTION

Spencer K. Lynn & Lisa F. Barrett  
Northeastern University

*Descriptors: emotion perception, decision making, signal detection theory*

Inferring a person's emotional state is a judgment made under uncertainty (a given facial expression can mean different things) and risk (there are costs to being wrong about the meaning of a facial expression). As in other decisions, sensitivity to reward or punishment may influence how effective people are at making such judgments. Participants ( $n=155$ ) completed an anger detection task under perceptual uncertainty (angry and not angry categories shared morphed facial scowl intensities) and economic risk (correct and incorrect responses earned and lost points, respectively). Decision outcomes incurred rewards and punishments: Correct detections and correct rejections were rewarded by earning points, false alarms and missed detections were punished by losing points. Participants attempted to earn as many points as they could over 1000 trials. We derived novel behavioral measures of reward and punishment sensitivity by calculating a person's response bias over the subset of trials following each of the four decision outcomes separately and controlled for the person's overall response bias. Hyper- and hypo-sensitivity to either reward or punishment was significantly correlated with low perceptual sensitivity ( $r^2=.03-.15$ ), suboptimal response bias ( $r^2=.04-.05$ ), and low working memory capacity ( $r^2=.03-.05$ ). These data show that reward and punishment sensitivity interfere with judgments about the emotional states of others by impairing people's abilities to discriminate emotional states and optimally balance their exposure to the economic risk of miscategorization.

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## POSTER A-26

### LAY THEORIES OF SOCIAL CLASS BUFFER LOWER-CLASS INDIVIDUALS AGAINST NEGATIVE AFFECT AND POOR SELF-RATED HEALTH

Jacynth J.X. Tan, & Michael W. Kraus  
University of Illinois, Urbana-Champaign

*Descriptors: social class, health, emotion*

The objective economic realities of one's life can profoundly influence health outcomes over the life course. In three studies, we showed that conceiving of social class as environmentally determined—a social constructivist belief—buffers lower-class individuals from negative affect and poor self-rated health, while believing that social class is biologically determined—an essentialist belief—does not. In a correlational study (Study 1;  $n = 169$ ), lower-class individuals reported poorer health than upper-class individuals when they endorsed essentialist beliefs, but showed no such difference when they endorsed social constructivist beliefs,  $\beta = .22$ ,  $t(165) = 2.14$ ,  $p = .03$ . In Study 2 ( $n = 71$ ), experimental exposure to essentialist theories of social class led lower-class individuals to report greater negative self-conscious emotions (e.g., shame, embarrassment) than upper-class individuals, but not for exposure to social constructivist theories,  $\beta = .41$ ,  $t(67) = 2.03$ ,  $p = .046$ . Study 3 ( $n = 345$ ) revealed that the experience of negative self-conscious emotions explained the effects of lay theories about social class on self-rated health: the indirect relationship between social class and self-rated health when exposed to essentialist theories was still significant when negative self-conscious emotions were included in the model, but not when exposed to social constructivist theories. Overall, these findings suggest that affective experiences elicited by lay theories of social class can powerfully shape long-term trajectories of lower-class individuals' health.

## POSTER A-27

### LOWER EMOTIONAL REACTIVITY PREDICTS BETTER SLEEP QUALITY IN DEMENTIA CAREGIVERS

James J. Casey<sup>1</sup>, Chien-Ming Yang<sup>2</sup>, Jennifer Merrilees<sup>3</sup>, & Robert W. Levenson<sup>1</sup>  
<sup>1</sup>University of California, Berkeley, <sup>2</sup>National Cheng Chi University, <sup>3</sup>University of California, San Francisco

*Descriptors: reactivity, psychophysiology, sleep*

Theory and research suggest that the relationship between emotional reactivity and sleep quality is bidirectional. Existing research has mostly relied on self-report measures of both emotional reactivity and sleep quality, thus supporting the need for research using more objective measures. In the present study, 26 spousal caregivers of patients with dementia (primarily with Alzheimer's disease and frontotemporal dementia) came to our laboratory and watched two 2-minute films that elicited amusement and fear. Throughout the procedure, peripheral physiological arousal was recorded. Following the session, caregivers (and patients) wore an actigraphy wristwatch (which measures movement and light) for one week to provide objective measures of sleep efficiency (total sleep time divided by total time in bed). Results indicated that lower emotional reactivity in response to the films (partial correlations controlling for pre-film baselines) predicted better sleep efficiency. This was found for somatic activity during the amusement film,  $\beta = -.42$ ,  $p < .05$ , and for heart rate and finger pulse transmission time during the fear film,  $\beta = -1.79$ ,  $p < .01$ , and  $\beta = -2.14$ ,  $p < .01$ , respectively. These results indicate that lower emotional reactivity in caregivers is associated with better sleep quality. Maintaining high quality sleep while undergoing the stresses associated with caregiving may prove to have positive benefits in terms of caregiver health and well-being.

## POSTER A-28

### THE EFFECTS OF A MINDFULNESS-BASED INTERVENTION ON SUBJECTIVE AND OBJECTIVE SLEEP IN HIGH AND LOW STRESS MOTHERS

Amanda Gilbert, Elissa Epel, Justine Arenander, David D. Shoup, & Aric A. Prather  
University of California, San Francisco

*Descriptors: mindfulness, sleep, stress*

Emerging research suggests that mindfulness-based interventions (MBI) may hold promise for improving sleep; however, their effectiveness in chronically stressed individuals has not been tested. The goal of this study was to examine the effects of a MBI, specifically designed for a chronically stressed population, on sleep. Seventy-four healthy, premenopausal mothers of either a child with Autism Spectrum Disorder (i.e., high stress caregivers;  $n=37$ ) or a typically developing child (i.e., low stress controls;  $n=37$ ) enrolled in either a 12-week MBI ( $n=46$ ) or a usual care control condition ( $n=28$ ). At baseline and 3 months post-intervention participants completed questionnaires [Pittsburg Sleep Quality Index (PSQI), Insomnia Severity Index (ISI)] and 7-days of wrist actigraphy to assess subjective and objective sleep parameters. Analysis revealed that compared to the usual care condition, those in the MBI group showed some improvement on subjective sleep measures (PSQI:  $F(1,69)=2.83$ ,  $p=0.10$  and ISI:  $F(1,65)=3.74$ ,  $p=0.06$ ) as well as an increase in total sleep time measured objectively by actigraphy ( $F(1,22)=3.93$ ,  $p=0.06$ ). MBI-related improvements in PSQI global sleep quality were significantly stronger in high stress caregivers compared to low stress controls ( $F(1,69)=3.68$ ,  $p=0.06$ ). Together these findings provide preliminary evidence that the mindfulness-based intervention has a favorable effect on subjective and objective measures of sleep, which may have important implications for high stress caregivers.

## POSTER A-29

### REGULATING AROUSAL IN OLDER AGE: IS SITUATION SELECTION EFFECTIVE?

Molly S. Cannon & Derek M. Isaacowitz  
Northeastern University

*Descriptors: emotion regulation, lifespan, psychophysiology*

As people age, declines in physiological flexibility may motivate differences in how they regulate their emotions (Charles, 2010). Situation selection is a unique regulation strategy because it allows individuals to choose or alter their environment before a full blown emotional response unfolds (Gross & Thompson, 2007). For older adults, for whom down-regulating from a highly arousing emotional state is thought to be especially difficult, this may be particularly effective. In Study 1, we assessed physiological responses while younger and older adults ( $n = 59$ ) selected from affective stimuli. In Study 2, we examined responses to identical sets of affective stimuli, in a new sample ( $n = 52$ ), when situation selection was unavailable as an emotion regulation strategy. We compared across studies and found that being able to select the affective content in the environment led to greater physiological reactivity in older adults but lower levels of reactivity in younger adults,  $F(1,92) = 6.27, p = .01$ . This pattern of findings indicated that while situation selection is effective in allowing individuals to avoid particular types of affective stimuli, being in control of the environment may be inherently activating for older adults. These studies are novel in their ability to address how changes in affective state unfold in tandem with real-time efforts to regulate emotions, and how this relationship changes with age.

## POSTER A-30

### THE MULTIDIMENSIONAL EMOTION QUESTIONNAIRE (MEQ): A NOVEL MEASURE OF EMOTIONAL EXPERIENCE

Anita S. Hibbert<sup>1</sup>, E. David Klonsky<sup>1</sup>, Sarah E. Victo<sup>1</sup>, & Greg H. Proudfit<sup>2</sup>  
<sup>1</sup>University of British Columbia, <sup>2</sup>Stony Brook University

*Descriptors: measurement, emotion, psychometrics*

The Multidimensional Emotion Questionnaire (MEQ) was developed to improve upon current measures of emotional experience by: 1) assessing the chronometric components of emotions, 2) enabling the examination of individual discrete emotions, and 3) differentiating emotional reactivity from emotion regulation. Specifically, the MEQ assesses: 2 superordinate dimensions of emotional reactivity (positive and negative); 3 chronometric components of emotional reactivity (frequency, intensity, and persistence); 5 discrete positive emotions (happy, excited, enthusiastic, proud and inspired) and 5 discrete negative emotions (sad, afraid, angry, ashamed, anxious); self-reported regulation of positive and negative emotions. In order to examine the psychometric properties of the MEQ, 309 individuals from the United States completed questionnaires via Amazon's Mechanical Turk website. Confirmatory factor analyses indicated very good fit for both the negative emotion scales (RMSEA = .046) and the positive emotion scales (RMSEA = .046). The internal reliabilities were acceptable-to-good: alphas of the reactivity and regulation scales ranged from .68-.79; alphas of the individual discrete emotions scales ranged from .61-.85. As a measure of convergent validity, correlations between the MEQ reactivity scales and the PANAS-X ranged from .43 to .72; correlations between the MEQ regulation scales and the DERS ranged from .31-.42. The current results support the potential utility of the MEQ in providing a detailed and valid assessment of emotional experience.

## POSTER A-31

### DAILY INTERPERSONAL AND NONINTERPERSONAL STRESS REACTIVITY IN CURRENT AND REMITTED DEPRESSION

Erin S. Sheets<sup>1</sup> & Michael F. Arme<sup>2</sup>  
<sup>1</sup>Colby College, <sup>2</sup>Butler Hospital and Brown University

*Descriptors: depression, stress, ecological momentary assessment*

Major negative life events are known to predict depression onset, but relatively few studies have examined the interplay of daily stress and negative affect, particularly in clinical samples. Preliminary research has been inconclusive whether only current depression is characterized by amplified emotional reactivity to stress, or whether these patterns are equally strong in those with any history of depression. Additionally, it is unknown if those with current depression are differentially responsive to negative interpersonal events. This is the first study to compare reactivity to daily stress across three levels of depression status: 23 currently depressed, 42 previously depressed, and 43 never depressed individuals. An ecological momentary assessment approach was used to examine reactivity to daily interpersonal and noninterpersonal negative events. Within-person causal processes regarding stress and negative affect were examined through multilevel modeling. Currently depressed individuals demonstrated greater reactivity (i.e. greater increases in negative affect) in response to negative events ( $t = 2.38, p = 0.02$ ), relative to previously and never depressed individuals. While previously and never depressed individuals exhibited equal reactivity to interpersonal and noninterpersonal stress, currently depressed participants were particularly sensitive to interpersonal events ( $t = 2.34, p = 0.02$ ). These findings suggest that patterns of increased stress reactivity are state-dependent rather than constituting a trait-like risk factor for depression onset and recurrence.

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## POSTER A-32

### "THE SOCIAL BRAIN"—DO WE HAVE ONE?

Shir Atzil<sup>1</sup>, Elizabeth Clark-Polner<sup>2</sup>, Anjali Krishnan<sup>3</sup>, Christy Wilson-Mendenhall<sup>2</sup>, Ajay B. Satpute<sup>4</sup>, Tor Wager<sup>3</sup>, & Lisa F. Barrett<sup>2</sup>  
<sup>1</sup>Martinos Center for Biomedical Imaging, <sup>2</sup>Northeastern University, <sup>3</sup>University of Colorado at Boulder, <sup>4</sup>Pomona College

*Descriptors: social neuroscience, meta-analysis*

"The social brain" is a popular term in neuroscience. Understanding how humans socialize has huge implications for the science of emotion, economics and psychopathology. However, is there a "social brain" or a dedicated brain mechanism that specifically evolved to enable social function? An alternative explanation is that basic neural features (which are networks with basic and general function) interact to manifest both social and non-social behaviors, indicating that there is no clear-cut distinction between social and non-social brain regions. If so, the repertoire of neural responses to social and non-social stimuli could be mapped as a continuum of occurrences on an axis. To test this, we used meta-analysis to search for neural features that participate in social and non-social experiences. Second, we mapped the brain regions that responded to a sociality-rank gradient using a parametric analysis of the IAPS fMRI data. Our results show that domain-general neural features (such as affect, mentalizing and salience) participate in creating social as well as non-social experiences, rather than a specialized "social brain." We conclude that sociality is represented in the brain as a continuous axis with many instances, and not as a dedicated system with an on/off switch.

## POSTER A-34

### AFFECTIVE SALIENCE NETWORK IN THE MACAQUE ANCHORED IN VENTRAL ANTERIOR INSULA

Jiahe Zhang<sup>1</sup>, Alexandra Touroutoglou<sup>2</sup>, Eliza Bliss-Moreau<sup>3</sup>, Dante Mantini<sup>4,5,6</sup>, Wim Vanduffel<sup>2,4</sup>, Bradford C. Dickerson<sup>2</sup>, & Lisa F. Barrett<sup>1</sup>  
<sup>1</sup>Northeastern University, <sup>2</sup>Harvard Medical School, <sup>3</sup>University of California at Davis, <sup>4</sup>KU Leuven Medical School, <sup>5</sup>Oxford University, <sup>6</sup>ETH Zurich

*Descriptors: resting state connectivity, salience network, macaque*

Affect is a species-general competency. In humans, affective processing is subserved by a large-scale brain network known as the “salience network” (Seeley et al., 2007). The connectivity strength of the salience network has been shown to be positively correlated with self-reported affective reactivity (Touroutoglou et al., 2012). Surprisingly, despite striking homologies in neuroanatomy and behavior (Bliss-Moreau et al., 2013), resting state studies (Mantini et al., 2013; Hutchison et al., 2011) have not identified a salience network within the intrinsic connectivity of the macaque brain. Using a seed-based approach, we tested the hypothesis that the salience network exists in the macaque brain (4 rhesus macaques; Mantini et al., 2013). We selected a region of interest (ROI) in the macaque ventral anterior insula (vAI) that was homologous to the human vAI ROI that anchors the human affective salience network (Touroutoglou et al., 2012). Whole-brain connectivity was calculated for the ROI and converted to z-scores. We predicted and found evidence for an affective salience network in the macaque brain. The vAI ROI shared preferential connectivity [ $t(10)=4.53$ ,  $p<.001$ ] with the dorsal anterior cingulate, pregenual anterior cingulate, bilateral vAI and amygdala, closely resembling the human affective salience network that is involved in affective reactivity (Touroutoglou et al., 2012). This study was the first to identify the affective salience network in macaques. Our finding has critical implications for understanding affective reactivity in nonhuman primates.

## POSTER A-35

### EMPATHY AND APPRAISAL: APPRAISALS OF OTHER-AGENCY CAUSE EMPATHIC ANGER

Joshua D. Wondra & Phoebe C. Ellsworth  
University of Michigan

*Descriptors: empathy, appraisal, vicarious emotions*

We used appraisal theories of emotion to predict that empathy, feeling what another feels, is based on interpretations (appraisals) of others' situations, just like firsthand emotions. Appraisals that bad situations are caused by someone else (high other-agency appraisal) make people feel angry, but appraisals that they are caused by bad circumstances (high situational agency appraisal) make people feel sad. In one study, subjects read about a disadvantaged high school student who applied to college and received only rejections. Although the rejected student felt sad, subjects felt angrier when the student's friend caused the bad outcome (other-agency condition,  $n = 71$ ) than when the student's disadvantaged circumstances caused it (situational agency condition,  $n = 74$ ),  $t(139.93) = 3.90$ ,  $p < .001$ , 95% CI [.46, 1.40]. Appraisals that the friend was to blame fully mediated the difference in anger, 95% bias-corrected CI [.24, .85]. The results support an appraisal theory approach to vicarious emotions where empathy is one possible outcome of general appraisal processes. This research contributes to emotion and empathy theories by combining the two, which have traditionally been studied in isolation from each other.

## POSTER A-36

### ANGRY EXPRESSIONS AS COGNITIVE CUES FOR PERSUASION

Jimmy Calanchini  
University of California, Davis

*Descriptors: emotion expressions, persuasion, threat*

Persuasive appeals often include expressions of emotion in an attempt to influence message recipients' thoughts, attitudes, and behaviors. I argue that emotion expressions that signal threat influence the extent to which recipients consider a persuasive appeal. In two experiments ( $Ns=216, 229$ ), participants who evaluated appeals accompanied by anger expressions reported more favorable attitudes towards strong, compelling arguments than weak, specious arguments ( $ts>2.30$ ,  $ps<.01$ ,  $ds>.52$ ). In contrast, participants who evaluated appeals accompanied by expressions of fear or happiness induced equally favorable attitudes towards strong and weak appeals ( $ts<0.72$ ,  $ps>.48$ ,  $ds<.20$ ). In two follow-up experiments, I tested threat as a mechanism using both mediation analysis ( $N=207$ ) and causal-chain design ( $N=166$ ). In the former, the extent to which participants perceived an expression to be threatening mediated the relation between the quality of the appeal and agreement with the appeal ( $\beta=-0.16$ ,  $p=.03$ ). In the latter, participants reported more favorable attitudes towards strong than weak appeals made by angry sources with direct gaze, but equally favorable attitudes towards strong and weak appeals made by angry sources with averted gaze ( $\beta=1.35$ ,  $p=.006$ ). Across all experiments, I found no evidence of emotion contagion, which suggest that threat signaled by angry expressions induces a cognitive appraisal process which influences how information is considered. Taken together, these findings contribute to our understanding of emotion expressions as meaningful cognitive cues.

## POSTER A-37

### EMPATHY REGULATION: NEURAL CORRELATES AND INDIVIDUAL DIFFERENCES

Craig Williams<sup>1</sup>, Emile G. Bruneau<sup>2</sup>, & Jamil Zaki<sup>1</sup>  
<sup>1</sup>Stanford University, <sup>2</sup>MIT

*Descriptors: empathy regulation, neuroimaging, attitudes*

Empathy can motivate helping, but can also induce feelings of distress and “burnout.” As such, the ability to flexibly increase or decrease empathy may be adaptive, but such “empathy regulation” remains relatively understudied. We assessed (i) whether people can regulate their empathy for others; (ii) which neural systems track empathy regulation; and (iii) whether empathy regulatory ability tracks salutary outcomes. Thirty participants read emotionally painful and neutral stories about other people and rated their empathic responses while being scanned with fMRI. Participants were instructed to adopt either psychologically close, natural, or distant perspectives while reading. Adopting a close perspective enhanced empathy ( $t = -2.97$ ), and increased activity in posterior ( $t = 5.32$ ) and anterior cingulate cortices ( $t = 5.00$ ) relative to a natural perspective. Conversely, adopting a distant perspective reduced empathy ( $t = -9.73$ ) and decreased activity in fusiform face area ( $t = 5.10$ ) and visual cortices ( $t = 4.87$ ) relative to a natural perspective. Surprisingly, regulatory success failed to track self-reported trait empathy ( $R's < .17$ ). Instead, up-regulatory success predicted reduced fear of compassion and ‘burnout’ ( $R's < -.34$ ), and down-regulatory success predicted the belief that empathy is malleable ( $R = .33$ ). In summary, we find that (i) individuals can regulate their experience of empathy; (ii) brain regions involved in theory of mind and facial/visual processing track empathic regulation; and (iii) attitudes about empathy predict regulatory success.

## POSTER A-38

### REGULATORY FLEXIBILITY AND INTEROCEPTIVE FEEDBACK: HOW THE HEART AND BROW GUIDE THE CHOICE OF EMOTION REGULATION STRATEGY

Jeffrey L. Birk & George A. Bonanno  
Teachers College, Columbia University

*Descriptors: emotion regulation, interoceptive feedback, psychophysiology*

Research has shown cognitive reappraisal to be an effective emotion regulation (ER) strategy. However, all forms of ER vary in efficacy, and real-time feedback may be needed to select between the continued use of that strategy or a shift to an alternative strategy (Bonanno & Burton, 2013). Interoceptive perception of physiological activity is one potential source of ER feedback. In this study, participants (N = 90) attempted to use cognitive reappraisal to down-regulate emotion while viewing unpleasant picture stimuli. We measured changes in heart rate, corrugator activity, and fingertip skin conductance level as well as subjective negative affect. Four seconds after each picture's onset, participants had the opportunity to either continue with the original ER strategy (reappraisal) or to switch to a new strategy (distraction) by pressing a button that caused several emotionally neutral pictures to appear in the screen's corners. The choice to switch from reappraisal to distraction was predicted by three of the four emotional indices during the preceding four seconds: greater heart rate decelerations,  $t(76) = 2.59$ ,  $p = .011$ , higher corrugator activity,  $t(77) = 3.55$ ,  $p = .001$ , and elevated subjective negative affect intensity,  $t(77) = 17.63$ ,  $p < .001$ , but not skin conductance level,  $t(76) = 1.43$ ,  $p = .158$ . The findings are consistent with the interoceptive feedback aspect of the regulatory flexibility framework.

## POSTER A-39

### THE ELECTROPHYSIOLOGY OF COGNITIVE DISSONANCE-ELICITED ATTITUDE CHANGE IN A FREE CHOICE PARADIGM

Adam Burnett & Mario Liotti  
Simon Fraser University

*Descriptors: cognitive dissonance, attitude change, electroencephalography*

Cognitive dissonance, the mental distress experienced when one holds simultaneous contradictory beliefs, is one of the most studied phenomena in the behavioural sciences. This psychological discomfort often causes individuals to engage in dissonance-reducing attitude change. Despite the influence cognitive dissonance theory has had over the decades, its neural correlates have only recently been investigated, predominantly using fMRI. Indeed, no published study to date has employed electroencephalography (EEG) in the study of cognitive dissonance-induced attitude change. In the first study of its kind, 30 healthy undergraduate participants engaged in a free choice decision-making task while their EEG was recorded. Participants rated a series of food stimuli on their desirability, which were then arranged into "dissonant" and "consonant" pairs. After choosing between paired items, participants re-rated the desirability of the stimuli, identifying the items for which attitude change occurred. Results indicate an early modulation in right frontal scalp peaking at 250ms,  $t(25) = 2.08$ ,  $p < 0.05$ , consistent with a model of cognitive dissonance in which right frontal cortex is recruited for down regulation of negative emotional arousal. A late effect was also found on frontoparietal scalp between 400 and 800ms, peaking at 650ms,  $t(25) = 2.33$ ,  $p < 0.005$ , possibly connected to reward signal changes associated with ventral striatal activity. Our study represents the first to track the time course of neural activity generated by a cognitive dissonance-inducing decision task.

This study was supported with funding from the Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant Program.

## POSTER A-40

### GIVING YOURSELF A BREAK WHEN LIFE WON'T: SELF-COMPASSION BUFFERS AGAINST THE EFFECT OF STRESS ON DEPRESSION

Michael C. Mullarkey<sup>1</sup> & Karen Bluth<sup>2</sup>

<sup>1</sup>University of Texas at Austin, <sup>2</sup>University of North Carolina-Chapel Hill Medical School

*Descriptors: self-compassion, stress reactivity, depression*

Adolescents who experience elevated stress levels have more depression symptoms (Shih, Eberhart, Hammen, & Brennan, 2006) and are more likely to be diagnosed with depression one year later (Lewinsohn, Joiner, & Rohde, 2001). Self-compassion, or the ability to be kind to oneself in difficult circumstances (Neff, 2003), buffers against self-critical feelings evoked by stressful events (Leary, Tate, Adams, Batts Allen, & Hancock, 2007). Therefore, self-compassion could reduce the effect of stress on depression. In the current study, thirty-four adolescents completed measures of self-compassion, perceived stress, and depression. They were then randomized into either a six-week self-compassion course or a wait-list control group, and both groups completed the measures again after six weeks. Adolescents with high initial self-compassion displayed a weaker relationship between initial stress and initial depression symptoms ( $t(30) = -2.05$ ,  $\beta = -.57$ ,  $p = .049$ ), and assignment to the treatment group neutralized the positive relationship between initial stress and increases in depression symptoms over the six weeks ( $t(28) = 2.51$ ,  $\beta = .48$ ,  $p = .02$ ). This effect cannot be accounted for by a decrease in stress, as group assignment did not cause a change in stress. Self-compassion appears to be a resource for protecting adolescents from depression, and a self-compassion intervention can neutralize the effects of initial stress on increases in depression over time. Future research could examine if shorter self-compassion interventions can produce similar effects.

## POSTER A-41

### THE DEVELOPMENT OF A LAB BASED ASSESSMENT OF ALEXITHYMIA

Rachel V. Aaron<sup>1</sup>, Matthew A. Snodgrass<sup>1</sup>, Lindsey V. McIntosh<sup>2</sup>, & Sohee Park<sup>1</sup>  
<sup>1</sup>Vanderbilt University, <sup>2</sup>University of Edinburgh

*Descriptors: alexithymia, emotional awareness, interoception*

Alexithymia refers to the inability to label and describe one's emotional experience. It is elevated in medical and psychological populations. Many argue the trait confers risk for the development of psychopathology and other problematic features. Alexithymia research has burgeoned in the last two decades, after the development of the first self-report measure of alexithymia, the Toronto Alexithymia Scale (TAS-20; Bagby et al. 1994). The current study seeks to extend alexithymia assessment by promulgating a versatile lab-based assessment of the construct. This would allow for rigorous examination of the nature of the construct and the directionality of its problematic correlates. Participants view Gross and Levenson's (1995) emotion-inducing film clips, designed to evoke a specific emotion. After each clip, we ask participants to identify: a) their primary emotional response; b) their level of arousal; and c) additional emotions experienced. So far, we have collected data from 23 participants, and current analyses are preliminary. We assess alexithymia using the TAS-20. We see trends for reduced identification of "target" emotions, especially for elevated scores on the externally oriented thinking scale of the TAS-20 ( $p = .07$ ) and for increased self-reported arousal ( $p = .07$ ). This is consistent with the theory that reduced emotional awareness leads to heightened experience of physiological cues, which helps explain why alexithymia is heightened in medical populations. We see no differences in self-reported intensity of emotion, or number of emotional words endorsed.

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## POSTER A-42

### INVESTIGATING THE EFFECT OF POSITIVE AFFECT ON THE STABILITY-FLEXIBILITY BALANCE

Rebecca D. Calcott & Elliot T. Berkman  
University of Oregon

*Descriptors: emotion-attention interaction, positive affect*

The balance between maintaining current goals in working memory and flexibly adjusting goals is important for successful navigation of life's challenges. Some positive affect states shift this balance by facilitating flexible goal adjustment, but at the cost of increased vulnerability to distraction. The mechanisms by which positive affect influences this stability-flexibility balance are currently unclear. The present study investigated two potential mechanisms: changes in top-down control over attention and changes in the bottom-up salience of task-irrelevant stimuli. To this end, affective state, the need for flexible goal shifting (top-down), and the presence of novel distractors (bottom-up) were manipulated independently. Participants completed a guided episodic memory task to induce either a positive or neutral mood before completing a set-shifting task that included both goal maintenance (repeat) and goal shift (switch) trials. Critically, on 10% of trials, a novel oddball distractor appeared. As expected, results ( $N = 60$ ) demonstrate clear reaction time costs for switch trials ( $F(1,58) = 15.47, p < .001$ ) and oddball trials ( $F(1,58) = 16.86, p < .001$ ). The three-way interaction (Switch x Oddball x Affect) was significant at the trend level ( $F(1,58) = 2.40, p = .13$ ). Neutral affect increased distractibility on non-switch trials, whereas positive affect increased distractibility on switch trials. This result demonstrates how positive affect can have different effects on cognition depending on other contextual factors such as the relative stability of the task.

## POSTER A-43

### EMPATHY IN THE CONTEXT OF MORAL REASONING IN SCHIZOPHRENIA

Linda J. Barbanel, Jonathan D. McGuire, & Robyn Langdon  
Macquarie University

*Descriptors: schizophrenia, empathy, moral reasoning*

Research on the emotions in schizophrenia has revealed impairments in emotion recognition and expression, and empathic responsiveness. The effect of these emotion deficits on moral reasoning has not yet been explored. The purpose of the current study was to compare a new behavioral measure of empathy in the context of moral reasoning to a self-report measure of empathy in schizophrenia. We administered Kohlberg's Moral Judgment Interview (MJ) to 24 participants with schizophrenia and 20 healthy controls. Self-report empathy was measured using the Interpersonal Reactivity Index (IRI). As a behavioral measure of empathy, responses on the MJ were recoded for along IRI-derived dimensions of Personal Distress, Empathic Concern, Fantasy and Perspective Taking. Cases had significantly lower MJ moral maturity scores than controls (Mann-Whitney:  $U = 113.50, p = .003$ ). These impaired performances were explained by neuro- and social-cognitive deficits and negative symptoms in patients. Cases had significantly lower MJ Empathic Concern scores compared to controls ( $U = 130.50, p = .01$ ) and expressed significantly less MJ Emotional Perspective Taking ( $U = 130.00, p = .009$ ). Similar differences were seen in the self-report measures, however between-group differences were not significant. This study represents a first examination of empathy as expressed in the context of moral reasoning in schizophrenia. Findings suggest that self-report measures of empathy may underestimate deficits in affective responsiveness and perspective taking in relation to moral reasoning in schizophrenia.

## POSTER A-44

### TESTING LINKS BETWEEN INTEROCEPTIVE SENSITIVITY AND AFFECTIVE EXPERIENCE

Ian R. Kleckner, Karen S. Quigley, & Lisa Feldman Barrett  
Northeastern University

*Descriptors: interoception, affect, heartbeat detection*

Many theories of emotion posit that "interoceptive" signals from the body to the brain are central to affective experience. However, the empirical literature is inconsistent as to whether individual differences in interoception are directly correlated with subjective arousal in response to evocative stimuli. This apparent disagreement in the literature may be partly because the two most common measures of interoception capture different facets of interoception. Specifically, the "heartbeat detection task" involves detecting the timing of heartbeats and thus is more a more principled measure of the ability to detect cardiac sensations. The "heartbeat tracking task" involves reporting the number of heartbeats in a pre-defined time period and thus could be accomplished using knowledge of heart rate and passage of time. Here, we used both of these interoception measures along with self-reported arousal in response to 100 evocative pictures in a single sample of 64 participants. We found that neither interoception measure was correlated with subjective arousal to negative, neutral, or positive pictures (all  $r_s < 0.27$ ). These results are significant because they suggest that interoception and subjective arousal to evocative stimuli are not simply correlated. Instead, we discuss an alternative hypothesis that interoception moderates the relationship between subjective arousal to evocative stimuli and physiological reactivity to evocative stimuli (e.g., change in heart rate).

NIMH F32 to IRK, Director's Pioneer Award to LFB.

## POSTER A-45

### POSITIVE EMOTION RELEVANT IMPULSIVITY AND AUTONOMIC REACTIVITY

Amy H. Sanchez, Jordan Tharp, & Sheri L. Johnson  
University of California, Berkeley

*Descriptors: positive urgency, psychophysiology, cognitive control*

Positive urgency (PUM), the tendency to act impulsively during high moods, has been found to be a transdiagnostic risk factor for substance abuse, bipolar disorder, depression, anxiety, and suicidality (Johnson, Carver, & Joormann, 2013). Little is known, though, about mechanisms guiding PUM. The current study examined whether PUM is related to higher autonomic arousal during positive moods and whether this arousal accounts for poorer performance on laboratory measures of impulsivity. During two lab sessions, one with high arousal positive emotion inductions and one without, 87 participants self-reported trait positive urgency and completed a battery of well-validated executive function and impulsivity tasks, including BART, antisaccade, risk taking propensities, and IMT. Heart rate, skin conductance (SC), and RSA were recorded throughout. Participants had higher tonic SC during BART,  $t(56)=3.50, p=.001$ , and IMT,  $t(61)=3.57, p=.001$ , in the positive mood induction session compared to the neutral session, indicating that the positive mood induction increased sympathetic arousal. However, PUM was not related to significantly higher sympathetic arousal during the positive mood induction session. Neither higher sympathetic arousal nor its interaction with positive urgency predicted impulsive behavior on laboratory tasks. Although analyses are ongoing, our findings thus far suggest that PUM may not be characterized by higher autonomic reactivity or by a greater role of autonomic reactivity in behavior. Instead, deficits in cognitive control may be a primary mechanism for PUM.

## POSTER A-46

### COUNTERINTUITIVE EFFECTS OF INTUITION: SYSTEMATIC, NOT INTUITIVE, THINKING IMPROVES EMPATHIC ACCURACY

Christine Ma-Kellams<sup>1</sup> & Jennifer Lerner<sup>2</sup>

<sup>1</sup>University of La Verne, <sup>2</sup>Harvard Kennedy School

*Descriptors: empathic accuracy, intuition, systematic thinking*

How intuitive is the ability to accurately infer the feelings of others? Four studies tested the link between intuitive vs. systematic thinking and empathic accuracy. Study 1 (N = 105) assessed lay beliefs about empathic accuracy and found that people assume empathic accuracy is an intuitive process; 72% of participant agreed that intuition facilitates mind-reading. Studies 2-4 demonstrated that, contrary to lay belief, intuitive thinking is associated with low empathic accuracy. Study 2 (N = 447) showed that systematic thinkers are better than intuitive thinkers in inferring complex mental states based on limited facial cues. Participants completed the Cognitive Reflection Test (CRT), a series of solvable math problems that offer intuitively appealing but incorrect answers. CRT performance predicted empathic accuracy on the RMET,  $\beta = .13$ ,  $t(446) = 2.78$ ,  $p = .006$ . Study 3 (N = 72) replicated this effect using a different measure of empathic accuracy: participants who showed greater systematic thinking on the CRT more accurately detected the emotions of their partners during live interviews,  $\beta = -.34$ ,  $t(71) = 2.98$ ,  $p = .004$ . Moreover, both studies demonstrated that these patterns hold even when controlling for other predictors of CRT performance and empathic accuracy. Study 4 (N = 74) confirmed that the relationship is causal: experimentally inducing a mindset that favored systematic thought (as opposed to intuitive) led to improved emotional mind-reading,  $F(1, 72) = 4.81$ ,  $p = .032$ . How individuals reason about the world profoundly implicates how they mind-read others.

## POSTER A-47

### SYMPTOMS OF EATING DISORDERS AND ADOLESCENT SEXUALITY

Annie M. Shearer, Jody Russon, Joanna Herres, Tita Atte, & Guy Diamond Drexel

*Descriptors: adolescence, sexuality, eating disorders*

Although research shows that gay and bisexual men are at increased risk for eating disorders (EDs), less is known about the relationship between sexual identity and ED symptoms amongst women, particularly in adolescence. This study examined ED symptoms across adolescents who reported being attracted to, and sexually active with, those of the same-sex, opposite-sex, or both. Sexual identity was inferred from these responses. Participants were recruited from ten primary care sites in Pennsylvania and administered the Behavioral Health Screen (BHS)—a web-based screening tool that assess psychiatric symptoms and risk behaviors—during a routine visit. As expected, gay and bisexual males exhibited significantly higher ED scores than their heterosexual peers (both  $p < .001$ ). Similarly, males who reported same-sex sexual experiences reported significantly higher scores than males who only reported only opposite-sex sexual experiences (both  $p < .05$ ). Amongst females, there were no significant differences in ED scores between lesbian or straight participants. Those who identified as bisexual, however, had significantly higher scores, on average, than their lesbian or straight counterparts ( $p < .001$ ). Surprisingly, females questioning their sexuality reported the highest ED scores of all ( $p < .001$ ). These findings are contrary to previous assumptions being lesbian or bisexual plays a protective role against eating pathology in females. In fact, these results suggest bisexual or questioning adolescent females may actually be at increased risk for developing ED symptoms.

## POSTER A-48

### ON THE INNOCENCE OF MEASUREMENT: THE CASE OF SELF-REPORT OF EMOTIONS

Omesh Johar  
University of St. Thomas

*Descriptors: measurement, regulation, attention*

It is generally accepted that measurements are not perfect; there is always room for greater validity. In the context of self-reports, the obvious limitation is that people do not necessarily have insights into their true experience. Social desirability or demand characteristics also raise concerns about the validity of (self) responses. However, such concerns suggest a restricted view of the power of measurements. A common underlying assumption is that self-reports are merely incapable of assessing the true experience that exists “out there.” Four experiments showed that measurements can, indeed, alter the true experience. Participants in all experiments completed an emotion-induction paradigm followed by the manipulation (presence or absence) of measurement. Finally, after some irrelevant filler tasks, all participants reported the intensity of their emotions. In all experiments, a numbing effect of measurements was observed, i.e., preceding measurements of emotions led to weaker final intensity of emotion. The numbing effect was observed regardless of the overt induction and measurement in Experiment 1 (sadness,  $N=170$ ,  $d=.43$ ) and 2 (guilt,  $N=180$ ,  $d=.54$ ), and the covert induction and measurement in Experiment 3 (envy,  $N=136$ ,  $d=.58$ ). Experiment 4 showed that the numbing effect occurs in case of negative affect, but not positive affect (standardized  $\beta$ s of  $-.31$  and  $-.02$ , respectively). It is suspected that a simple measurement can serve to regulate negative emotion by forcing attention toward the emotion in a non-ruminative fashion.

## POSTER A-49

### AGGRAVATED BUT ACCURATE: RECOGNITION MEMORY FOR ANGRY, FEARFUL, AND HAPPY STATEMENTS

Daniel F. Bogart & Linda J. Levine  
UC Irvine

*Descriptors: emotion, anger, memory*

If anger decreases the use of systematic information processing in favor of heuristic processing, as some researchers have argued, we would expect anger to have detrimental effects on memory accuracy. This study tested this by examining memory accuracy and confidence for written statements conveying different emotions. Subjects (N = 645) were randomly assigned to view and empathize with statements that conveyed either anger, fear, or happiness. After a 30-minute retention interval, they completed a recognition memory test consisting of previously-viewed statements and novel foils. Subjects also rated their confidence in their memory judgments and the intensity of emotion the statements had evoked. Angry statements were remembered more accurately ( $M = .67$ ) than fearful ( $M = .61$ ) or happy statements ( $M = .63$ ),  $F(2, 642) = 15.59$ ,  $p < .001$ . Hit rates did not differ by condition; instead, better memory for angry statements was driven by more correct rejections,  $F(2, 642) = 23.70$ ,  $p < .001$ . Calibration between memory accuracy and confidence (i.e., confidence for accurate trials minus confidence for inaccurate trials) was greater for angry statements ( $M = .53$ ) than for fearful ( $M = .38$ ) or happy statements ( $M = .40$ ),  $F(2, 642) = 4.78$ ,  $p = .009$ . Moreover, the greater the intensity of anger subjects experienced in response to the angry statements, the higher the calibration between memory accuracy and confidence,  $r(206) = .18$ ,  $p = .009$ . Together, these findings challenge the view that anger decreases systematic information processing, at least in the domain of recognition memory.

## POSTER A-51

### THE PARASYMPATHETIC NERVOUS SYSTEM IS SENSITIVE TO ADULT ROMANTIC ATTACHMENT IN A NON-HUMAN PRIMATE MODEL

Emily S. Rothwell<sup>1</sup>, Eliza Bliss-Moreau<sup>1</sup>, Gilda Moadab<sup>2</sup>, & Karen L. Bales<sup>1</sup>  
<sup>1</sup>University of California- Davis, <sup>2</sup>California National Primate Research Center

*Descriptors: autonomic physiology, adult attachment, non-human primate*

High quality relationships reliably promote psychological well-being and physical health, whereas diminished or lack of social support conveys detrimental effects. Cardiovascular regulation by the autonomic nervous system is a candidate mechanism by which relationships can exert these dually beneficial effects. The autonomic nervous system dynamically regulates heart rate with the parasympathetic nervous system (PNS) inhibiting the sympathetic nervous system to slow heart rate. We investigated the sensitivity of the parasympathetic nervous system to the presence of adult romantic attachment partners in titi monkeys (*Callicebus cupreus*), an animal model of adult romantic attachments. We noninvasively recorded an electrocardiogram from two adult titi monkeys in order to index respiratory sinus arrhythmia (RSA), a PNS measure. Recordings were taken during three consecutive 10-minute test conditions: 1) social isolation 2) stranger of the opposite sex present and 3) attachment partner present. An analysis in HLM with minute block of data nested within conditions within monkey revealed that RSA was lower in the presence of the attachment partner than during social isolation and when the stranger was present ( $B_0 = -0.79$ ,  $t(58) = 3.16$ ,  $p = .003$ ). This indicates that the PNS is specifically responsive to an attachment figure in a monogamous species. This first ever study of RSA in titi monkeys lays the foundation for developing titi monkeys as a translational model to study the relationship between adult attachments and the ANS.

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## POSTER A-52

### EMOTIONS EXPERIENCED DURING SUICIDAL THINKING

Alexis M. May & E. David Klonsky  
University of British Columbia

*Descriptors: suicide ideation*

We are interested in the emotions people experience when they “feel” suicidal. Our study addresses 2 questions: 1) What emotions occur when people think about suicide and 2) How are these emotions associated with the severity of ideation? Participants were 405 adults with a history of suicide ideation recruited online using Mechanical Turk. They reported on 32 emotions experienced during suicide ideation. Factor analysis was used to identify patterns of responding among the emotions. As expected, negative emotions were the most highly endorsed. A 3-factor structure emerged for negative emotions: General Negative (e.g., sad, angry), Anxious, and Self-Conscious (e.g., ashamed). Surprisingly, half of the participants (56%) also reported feeling at least one positive emotion, moderately or more, during ideation. A 2-factor structure emerged for positive emotions: High Arousal (e.g., excited) and Low Arousal (e.g., calm). A subset of 240 participants reported on ideation severity. Both High Arousal and Low Arousal correlated with more severe suicide ideation ( $r = .23$  and  $.28$ , respectively). The General Negative factor correlated weakly with higher ideation severity ( $r = .13$ ), while the Self-Conscious factor correlated weakly with lower ideation severity ( $r = -.11$ ). Our results suggest that in addition to nearly universal negative emotion, a significant number of people also experience positive emotions during ideation. Positive emotions are associated with more severe ideation. Understanding the role of emotion during suicidal crises can improve risk assessment and intervention.

## POSTER A-53

### EMOTION CONCEPT KNOWLEDGE CONTAINS LESS INTEROCEPTIVE INFORMATION IN OLDER VERSUS YOUNGER ADULTS

Jennifer K. MacCormack, Brian M. Davis, & Kristen A. Lindquist  
University of North Carolina at Chapel Hill

*Descriptors: aging, emotion concepts, embodied cognition*

Growing research suggests that a person re-enacts or “simulates” the sensorimotor representations associated with an emotion category when thinking about that concept (Wilson-Mendenhall et al. 2011). Bodily feelings are often thought to be a key component of emotions, and hence emotion knowledge. However, bodily feedback from the peripheral nervous system becomes less intense with older age, leading older adults to experience “maturational dualism” (Mendes, 2010). These findings suggest that aging adults may rely less on interoceptive states to simulate emotion concepts and have implications for how older adults think of and experience emotions. To assess whether there are age differences in emotion concept knowledge, the present study asked younger versus older adults to weight the importance of interoceptive (e.g., “hot”), behavioral (e.g., “frowning”), and situational (e.g., “injustice”) properties in emotion categories. Participants (aged 18-72, Mean=36) rated how strongly they associated 180 interoceptive, behavioral, and situational properties with specific emotions (anger, disgust, fear, sadness, boredom). Consistent with “maturational dualism,” older adults were less likely than younger adults to associate interoceptive properties with specific emotions ( $\beta = -.009$ ,  $p = .040$ ) but did not differ in the extent to which they believed behaviors ( $\beta = -.008$ ,  $p = .181$ ) and situations ( $\beta = -.005$ ,  $p = .375$ ) were associated with specific emotions. These findings suggest that older adults may rely less on interoceptive properties when simulating emotions than younger adults.

## POSTER A-54

### HOW CHILDREN USE PAST EMOTIONAL EVENTS TO FORECAST MENTAL STATES: LINKS TO ANXIETY AND BIASED ATTENTION

Karen M. Hjortsvang, Kristin H. Lagattuta, Hannah J. Kramer, & Liat Sayfan  
University of California, Davis

*Descriptors: anxiety, attention bias, theory of mind*

We examined relations among anxiety, attention bias, and children’s reasoning about connections between past experiences and future-oriented mental states. Four- to 10-year-olds ( $N = 193$ ; non-clinical) responded to 8 scenarios where focal characters re-encounter agents who had caused them negative emotions twice, positive emotions twice, negative emotions first and positive emotions second, or reversed positive-negative event order. Children predicted focal characters’ thoughts (“think something bad will happen” vs. “think something good will happen”), emotions (“worried” vs. “happy”), and decisions (“stay away” vs. “go close”). Eye movements to past event stimuli were recorded throughout. We analyzed children’s ability to construct coherent mental state triads (thought=emotion=decision valence). We computed a negative attention bias score from inconsistent-past trials (LT negative event - LT positive event)/(total LT). Children and their parents reported child anxiety using a modified Spence Children’s Anxiety Scale (Spence, 1997; Lagattuta et al., 2012). Age ( $\beta = .27$ ,  $p < .001$ ), child self-reported anxiety ( $\beta = -.34$ ,  $p < .001$ ), and negative attention bias ( $\beta = -.15$ ,  $p = .02$ ) independently predicted coherent mental state triads ( $R^2 = .30$ ); younger children, more anxious children, and children with a stronger negative attention bias offered less coherent judgments (e.g., think positive + feel happy + avoid). These data reveal that children’s reasoning about mental states (theory of mind) can be shaped by emotional health as well as attention to emotional information.

National Science Foundation; NIH Predoctoral Training Consortium in Affective Science

## POSTER A-55

### **GREATER EMOTION REGULATION IN DEMENTIA PATIENTS PREDICTS LESS MENTAL ILLNESS IN THEIR CAREGIVERS**

Marcela C. Otero & Robert W. Levenson  
University of California, Berkeley

*Descriptors: emotion regulation, dementia, caregiving*

Caring for a spouse with dementia can have profound negative effects on caregivers' mental health (e.g., greater anxiety and depression). Differences among caregivers in the severity of these effects may be related to differences in patients' emotional functioning. Given the critical role that emotion regulation plays in interpersonal relationships, we examined whether dementia patients' emotional regulatory abilities were related to caregiver mental health in a sample of 40 patients with Alzheimer's Disease (AD), 39 patients with behavioral variant frontotemporal dementia (bvFTD), and their caregivers. Patients came to the laboratory and were videotaped while they watched an extremely disgusting film. Trained coders rated the video recordings for evidence of visual avoidance behaviors (e.g., gaze aversion) using an objective coding system. Caregiver mental illness symptoms were measured using a standard self-report inventory. Results indicated that bvFTD patients were less likely to utilize visual avoidance behaviors than AD patients. Across diagnostic groups, greater use of visual avoidance by patients was associated with fewer mental illness symptoms in their caregivers ( $\beta = -1.28$ ,  $t(80) = -2.54$ ,  $p < .05$ ), even after controlling for dementia severity. These findings suggest that preservation of this important aspect of emotion regulation in patients may help reduce the negative effects of caregiving.

## POSTER A-56

### **A DIFFERENTIATED APPROACH TO THE LINK BETWEEN POSITIVE EMOTION AND WELLBEING**

Elizabeth Barrett-Cheetham & Lisa A. Williams  
University of New South Wales

*Descriptors: positive emotion, wellbeing, motivation*

A substantial corpus of research has highlighted how positive emotions promote wellbeing, yet such research often fails to differentiate between discrete positive emotions (e.g., pride, compassion, gratitude) and therefore may overlook functional differences amongst positive emotions. One promising avenue for identifying such discrete emotion effects is to investigate how emotions impact motivations, which would in turn influence wellbeing. For this purpose, this study differentiated communal from agentic motivations as well as social from self-focused wellbeing. The current study ( $N = 273$ ) provided support for a novel model highlighting the distinct pathways via which discrete positive emotions contribute to wellbeing, namely through motivations. Structural equation modelling of data regarding dispositional discrete positive emotions, communal and agentic motivation, and wellbeing identified two main pathways to wellbeing. Specifically, dispositional compassion, via communion motivation, predicted social wellbeing ( $\beta = .23$ ) and dispositional pride, via agency motivation, predicted self-focused wellbeing ( $\beta = .12$ ). Gratitude predicted social and self-focused wellbeing independent of motivations ( $\beta_s = .19, .23$ , respectively). These findings corroborate recent trends in affective science to differentiate amongst discrete positive emotions and give promise for integration of differentiated positive emotions in wellbeing interventions. This work also lays the foundation for exploring how state discrete emotions might influence motivation and, subsequently, wellbeing.

## POSTER A-57

### **JUSTIFICATIONS FOR SAVORING: ARE SOME MOTIVATIONS MORE BENEFICIAL THAN OTHERS?**

Meagan A. Ramsey<sup>1</sup>, Karena M. Moran<sup>2</sup>, Cara A. Palmer<sup>3</sup>, & Amy L. Gentzler<sup>1</sup>  
<sup>1</sup>West Virginia University, <sup>2</sup>West Virginia University, <sup>3</sup>University of Houston

*Descriptors: savoring, positive affect, emotion regulation*

People often savor life events (i.e., up-regulate positive affect), which is linked to positive outcomes (e.g., Bryant, 2003). Although the motivations underlying people's emotion regulation may matter (e.g., Mauss & Tamir, 2014), little research has examined reasons why people may savor. Thus, this study examined how savoring justifications relate to savoring ability and emotional well-being for 218 adults (128 females) ages 18-77 ( $M = 42.23$ ). Participants completed an online survey on Amazon Mechanical Turk and reported on their perceived savoring ability (SBI; Bryant, 2003), life satisfaction (SWLS; Diener et al., 1985), and depressive symptoms (CESD-R; Van Dam & Earleywine, 2011). Participants answered open-ended questions about why they savor positive events. Justifications were coded as hedonically-driven, self-focused, other-focused, or practical (overall  $\kappa = .61$ ). Results indicated that those who cited more hedonically-driven justifications reported greater savoring ability ( $\beta = .21$ ,  $p = .009$ ). Hedonically-driven justifications were also marginally associated with life satisfaction ( $\beta = .16$ ,  $p = .054$ ) and significantly associated with lower reports of depressive symptoms ( $\beta = -.19$ ,  $p = .017$ ). Self-focused, other-focused, and practical motivations were not associated with savoring ability or emotional well-being. Overall, this study suggests that those who savor for hedonic reasons report a greater ability to up-regulate their positive affect and greater emotional well-being compared to those who report other motivations for savoring. Thus, savoring motivations matter.

## POSTER A-58

### **STABLE RESPIRATION PATTERNS PREDICT LENGTH OF PRACTICE AND SELF-REPORTED AFFECTIVE MEASURES IN LONG-TERM MEDITATION PRACTITIONERS**

Joseph Wielgosz, Donal G. MacCoon, Antoine Lutz, Giulio Tononi, & Richard J. Davidson  
University of Wisconsin-Madison

*Descriptors: respiration, meditation, psychophysiology*

Respiration patterns have special relevance for the physiological study of emotion regulation: they show trait-like stability; have been associated, in prior research, with individual differences in emotion processing; and are subject to combined automatic and conscious control. Attention to and regulation of the breath are also central components of traditional meditation practices. However, little is known about the role of altered respiration patterns in affective changes associated with contemplative practice. We examined respiration in a sample of long-term meditation practitioners ( $n = 23$ , mean lifetime practice approx. 8600 hours), recorded at rest in three sessions at intervals of 1.5 to 15 months. Respiration rate (RR) was highly stable across time ( $ICC = 0.86$ ) and showed strong relationships with both total lifetime hours of practice (log-scaled,  $r = -0.51$ ,  $p = .012$ ), and total days on meditation retreat (log-scaled,  $r = -0.63$ ,  $p < .001$ ). These relationships survived controls for age, gender, and other relevant physiological and demographic measures. Further analysis revealed contrasting associations with sub-scales of affective measures, with higher RR associated with positive changes in Interpersonal Reactivity Index/Perspective-Taking ( $r = 0.53$ ,  $p < .01$ ) and Positive and Negative Affect Scale/Joy ( $r = 0.42$ ,  $p = .046$ ), but a trend towards reduced Psychological Well-Being Scale/Purpose ( $r = -0.38$ ,  $p = 0.076$ ). Together these results support further study of respiration patterns as a physiological marker of sustained meditation practice, with relevance for affective processes.

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## POSTER A-59

### THE DIFFERENTIAL ROLES OF POSITIVE AND NEGATIVE AFFECT AMONG INDIVIDUALS WITH REMITTED MOOD DISORDERS

Meredith T. Dryman<sup>1</sup>, Amanda S. Morrison<sup>1</sup>, Jonah N. Cohen<sup>1</sup>, Richard G. Heimberg<sup>1</sup>, & June Gruber<sup>2</sup>  
<sup>1</sup>Temple University, <sup>2</sup>University of Colorado, Boulder

*Descriptors: bipolar disorder, social anxiety*

When social anxiety (SA) is present, major depressive disorder (MDD) and bipolar disorder (BD) are associated with more severe clinical trajectories. The mechanisms that explain these relationships are not well understood. Given that SA and depression are both associated with increased negative affect (NA) and reduced positive affect (PA), the present study examines PA and NA as mediators of the relationship between SA and depressive symptoms among a sample of individuals with remitted mood disorders. Participants were individuals with remitted BD (n=30) or remitted MDD (n=29). Data were collected at three time points (T1, T2, T3), each six months apart. Participants completed measures of SA (Brief Fear of Negative Evaluation Scale) and trait PA and NA (Positive and Negative Affect Scale) at T1, as well as a measure of depression (Beck Depression Inventory-II) at all time points. Reduced PA mediated the positive relationship between SA and depression for the BD group at T1 (indirect effect:  $b=.05$ ), T2 ( $b=.08$ ), and T3 ( $b=.10$ ), but not for the MDD group at any point. Increased NA mediated the relationship between SA and depression for the MDD group at T1 ( $b=.10$ ) and T2 ( $b=.12$ ), but not for the BD group at any point. The present study provides insight into trait-like patterns of emotion that may predict a more severe clinical course for comorbid mood disorders and SA. Our findings suggest that the influence of SA on concurrent and prospective levels of depression within mood disorders may vary based on trait levels of PA and NA, independent of current mood phase.

## POSTER A-60

### EMOTIONAL EMPATHY IS IMPAIRED IN BEHAVIORAL VARIANT FRONTOTEMPORAL DEMENTIA AND ENHANCED IN ALZHEIMERS DISEASE

Virginia E. Sturm<sup>1</sup>, Alice Y. Hua<sup>1</sup>, Sandy J. Lwi<sup>1</sup>, Katherine P. Rankin<sup>1</sup>, Bruce L. Miller<sup>1</sup>, Howard J. Rosen<sup>1</sup>, William W. Seeley<sup>1</sup>, & Robert W. Levenson<sup>2</sup>  
<sup>1</sup>Memory and Aging Center, Department of Neurology, University of California, San Francisco, <sup>2</sup>Department of Psychology, University of California, Berkeley

*Descriptors: empathy, autonomic nervous system, frontotemporal dementia*

Loss of empathy is a hallmark feature of behavioral variant FTD (bvFTD). Impairment in emotional empathy, an affect-sharing mechanism that promotes understanding through simulation of others' emotional states, may play a role in the social deficits seen in bvFTD. We assessed emotional empathy in 30 bvFTD, 29 Alzheimer's disease (AD), and 30 healthy controls by measuring their behavioral (facial expression) and autonomic nervous system reactivity while they watched four film clips in which a target character displayed a positive emotion. Patients with bvFTD displayed less facial behavior than patients with AD during the affection and enthusiasm films ( $p<.05$ ). Patients with bvFTD generally showed the lowest levels of facial behavior, patients with AD showed the highest levels, and healthy controls fell in between. A comparison of participants' mean physiological levels during the baseline and film-viewing periods revealed a significant main effect of diagnosis on skin conductance level and significant interactions of diagnosis X measurement period on heart rate and respiration rate during the enthusiasm film ( $p<.05$ ). Patients with bvFTD were largely unresponsive to the film and had lower skin conductance levels (during both the baseline and film) and faster heart and respiration rates during the baseline period compared to the healthy controls. In bvFTD, degeneration of emotion-relevant networks may alter baseline autonomic physiology in ways that interfere with emotional empathy, thus creating difficulties with social interactions and understanding the emotions of others.

## POSTER B-1

### THE EFFECTS OF RENEWED MEDIA COVERAGE FOLLOWING INCIDENTS OF MASS VIOLENCE

Jolie B. Wormwood, Anna Neumann, Spencer Lynn, Lisa F. Barrett, & Karen S. Quigley  
Northeastern University

*Descriptors: threat perception, anxiety, trauma*

This longitudinal study investigates changes in anxiety, negative affect, and threat perception in Boston area residents over the one-year anniversary of the 2013 Boston Marathon bombings. Ninety-five participants completed three experimental sessions, with the second falling immediately before the annual Boston Marathon when media coverage about the bombings was greatly increased. Anxiety and more general negative affect were measured via self-report as well as via peripheral physiology: facial electromyography (fEMG) was used to record participants' blink reflex during an affective modulation of startle task, and electrodermal activity (EDA) was recorded as a measure of arousal throughout the experimental sessions. Changes in threat perception were tracked using both self-report and a computer-based Shooter Bias Task wherein participants had to quickly decide whether to "shoot" or "not shoot" armed and unarmed individuals, respectively. We model how changes in media exposure over time interact with initial exposure to the bombings to predict changes in self-reported and physiological arousal within individuals as well as how such changes influence participants' perceptions of and responses to potential threats. For example, participants who recalled greater exposure to the initial trauma had a more conservative threat perception bias (i.e., they favored the "don't shoot" response) ( $r=.21, p<.05$ ), but only at the experimental session closest to the anniversary of the bombings when media coverage was at its peak.

This research was funded by a grant from the National Science Foundation (BCS-1426171).

## POSTER B-2

### ABNORMAL MOTOR CORTEX PLASTICITY IN GIRLS WITH MAJOR DEPRESSIVE DISORDER

Cameron S. Laue, Steve W. Wu, Donald L. Gilbert, David A. Huddleston, Atara S. Minster, & Ernest V. Pedapati  
Cincinnati Childrens Hospital Medical Center

*Descriptors: TMS, depression, cortical plasticity*

Measuring motor cortex (M1) excitability with repetitive transcranial magnetic stimulation (rTMS) provides a way to examine potential brain-based differences between depressed and healthy populations. We expected youth with major depressive disorder (MDD) would demonstrate deficits in M1 excitability following intermittent theta burst stimulation (iTBS) rTMS compared to healthy age-matched controls. Medication-naïve female adolescents with MDD between ages of 14-17 were compared with healthy females recruited from the community. Changes in amplitude of motor evoked potentials (MEP) following a single session of 30 Hz iTBS were measured at five time points over 10 minutes following baseline. Repeated measures two-way ANOVA was used to compare group means over time. Five females with MDD (mean age=15.2) and five healthy controls (mean age=15.8) participated in this study. As expected, mean scores on the Children's Depression Rating Scale (CDRS) were significantly higher in depressed ( $M=81.0, SD=8.39$ ) than healthy ( $M=39.6, SD=8.96$ ) female adolescents ( $p<0.001$ ). An interaction effect of MEP amplitude ( $F(5,40)=2.594, p=.04$ ) was identified between group and time. In addition, depressed subjects had decreased ( $M=0.78, SD=.18$ ) average MEP amplitude compared to healthy subjects ( $M=1.18, SD=.35$ ). There was a trending negative correlation ( $R^2 = 0.33; p = 0.08$ ) between CDRS score and mean MEP change. Our findings demonstrate preliminary evidence of a discriminatory physiological biomarker that may correlate with symptom severity and predict treatment response.

## POSTER B-3

### RELATIONAL MOBILITY MODERATES THE RELATIONSHIP BETWEEN MAXIMIZING IN SELECTING FRIENDS AND WELL-BEING

David B. Newman<sup>1</sup>, Joanna Schug<sup>2</sup>, Junko Yamada<sup>3</sup>, & Masaki Yuki<sup>3</sup>  
<sup>1</sup>University of Southern California, <sup>2</sup>College of William and Mary, <sup>3</sup>Hokkaido University

*Descriptors: decision-making, well-being, friendships*

The present study tested the hypothesis that relational mobility, the degree of freedom to which one can move in and out of social relationships, would moderate the negative relationship between maximizing and well-being in the novel domain of friendship selections. Maximizers attempt to select the very best option in a given set of choices, whereas satisficers choose an option that meets a certain threshold. Although maximizers aim to find the choice that will increase their happiness, they tend to regret their decisions and are less satisfied with their choices. Because maximizers regret their decisions, an increase in the number of choices leads to greater dissatisfaction and lower positive affect. In the domain of friendship selections, we defined the number of potential friendship partners or choices as relational mobility. We hypothesized that the negative relationship between maximizing and several well-being measures (life satisfaction, regret, and positive and negative affect) would be stronger in high than low relational mobility societies. We distributed online questionnaires in the US and Japan, countries of high and low relational mobility ( $n = 150$  and  $207$ , respectively). Mostly consistent with our predictions, relational mobility significantly moderated the relationships between maximizing and life satisfaction ( $\beta = -.11, p < .05$ ), regret ( $\beta = .16, p < .01$ ), and positive affect ( $\beta = -.15, p < .01$ ), but not negative affect ( $\beta = .03, p > .05$ ). In social environments with abundant friendship options, maximizing was particularly detrimental to one's well-being.

This project was funded by a grant from the National Science Foundation East Asia and Pacific Summer Institute awarded to the first author.

## POSTER B-4

### DEPRESSION, EMOTION REGULATION, AND WITHDRAWAL DURING INTIMATE RELATIONSHIP CONFLICT

Irene H. Chui<sup>1</sup>, Lian Bloch<sup>1</sup>, & Sarah R. Holley<sup>2</sup>  
<sup>1</sup>PGSP-Stanford Psy.D. Consortium, <sup>2</sup>San Francisco State University

*Descriptors: emotion regulation, depression, communication*

Demand-withdraw is a common, harmful conflict pattern in which one partner nags or pressures while the other partner avoids or withdraws (Eldridge & Baucom, 2012). Research has shown that depression, which often involves social and emotional withdrawal, is associated with the presence of this pattern of behaviors (e.g., Papp, Kouros, & Cummings, 2009). This study explored whether emotion regulation mediates the association between depression and a tendency to withdraw during conflict. Research suggests that depressed individuals are less able to effectively regulate their emotions (e.g., Joorman & Gotlib, 2010). These deficits may in turn account for tendencies to withdraw during aversive conflict situations. The study sample consisted of 237 undergraduate heterosexual couples. All measures were obtained via self-report. Mediation analyses were conducted using bootstrap confidence intervals to evaluate significance (Preacher & Hayes, 2004). Analyses were run separately for female and male partners; models controlled for age, relationship length, and relationship satisfaction. Results showed that emotion regulation fully mediated the association between depression and the tendency to withdraw for both females (bootstrap 95 percent CI: 0.03, 0.18) and males (bootstrap 95 percent CI: 0.02, 0.22). It appears that, for both women and men, the effect of depression on withdrawing during conflict is mediated by emotion regulation abilities. Thus, interventions targeting emotion regulation may be useful in reducing demand-withdraw in couples with a depressed partner.

## POSTER B-5

### HOW DOES ADAPTIVE EMOTION REGULATION PROMOTE GREATER WELL-BEING? THE ROLE OF POSITIVE EMOTIONAL RESPONSES TO DAILY STRESSORS

Brett Q. Ford<sup>1</sup>, Oliver P. John<sup>1</sup>, Fausto J. Gonzalez<sup>1</sup>, Amanda J. Shallcross<sup>2</sup>, & Iris B. Mauss<sup>1</sup>

<sup>1</sup>University of California, Berkeley, <sup>2</sup>New York University, School of Medicine

*Descriptors: emotion regulation, positive emotion, well-being*

Adaptive emotion regulation (ER) has been linked with greater well-being, but little is known about the mechanisms by which this occurs. We propose that positive emotion may be one such mechanism, particularly when experienced in the context of stressors: whereas these stressors generally take a toll on positive emotion, this toll should be attenuated for individuals who use more adaptive ER. This may, in turn, promote well-being. This mechanism may unfold in two distinct ways, reflecting the dynamic time course of positive emotion: by retaining positive emotion during stressors or by recovering positive emotion after stressors. We tested these hypotheses in two studies using daily-diary paradigms to assess positive emotional responses to daily stressors in diverse community adults. Studies 1 (N=35) and 2 (N=175) showed that individuals higher in adaptive ER (higher reappraisal, lower suppression) retained more positive emotion during daily stressors ( $r_s = .14-.30$ ) and recovered more positive emotion after the stressors ( $r_s = .20-.52$ ). Study 2 showed that these positive emotional experiences predicted higher well-being six months later ( $r_s = .18-.22$ ), and that the positive emotions participants felt one hour after (but not during) the daily stressors mediated the link between adaptive ER and well-being. Thus, one path by which ER may promote well-being is through daily dynamics of positive emotion. Further, the positive emotions individuals are able to recover after stressors may be particularly important for promoting overall well-being.

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## POSTER B-6

### INCREASED HEART RATE VARIABILITY AFTER SHORT TERM BIOFEEDBACK: VISUAL FEEDBACK WITHOUT PACED BREATHING IS SUFFICIENT TO REGULATE

Brice Beffara<sup>1</sup>, Amélie Bret<sup>1</sup>, Pierre Chausse<sup>2</sup>, Eric Guinet<sup>1</sup>, Nicolas Vermeulen<sup>3</sup>, & Martial Mermillod<sup>1</sup>

<sup>1</sup>Univ. Grenoble Alpes, LPNC, F-38000 Grenoble, France and CNRS, LPNC, F-38000 Grenoble, France, <sup>2</sup>Laboratoire de Psychologie Sociale et Cognitive, CNRS UMR 6024 Clermont Université, Université Blaise Pascal, France, <sup>3</sup>Psychological Sciences Research Institute (IPSY), Université Catholique de Louvain (UCL), Belgium & Fund for Scientific Research (FRS-FNRS), Belgium

*Descriptors: biofeedback, emotion regulation, heart rate variability*

It is well established that Heart Rate Variability (HRV) can be increased by short term biofeedback. Biofeedback is widely used in psychology in order to regulate emotions. Classic HRV biofeedback is often based both on the visual feedback of real-time HRV and guided paced breathing. However, related methods such as neurofeedback can be performed only with a visual feedback of the real-time physiological activity. The aim of this experiment was to test whether visual feedback alone is sufficient to enhance HRV, without guiding the breathing. We carried out a study comparing the effect of an intuitive visual HRV biofeedback against a control condition on the power of High Frequency HRV (HF HRV), a marker of the Parasympathetic Nervous System activity, responsible for self-soothing. 59 healthy adults participated in the experiment. 53 were suitable for analysis. Results showed a significant interaction between the experimental condition and initial HRV baseline ( $t = -2.88, p = .006$ ). The model significantly accounted for 17.3% of the variance on the HF HRV evolution (HF HRV measured after biofeedback compared to the baseline),  $F(3, 49) = 3.43, p = .02$ . In the biofeedback condition, the lower the HRV baseline the higher the HRV increase ( $t = -3.02, p = .004$ ). This effect was not observed in the control condition ( $t = 1.06, p = .30$ ). These results suggest that paced breathing is not necessary to enhance HRV and that visual biofeedback is sufficient to regulate HRV for low HRV participants. For emotion regulation, this method could be considered as an alternative to classic biofeedback.

This work was supported by the French CNRS and a grant from the Pôle Grenoble Cognition to BB and MM.

## POSTER B-7

### ANTHROPOMORPHISM PREDICTS VARIATION IN NONHUMAN ENTITIES' CAPACITY TO BE TARGETS OF EMOTION

Lisa A. Williams<sup>1</sup> & Eliza Bliss-Moreau<sup>2</sup>

<sup>1</sup>University of New South Wales, <sup>2</sup>University of California, Davis

*Descriptors: emotion targets, anthropomorphism*

Humans feel emotions not only toward other humans, but also toward a great deal of other entities (e.g., nonhuman animals, electronic devices). Yet, little is known about the processes by which or the factors that contribute to people's ability to feel emotions towards different types of entities. The present study investigated one possible factor: anthropomorphism, the process by which people grant nonhuman entities human-like traits. We hypothesized that the degree to which a nonhuman entity was anthropomorphized would be associated with the extent to which people would report plausibly feeling emotion towards it. Further, we anticipated that individual differences in anthropomorphism would inform this relationship. Participants (N=235) reported their tendencies to anthropomorphize as well as the degree to which they anthropomorphized 26 specific nonhuman entities (e.g., dog, elephant, Siri). Participants also reported the degree to which each entity could be the target of emotion. Analyses revealed that, for all but three entities, the degree to which entities were anthropomorphized correlated positively with that entity's rating as a target of emotion ( $r_s = .13-.67$ ). Further, bootstrapped tests of indirect effects suggested that individual differences in anthropomorphism predicted, via anthropomorphism of an entity, that entity's rating as a target of emotion (IEs = .07-.26). These results are the first to identify key predictors of the degree to which a nonhuman entity can be the target of emotion.

## POSTER B-8

### LEADERS' SMILES REFLECT THEIR NATIONS' IDEAL AFFECT

Elizabeth Blevins<sup>1</sup>, Jeanne L. Tsai<sup>1</sup>, Jen Ying Zhen Ang<sup>1</sup>, Julia Goernandt<sup>1</sup>, Helene H. Fung<sup>2</sup>, & Da Jiang<sup>2</sup>

<sup>1</sup>Stanford University, <sup>2</sup>Chinese University of Hong Kong

*Descriptors: culture, ideal affect, leadership*

Although previous studies have linked specific affective states with leadership, few studies have examined how culture influences the affective states that are associated with leadership. We predicted that because cultures vary in the emotions that people value and ideally want to feel ("ideal affect"), cultures differ in the emotional cues that are associated with leadership. We administered self-report measures of ideal affect in college student samples from 10 different nations (N = 1,349) and then eight years later, coded the emotional expressions that legislators from those nations showed in their official photos (N = 3,372). To assess whether ideal affect predicted the expressions displayed by legislators, we conducted multiple regression analyses in which the percentage of legislators who showed each type of smile was regressed onto national levels of ideal and actual affect. As predicted, the more nations valued excitement and other high arousal positive states, the more likely legislators were to show excited, open-mouth smiles (standardized  $\beta = .72$ ). Similarly, the more nations valued calm and other low arousal positive states, the more their leaders showed calm, closed-mouth smiles (standardized  $\beta = .87$ ). These findings suggest that culture—via ideal affect—shapes the affective states associated with leadership.

## POSTER B-9

### INTEROCEPTION MODERATES THE RELATIONSHIP BETWEEN TASK-EVOKED ACTIVATION OF AFFECTIVE NEURAL CIRCUITRY AND SUBJECTIVE AFFECTIVE EXPERIENCE

Emil G Moldovan<sup>1</sup>, Alexandra Touroutoglou<sup>2</sup>, Joe Andreano<sup>2</sup>, Karen S. Quigley<sup>1,3</sup>, Brad Dickerson<sup>2</sup>, & Lisa F. Barrett<sup>1,2</sup>

<sup>1</sup>Northeastern University, <sup>2</sup>MGH/HST Martinos Center for Biomedical Imaging, <sup>3</sup>Edith Nourse Rogers Memorial Hospital

*Descriptors: interoception, affective reactivity, gamma regression*

Interoception is an important but often overlooked component in affective reactivity. In this study, we hypothesize that a person's ability to report on his or her affective reactions is dependent upon his or her interoceptive sensitivity, which is the ability to recognize physiological cues from the periphery. 78 participants (mean age = 46.7) performed a heart-beat detection (HBD) task that measured interoceptive sensitivity. Participants then viewed highly arousing, negatively valenced images and reported their subjective experience in response to them. We used fMRI to measure the neuronal activity to other highly arousing, negatively valenced images in regions known to be part of the "salience" network, a large scale intrinsic brain network implicated in affective processing. Data were analyzed with gamma regression. HBD significantly interacted with activity in the amygdala, anterior cingulate cortex, insula, and orbitofrontal cortex to predict subjective affective experience (all  $p$ s < .05). Individuals who were higher in interoceptive ability had a stronger positive relationship between task-evoked activation of affective regions and self-reports of arousal as well as between task-evoked activation of affective regions and self-reports of unpleasantness in response to negative images. We conclude that subjective affective experiences are more strongly coupled with brain activity in the affective circuitry for individuals who are high in interoception. This has important implications for the role of interoception in affective experience.

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## POSTER B-10

### STRESS-INDUCED CHANGES IN EXECUTIVE CONTROL ARE ASSOCIATED WITH DEPRESSION SYMPTOMS: EXAMINING THE ROLE OF RUMINATION

Meghan E. Quinn<sup>1</sup>, & Jutta Joormann<sup>2</sup>

<sup>1</sup>Northwestern University, <sup>2</sup>Yale University

*Descriptors: executive control, depression, stress*

A failure to effectively cope with stressors is associated with depression symptoms and an inability to effectively cope may result from deficits in executive control (EC). For some individuals, stress exposure leads to a temporary decline in EC. Thus, for these individuals, when EC is needed to help respond to a stressful event, EC is compromised. The first aim of this study was to examine whether EC under stress is more strongly associated with depression symptoms than trait EC. This study also examined who may be more adversely impacted by a stress-induced decline in EC. Because one of the functions of EC is to inhibit habitual responses, we examined whether a tendency to engage in rumination moderates the relation between EC under stress and depression symptoms. Ninety-two participants completed a measure of EC, an n-back task, before and immediately following a stress induction. The correlation between EC under stress and depression symptoms was significantly stronger than the correlation between the standard measure of EC and depression symptoms,  $p < .01$ . Further, the relation between EC under stress and depression symptoms was qualified by a significant interaction with trait brooding,  $p < .01$ ,  $R$  squared change = .07. The results indicate that deficits in EC under stress are related to symptoms of depression only for individuals who report a tendency to engage in rumination. These results suggest that future studies examining the role of EC in emotion regulation and depression should measure EC under conditions of stress.

## POSTER B-11

### EMOTION RECOGNITION TRAINING INCREASES NEURAL RESPONSE TO HAPPY FACES IN INDIVIDUALS WITH HIGH LEVELS OF DEPRESSIVE SYMPTOMS

Michael N. Dalili<sup>1</sup>, Katherine S. Button<sup>1</sup>, Michael Browning<sup>2</sup>, Sally Adams<sup>3</sup>, Meg E. Fluharty<sup>1</sup>, Emily A. Holmes<sup>4</sup>, Catherine J. Harmer<sup>2</sup>, Marcus R. Munafó<sup>1</sup>, & Ian S. Penton-Voak<sup>1</sup>

<sup>1</sup>University of Bristol, <sup>2</sup>University of Oxford, <sup>3</sup>University of Bath, <sup>4</sup>MRC Cognition and Brain Sciences Unit

*Descriptors: emotion, recognition, fmri*

Emotion recognition training (ERT) has shown promise in modifying cognitive biases associated with low mood (Penton-Voak et al., 2012) and can be easily delivered via computer or smartphone applications. Using a novel paradigm we conducted a randomised controlled trial of the effects of ERT on amygdala response to facial expressions of emotion, in order to explore the neural mechanism of action of this intervention in a sample of individuals with depressive symptoms. We randomised 36 adults from the general population who reported high levels of depressive symptoms ( $\geq 14$  on the Beck Depression Inventory-II) to five consecutive daily sessions of the ERT intervention or control procedure, followed by an fMRI scan on the final training day. Region of interest analysis demonstrated significant group differences in the neural response to happy vs. sad stimuli in the left amygdala, with activation greater in the trained versus control groups. This effect was driven by amygdala responses to happy faces, with an 8% increase in amygdala activation in the trained group relative to a 4% reduction in the control group relative to resting state. Our findings suggest that computerised training (ERT) using a novel cognitive bias modification technique targeting emotional processing in depression resulted in greater neural activation to positive faces relative to negative faces. This effect is similar to those of antidepressants in depressed individuals, raising the possibility that ERT may be a valuable and cost-effective adjunctive treatment for depression.

Medical Research Council (UK).

## POSTER B-12

### MONETARY AND SOCIAL REWARD PROCESSING IN BIPOLAR I DISORDER: ROLE OF PSYCHOSIS HISTORY

John R. Purcell<sup>1</sup>, Sunny J. Dutra<sup>2</sup>, William A. Cunningham<sup>3</sup>, Mary Phillips<sup>4</sup>, Hedy Kober<sup>2</sup>, & June Gruber<sup>1</sup>

<sup>1</sup>Colorado University Boulder, <sup>2</sup>Yale University, <sup>3</sup>University of Toronto, <sup>4</sup>University of Pittsburgh

*Descriptors: reward processing, bipolar disorder, psychosis*

Bipolar Disorder (BD) is associated with increased reactivity to rewards (Gruber, 2011). Psychosis during episodes of mania or depression occurs in approximately 58% of those with BD (Keck et al., 2003). Although a history of psychosis is associated with more pervasive cognitive deficits and poorer functional outcome, it is not known whether it could also be indicative of increased reward sensitivity. To address this, the present investigation utilized a within-subjects design that involved both a monetary incentive delay task and a social incentive delay fMRI task in adults with remitted BD I with a history of psychosis (BD+;  $N = 12$ ) and without (BD-;  $N = 12$ ), as well as a non-psychiatric control group (CTL;  $N = 25$ ). Previous findings from this dataset revealed significantly elevated striatal reactivity in response to both monetary and social rewards across the entire BD compared to CTL group (Dutra et al., in prep), yet the role of psychosis history was not investigated. In the current investigation, region of interest analyses revealed elevated right dorsal striatal reactivity to monetary and social rewards in the BD+ (but not BD-) group compared to the CTL group  $F(2, 46) = 3.38$ ,  $p = .04$ . An additional analysis using an extracted mask of right caudal activation found significance even when controlling for mania and depressive lifetime episode frequency  $F(2, 46) = 7.759$ ,  $p = .001$ . No significant differences emerged between the BD- and either other group. Findings suggest increased right caudate activation during monetary and social reward processing among BD+ individuals.

## POSTER B-13

### AFFECT RECOGNITION IN BIPOLAR DISORDER: USING EYE-TRACKING TO LOOK UNDER THE HOOD

Andrew D. Peckham, Sheri L. Johnson, Jordan Tharp, & Charles Murray  
University of California, Berkeley

*Descriptors: bipolar disorder, eye-tracking, emotion identification*

In people with bipolar disorder (BD), deficits in recognizing facial displays of happiness and fear are linked to worse functional outcomes. While viewing images of happy and fear faces, people with BD show altered activation in several brain regions important for orienting attention, leading some to theorize that affect recognition deficits in BD are mediated by disturbances in attention to affective cues. The present study tested this hypothesis using eye-tracking. 25 people with remitted BD and 22 well-matched control participants completed a facial affect recognition task including photographs of fear and happy expressions of low and moderate intensity displayed for up to 10 seconds. Eye-tracking was used to monitor fixations on eye and mouth areas of interest (AOIs) during the task. People with BD were less accurate at identifying fear,  $t(40.21) = 2.07$ ,  $p < .05$ , but equally accurate in identifying happiness as compared to controls,  $t(45) = .25$ ,  $p = .80$ . Groups did not differ on fixation length to eye ( $ps = .62$  for happy and fear) or mouth AOIs (fear:  $p = .86$ , happy  $p = .55$ ). In the BD group only, accuracy on moderate-intensity happy faces correlated with fixation time on the mouth AOI,  $r = .53$ ,  $p = .01$ , controlling for viewing time. Attention to key face regions did not differ among BD and control groups; affect recognition deficits may be better explained by other mechanisms. Identification of happy faces was related to visual attention in BD, possibly indicating that those with BD needed to recruit greater attentional resources to accurately identify positive affect.

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## POSTER B-14

### SELF-OTHER AGREEMENT IN MINDFULNESS

Lisa M. May, & Kristen M. Reinhardt  
University of Oregon

*Descriptors: self-other agreement, mindfulness, person perception*

Self-Other Agreement (SOA) has played key roles in the understanding of self-concept, personality, and attribution theory. Here, we present the first examination of SOA with trait mindfulness. Does self-perceived mindfulness closely match others' perceptions, or does it differ dramatically? Or are the processes involved in mindfulness so internal that they are simply not visible to others? In Study 1, 106 undergraduates rated observability and desirability for the Five Facet Mindfulness Questionnaire (FFMQ). Two facets were rated as more easily observed than the midpoint (Describe and NonJudge), and three facets were rated as more difficult to observe than the midpoint (Observe, ActAware, and NonReact). All facets were rated as desirable, with the Observe facet being the least desirable and Describe being the most desirable. In Study 2, we collected self-reported and close-other reported mindfulness (FFMQ) from 36 dyads. SOA correlations for FFMQ facets were all positive in direction, ranging from 0.20 to 0.45. Self- and other-reports of mindfulness agreed more than they disagreed and ranged from low (Observe, Describe) to medium (ActAware, NonJudge, NonReact). Interestingly, mindfulness SOA did not demonstrate strong relationships with either Observability or Desirability. These results suggest that trait mindfulness can indeed be gleaned accurately through social perception, although what if any informational or motivational factors affect mindfulness SOA requires more study.

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## POSTER B-15

### DEPLOYMENT-RELATED SUPPRESSION OF POSITIVE ATTENTION BIAS MODERATES THE ASSOCIATION BETWEEN PTSD SYMPTOMS AND AGGRESSION AMONG U.S. SOLDIERS

Phillip J. Quartana<sup>1</sup>, K. Lira Yoon<sup>2</sup>, Yair Bar-Haim<sup>3</sup>, Keren Moaz<sup>3</sup>, & Maurice L. Sipos<sup>1</sup>

<sup>1</sup>Walter Reed Army Institute of Research, <sup>2</sup>University of Notre Dame, <sup>3</sup>Tel Aviv University

*Descriptors: attention bias, PTSD, aggression*

Studies suggest that aggression is associated with combat-related PTSD. Mechanisms of this association have not been explored. We examined the role of deployment-related changes in attention bias (AB) to threatening and positive stimuli concerning associations between combat exposure and deployment-related changes in PTSD symptoms and aggression. Pre and post-deployment,  $n=75$  U.S. National Guard soldiers completed a dot-probe task and measures of combat exposure, PTSD, and aggression. We hypothesized that among soldiers with greater combat exposure, deployment-related increases in PTSD would be most strongly associated with aggression among soldiers with greater deployment-related escalation of threat-related AB, or suppression of AB to positive stimuli. Changes in threat-related AB had no effect on associations between combat exposure and deployment-related changes in PTSD and aggression. The Combat Exposure x PTSD x Positive AB effect was significant ( $b=.03$ ,  $p<.05$ ). Among soldiers with greater combat exposure, the PTSD x Positive AB interaction was significant ( $b=.08$ ,  $p<.05$ ), such that deployment-related increases in PTSD symptoms were most strongly associated with concurrent increases in aggression among those with greater suppression of positive AB. The PTSD x Positive AB effect on aggression was not significant at lower levels of combat exposure. Deployment-related suppression of positive AB may represent an important mechanism contributing to the association between concurrent increases in PTSD symptoms and aggression associated with combat deployment.

## POSTER B-16

### EXAMINING HETEROGENEITY IN DISRUPTIVE BEHAVIOR DISORDERS VIA MOTIVATION AND EMOTION REGULATION

Rachel B. Tenenbaum & Erica D. Musser  
Florida International University

*Descriptors: disruptive behavior disorders, motivation, autonomic reactivity*

Introduction: Attention deficit/hyperactivity disorder (ADHD) and oppositional defiant disorder (ODD) are highly comorbid suggesting both shared and distinct etiological mechanisms. Both disorders have been linked with emotion dysregulation and high external reward sensitivity. Few studies have utilized a multi-method approach (i.e., behavioral and biological) to examine these constructs in children with these disorders to explain shared and distinct characteristics. Methods: 29 ADHD children (recruited from a Summer Treatment Program) and 25 control children (M age=7.96, SD=1.87, 67.3% male) completed the Balloon Analogue Risk Task (BART; a measure of reward and punishment sensitivity) while electro-and impedance cardiogram were collected to index respiratory sinus arrhythmia (RSA; i.e., parasympathetic-based regulation) and cardiac pre-ejection period (PEP; i.e., sympathetic-based reward sensitivity). ANOVA with covariates including age, gender, and comorbid diagnoses were completed to address all research questions. Results: ODD was uniquely associated with greater behavioral external reward sensitivity as indexed by task performance ( $F(1,37) = 4.92, p=0.03$ ) and by sympathetic-based indexes (i.e., PEP shortening;  $F(1,37)=4.14, p<0.05$ ). However, ADHD was uniquely associated with parasympathetic-based dysregulation (i.e., RSA augmentation;  $F(1,37)=6.66, p=0.01$ ). Discussion: Understanding shared and distinct factors that contribute to ADHD and ODD will help both to understand the heterogeneity observed in disorders and to aid in the design of person-centered interventions.

## POSTER B-17

### GENERAL AND SPECIFIC ASSOCIATIONS BETWEEN POSTTRAUMATIC STRESS DISORDER (PTSD) SYMPTOM DOMAINS AND THE PHYSICAL AND PSYCHOLOGICAL FUNCTIONAL HEALTH OF VETERANS

Tong Sheng, Peter J. Bayley, Michael V. Stanton, Linda Isaac, Jordan M. Nechvatal, Jennifer Kaci Fairchild, John Wesson Ashford, & Maheen M. Adamson  
VA Palo Alto/Stanford University School of Medicine

*Descriptors: posttraumatic, stress, health*

In PTSD, affective processes that enable appropriate behavior in demanding situations become dysfunctional, and experiences of fear, anxiety, stress, and/or aggression can occur in contexts that typically would not evoke such responses. While PTSD symptoms can interfere with daily functioning, an understanding of how symptoms in specific domains (i.e., re-experiencing, avoidant, and arousal; DSM-IV) might be associated with different aspects (e.g., physical, psychological) of daily functioning is currently lacking. A more precise understanding of these relationships can lead to better-targeted treatment approaches. In the current study, Veterans (N=103; age: 26-77 yrs) completed questionnaires assessing current (i.e., last-month) PTSD symptom severity across all PTSD domains (PCL-C) and physical and psychological functional health status (VR-36). A canonical correlation analysis showed an overall relationship between PTSD symptom severity and poorer functioning, and pairwise associations were found between both physical and psychological functioning and symptom severity in all domains. In particular, avoidant symptoms had the strongest associations with both physical and psychological functioning, and Williams' T2 tests revealed these associations to be stronger than those involving arousal and re-experiencing symptoms in some cases. These findings offer a more detailed account of the relationships between specific PTSD domains and aspects of functional health. A focus on avoidant symptoms might yield particular therapeutic benefit.

## POSTER B-18

### THE RELATIONSHIP BETWEEN HEDONIC AND PHYSIOLOGICAL REACTIONS TO PLEASANT AND UNPLEASANT FOODS

Eric C. Anderson, Lisa Barrett, & Quigley Karen  
Northeastern University

*Descriptors: psychophysiology, food perception*

Across people, there are vast differences in the foods people enjoy eating. For instance, many vegetarians report feeling disgusted by meat, a food others find pleasant. Little is known about how hedonic experiences of food are related to changes in the body. In this study, we explored the relationship between self-reported enjoyment of food and bodily responses. 63 participants (both vegetarians and omnivores) viewed images of different foods (including meat, vegetarian meals, sweets, and moldy food) while we measured peripheral physiology. As expected, we found that meat meals were rated as less appetizing for vegetarians compared to omnivores ( $p < .05$ ). However there were no differences between how the two groups experienced other foods. Across all participants, we found a strong relationship between corrugator facial muscle movement (associated with negative affect) and how appetizing participants rated food ( $r = -.212, p < .05$ ). We found a weaker relationship between ratings and levator labii facial muscle movement (associated with disgust;  $r = -.076, p < .05$ ). This finding suggests that corrugator might be a better measure of hedonic experience of food. More broadly, this work suggests that psychophysiology might be a useful measure of hedonic experience of food.

## POSTER B-19

### DO YOU THINK SADNESS SPREADS? RELATIONSHIPS BETWEEN BELIEFS, MOTIVES, AND EXPRESSION

Nicole Senft & Yulia Chentsova-Dutton  
Georgetown University

*Descriptors: culture, interpersonal motives, expression*

Beliefs about emotions guide emotional behavior. Emotions are interpersonal phenomena, yet we know little about individuals' beliefs about the interpersonal nature of their emotions. The current studies examine one such belief: the belief that emotions spread. In past surveys, the belief that sadness spreads to others predicted increased reported expression of negative emotions. In Study 1, we assessed the role of interpersonal motives in explaining these relationships in American ( $n=108$ ) and Korean ( $n=112$ ) cultural contexts. The belief that sadness spreads positively predicted nonverbal expressivity, venting, and emotional support seeking ( $p$ -values  $< .05$ ). These relationships were partially mediated by the motive to receive support (95% CIs did not include zero). In Study 2, participants were randomly assigned to read an article priming beliefs that emotions spread easily (contagion condition), are experienced independently (separation condition) or an unrelated article (control condition) and report their expectations of support from friends. Among Koreans ( $n=84$ ), participants in the contagion condition reported expecting more support from friends than did those in the separation or control conditions ( $F(2, 81)=3.06, p=.05$ ). Similarly, in preliminary analyses of Americans ( $n=30$ ), participants in the contagion condition expected more support from friends than those in the control group ( $F(2,27)=3.98, p=.03$ ). These studies suggest that the belief that sadness spreads may lead to increases in emotional behavior through perceived effectiveness in eliciting desired support.

Data collection in South Korea was made possible through the NSF's East Asia and Pacific Summer Institute Fellowship.

## POSTER B-20

### EMOTION REGULATION SIMILARITY AND ACCURACY IN ROMANTIC RELATIONSHIPS

Lameese Eldesouky<sup>1</sup>, Tammy English<sup>1</sup>, & James J. Gross<sup>2</sup>  
<sup>1</sup>Washington University in St. Louis, <sup>2</sup>Stanford University

*Descriptors: emotion regulation, emotion perception, relationships*

Previous research has examined whether similarity on various dimensions, including personality traits and attitudes, predicts relationship quality. Findings are mixed, sometimes showing that similarity is beneficial to relationship quality and other times showing that it is not important. In contrast, accurately judging a romantic partner's traits has been linked to higher relationship quality. In this study, we examined similarity and accuracy in a different domain: emotion regulation. We assessed similarity and accuracy levels for emotion regulation among 120 heterosexual dating couples (N=240), then tested whether similarity and accuracy predicted relationship quality. Suppression and reappraisal use were assessed with the Emotion Regulation Questionnaire. Relationship quality was assessed with measures of maintenance behaviors, investment, couple satisfaction, and love. Couples higher in suppression similarity were more invested in their relationship if they were high on suppression ( $\beta=.18, p<.05$ ), and couples were more satisfied if the woman was high on suppression and accurately judged her partner's suppression ( $\beta=.13, p<.05$ ); relationship quality was not linked to accuracy of men's perceptions. For reappraisal, similarity did not predict relationship quality and couples higher in accuracy were less satisfied in their relationship ( $\beta=-.42, p<.05$ ). There were no differences in similarity or accuracy between suppression and reappraisal. These findings suggest that emotion regulation accuracy may be more important for relationship quality than similarity.

## POSTER B-21

### EMOTIONAL TASK-RELEVANCE IN COGNITIVE AND EMOTIONAL CONFLICT PROCESSING

Artyom Zinchenko<sup>1</sup>, Philipp Kanske<sup>1</sup>, Christian Obermeier<sup>1</sup>, Erich Schröger<sup>2</sup>, & Sonja A. Kotz<sup>3</sup>

<sup>1</sup>Max Planck Institute for Human Cognitive and Brain Sciences, <sup>2</sup>University of Leipzig, <sup>3</sup>University of Manchester

*Descriptors: emotion, cognitive control, emotional control*

Emotional stimuli have been shown to speed up cognitive conflict processing, when they are task-relevant. It is unclear, however, what role task-relevance plays for emotional stimuli in emotional conflict processing. In two EEG Experiments we compared the influence of task-relevance of emotional stimuli in cognitive and emotional conflict processing. In order to maximally approximate real-life processes and to elicit robust neural responses, we used multisensory stimuli. Participants either categorized spoken vowels ('A' and 'O', cognitive conflict) or their emotional valence (emotional conflict), irrespective of congruence with visual information. The results revealed that emotion facilitates both cognitive and emotional conflict processing, as reflected in a reduced RT conflict effect for emotional relative to neutral trials. In contrast, we observed a conflict-specific reversal of the N100 response in the event-related potentials: the conflict effect was enhanced for emotional compared to neutral trials in cognitive conflict and reduced in emotional conflict. These results reflect ERP modulations of domain-specific conflict processing. Additionally, domain-general conflict effects were observed in the P200 and the N200 responses. Emotional stimuli receive prioritized processing due to their motivational relevance and facilitate conflict processing. However, neuropsychological mechanisms underlying facilitation of cognitive and emotional conflict processing may differ.

## POSTER B-22

### WHAT SYMPATHETIC RESPONSES CAN TELL ABOUT CHILDREN'S PERFORMANCE IN READING

Salah M. Taamneh<sup>1</sup>, Dvijesh Shastri<sup>2</sup>, Debra Currie<sup>1</sup>, Malcolm Dcosta<sup>1</sup>, & Ioannis Pavlidis<sup>1</sup>

<sup>1</sup>University of Houston, <sup>2</sup>University of Houston-Downtown

*Descriptors: EDA, reading performance, developmental ages*

We investigated the relationship between reading performance and sympathetic responses in developmental ages. We recruited 20 children (10 M / 10 F; mean age = 9.44 and SD = 1.33). First, we asked each child to fill out a questionnaire about her/his perceived reading skill. Next, we determined the reading level for each child. Finally, we asked each child to read for six minutes words at her/his level (Baseline Reading, BR) and for six minutes words at two levels above BR (Difficult Reading, DR). During reading we recorded electrodermal activity (EDA) responses via a wearable EDA sensor attached to the child's non-dominant hand. We quantified the relative reading performance between the two reading tasks for each child, thus, dividing the cohort to good performers (n=10) and poor performers (n=10). We also quantified the differential EDA response between the two reading tasks for each child. The results demonstrate that all poor performers exhibited significantly greater sympathetic responses during DR with respect to BR (p<0.05). One good performer who misunderstood the instructions and three good performers, who underestimated their reading proficiency per the self-assessment questionnaire, exhibited the same sympathetic pattern as the bad performers. Hence, sympathetic responses not only can be used in assessing reading performance in developmental ages, but also could uncover the internal cost of low self-esteem in reading tasks.

This material is based upon work supported by the National Science Foundation via grant # IIS-1249208.

## POSTER B-23

### MAKING MEANING: SOCIAL ISOLATION, LONELINESS, AND POSITIVE SYNDROME IN THE SCHIZOPHRENIA SPECTRUM

Laura L. Hieber<sup>1</sup>, Jejoong Kim<sup>2</sup>, & Sohee Park<sup>1</sup>

<sup>1</sup>Vanderbilt University, <sup>2</sup>Duksung Women's University

*Descriptors: schizophrenia, loneliness, positive syndrome*

Social withdrawal is a prominent feature of schizophrenia (SZ), along with hallucinations and delusions of social and emotional nature. However, a causal relationship between these symptoms has not been elucidated. Hoffman's social deafferentation hypothesis (SDH, 2007) posits that delusions emerge in vulnerable individuals when prolonged social isolation triggers over-activation of the social brain network, thus fabricating social meaning. Increased tendency for SZ patients to falsely "detect" social meaning in randomness has been previously observed in biological motion (BM) perception studies using point-light displays (Kim et al, 2011). We hypothesized that social isolation and loneliness would exacerbate deficits in social perception as assessed by BM tasks, and testing the effects of isolation and loneliness on false detection of social stimuli. Study 1 manipulated social inclusion/exclusion in healthy participants (n=60) and found that exclusion impaired efficient detection of social information from BM group (t(54)=2.64, p= 0.01). Moreover, increased schizotypal traits were associated with loneliness (rs =0.58, p < .0001). Study 2 examines the relationship between social isolation and false detection of BM in SZ. Preliminary results indicate a weak association between BM accuracy and loneliness (rs = -0.40, p = .09). Chronic loneliness may play a more significant role in social perceptual accuracy than acute manipulations of social isolation. Future intervention efforts should address the adverse impact of loneliness on social cognitive processes and outcome in SZ.

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## POSTER B-24

### EMOTION REGULATION IN THE MIDDLE SCHOOL YEARS: PROBLEM BEHAVIORS OR EMOTION DISORDERS?

Lysandra Sinclair-Harding & David Whitebread

University of Cambridge

*Descriptors: emotion regulation, psychophysiology, childhood mental health*

Sustained exposure to threatening environments may alter the biological stress response and produce deficits in a child's ability to effectively regulate their emotions (Gunnar & Quevedo, 2007). Early established patterns of emotion regulation (ER) may appear maladaptive or disordered in normative environments, (e.g. at school, McCrory et al., 2010) and are not well explained by laboratory studies. In particular, under-controlled negative emotion is linked to problematic externalizing behaviors, whilst over-control is associated with greater internalizing problems. What are the physiological indices underpinning ER behaviors that unfold across childhood? 128 participants (aged 7-9) from five different UK primary schools were observed during two collaborative LEGO construction tasks. Skin conductance data were combined with observation data and compared to self-reports of ER strategies and teacher-reports of child emotional and behavioral tendencies. We tested 1) whether children with higher levels of physiological reactivity demonstrate more maladaptive response-focused strategies; 2) if participants with low physiological reactivity employ more adaptive ER strategies. Preliminary results support both hypotheses. Teacher-reported emotional problems are correlated with skin conductance lability (p<0.01). Prosocial behaviors are related to lower physiological reactivity (p<0.05). These findings will be discussed alongside observational data, shedding light on the regulatory strategies that underpin emotional and behavioral problems on display in the classroom.

## POSTER B-25

### ATTENTIONAL EFFICIENCY IN SOCIAL ANXIETY DISORDER: THE IMPACT OF COMORBID DEPRESSION

Shreya Lakhan-Pal<sup>1</sup>, Amanda S. Morrisson<sup>1</sup>, Faith A. Brozovich<sup>1</sup>, Philippe Goldin<sup>2</sup>, & James J. Gross<sup>1</sup>

<sup>1</sup>Stanford University, <sup>2</sup>UC Davis

*Descriptors: attention, comorbidity, social anxiety*

The attentional blink (AB) effect, or reduced accuracy in identifying a target (T2) presented in close temporal proximity to a prior target (T1) in a rapid serial visual presentation task (RSVP), indicates reduced attentional efficiency. Consistent with Eysenck's attentional control theory, research has shown anxiety to be associated with impaired attentional control in a variety of tasks. However, research thus far has failed to differentiate between anxiety and comorbid depression. The present study examines the influence of comorbid depression on AB task accuracy in adults diagnosed with generalized social anxiety disorder (SAD). There were four groups of participants. Three groups had a primary diagnosis of SAD, with no history of a depressive disorder (n=81), with a past diagnosis of depression (n=59), or with current depression (n=26). Healthy controls did not meet diagnostic criteria for any current or past Axis I disorder (n=37). Participants completed an RSVP task with T2 at either a short (336 ms) or long (672 ms) lag. A one-way ANOVA comparing the four groups on percent T2 accuracy at the short lag was significant,  $F(3, 199) = 4.26$ ,  $p < .01$ . Follow-up t-tests comparing each of the groups to one another revealed only participants with both SAD and current depression had lower accuracy compared to the other three groups,  $ps < .02$ . The other groups did not differ from one another,  $ps > .10$ , and there were no differences among groups at the long lag. The present study indicates that reduced attentional control in adults with SAD may be due to current depression.

## POSTER B-26

### SOCIAL INTELLIGENCE FROM THE GROUND UP

Rami H. Gabriel

Columbia College Chicago

*Descriptors: social intelligence, philosophy of psychology*

While cognitive mental processes have been studied and modeled for the last 50 years, behaviors emerging from perceptual and affective processes have not garnered as much attention and are less well-understood and thus occupy a lower position in our explanatory framework of the mental and behavioral palette of animals. In what follows, as part of a project of expanding our tools for understanding the pre-cognitive aspects of behavior I put forward a model that makes sense of socially intelligent behavior based more on perception and affect than cognition and representational processes. Taking a bottom-up approach based on the mammalian "toolbox" of perception, homeostasis, and affect, along with communication abilities, a model is presented of how the embodied storing of information in body-world loops functions as a form of social intelligence. The affordance theory, elements of Affective Neuroscience, the somatic marker hypothesis, and Pushmi-Pullyu representations provide the functional foundations for how perception and social interaction are forms of communication and social intelligence. In addition to providing an evolutionary story for the existence and perpetuation of complex social abilities, this model leaves room for the behavioral complexity of cultural learning and cognitive processes.

## POSTER B-27

### MITIGATING ENVY: WHEN SUCCESSFUL INDIVIDUALS SHOULD REVEAL THEIR FAILURES

Karen Huang, Alison Wood Brooks, Ryan Buell, & Brian Hall  
Harvard University

*Descriptors: envy, transparency, effort*

Although envy is an aversive emotion that leads to negative interpersonal behaviors, researchers have not identified ways to down-regulate envy. We present an effective yet counterintuitive interpersonal strategy for mitigating envy: revealing failures that one has experienced along the way to success. Our research shows that people are much less likely to reveal their failures than their successes. In Study 1 (n = 141), we find that failures were shared with a mean of 1.39 people, whereas successes were shared with a mean of 6.70 people,  $p < .001$ . The probability of hiding a failure was 41.84%, while the probability of hiding a success was only 9.22%, a significant difference  $p < .001$ . Although failures are less likely to be revealed than successes, we show that revealing the failures of a successful other mitigates envy and increases perceptions of perseverance. In Study 2 (n = 251), participants shown another person's failures and successes reported lower feelings of envy (M = 3.45, SD = 1.02) than did participants shown only successes (M = 4.07, SD = 1.11),  $p < .001$ . Furthermore, in Study 3 (n = 314), we find that participants shown another person's failures and successes reported higher perceptions of perseverance (M = 5.62, SD = 0.92) than did participants shown only successes (M = 5.40, SD = 1.00),  $p = .038$ . Our findings suggest that increasing the transparency of one's own path to success can mitigate the envy that others feel and can paradoxically increase positive perceptions of the person who reveals his personal failures

## POSTER B-28

### EMOTIONAL REACTIVITY, SUSTAINED AFFECT, AND RECOVERY ACROSS EMOTION VALENCE IN CHILDREN'S BEHAVIOR

Alyssa Saylor, Carol Van Hulle, & Hill Goldsmith  
University of Wisconsin-Madison

*Descriptors: reactivity, regulation*

Emotion reactivity and recovery are key dynamic features of affectivity individuality. We need to understand more about the interplay of these features in actual behavior of children. We studied 1398 seven-year-old children in their homes and recorded their affective reactions in episodes from the Laboratory Temperament Assessment Battery (Lab-TAB). Videos were later coded in 5s to 20s intervals for emotion behaviors, including facial and bodily manifestations of anger, fear, and happiness, as well as some vocalizations. Certain intervals were chosen as reflecting either initial reactivity or sustained reactions. Recovery was measured as sustained reaction, controlling for initial reactivity for the negatively valenced episodes. We used 3 positive valence, 3 angry valence, and 2 fearful valence episodes. Hypotheses concerned the inter-relationships of reactivity and recovery across valences. We found little correlational support for the hypotheses; for instance, sustained positive affect did not predict quick recovery from negative affect and recovery from fear did not predict recovery from anger. Very modest evidence accrued for an association between positive reactivity and anger reactivity, which supports motivational (approach-based) based explanations. Overall, however, specificity of reactivity and recovery to specific valences appeared to best explain the data.

## POSTER B-29

### RELATIONS BETWEEN ANHEDONIA, MOOD, AND EMOTIONAL REACTIVITY TO AFFECTIVE STIMULI

Abhishek Saxena, David Pagliaccio, Katherine R. Luking, & Deanna M. Barch  
Washington University in St. Louis

*Descriptors: emotional reactivity, depression, anhedonia*

Major Depressive Disorder (MDD) is often characterized by impaired emotional functioning, which can vary drastically based on the cluster of symptoms exhibited and symptom severity. This study examined the relationship between the two gateway symptoms for diagnosis of MDD, anhedonia and depressed mood, and emotional reactivity within a large non-clinical sample. Participants (N=107) were asked to complete an Emotional Picture Rating Task (EPRT). In the EPRT participants rated the valence and arousal level of emotional responses to 100 pictures (40 negative, 20 neutral, and 40 positive pictures) from the International Affective Picture System. Participants also completed self-report questionnaires assessing hedonic capacity, general affect, and depressive symptomatology. We found that elevated levels of anhedonia (i.e. decreased hedonic capacity) predicted blunted emotional reactivity to both positive ( $p < 0.001$ ) and negative ( $p < 0.001$ ) pictures, while elevated depressive symptoms predicted potentiated negative emotional reactivity to negative pictures ( $p = 0.017$ ). These findings are consistent with literature suggesting depressive symptoms relate to emotional processing, but extend this literature by suggesting that different types of depressive symptoms, anhedonia and depressed mood, affect emotional processing in different ways. Future studies taking such a dimensional approach and including different symptoms as predictors of emotional function may help rectify inconsistencies in the MDD literature and the heterogeneity in behavioral manifestations of mood pathology.

## POSTER B-30

### COMPASSION BORN OF SUFFERING: THE EFFECTS OF ADVERSE LIFE EXPERIENCES ON PROSOCIALITY

Daniel Lim & David DeSteno  
Northeastern University

*Descriptors: adversity, compassion, empathy*

In two studies, we examined the possibility of (1) how experiencing adverse life events would lead to greater prosocial orientations via empathy and compassion and (2) whether or not the resulting increase in prosocial orientations predicted prosocial outcomes. The first study is an exploratory online survey on Amazon's Mechanical Turk and the second study is an in-lab study that included a behavioral measure of prosocial behavior. In study one, we found that individuals ( $n = 224$ ) who have undergone severe life experiences have higher levels of empathy (perspective-taking,  $r = .17$ ,  $p = .012$ ; empathic concern,  $r = .38$ ,  $p = .000$ ) and dispositional compassion ( $r = .36$ ,  $p = .000$ ), which then predicted charitable giving ( $r = .25$ ,  $p = .000$ ). Using a structural equation model, we found that there are two possible empathy-related pathways in which experiencing severe adverse life events could lead to increased dispositional compassion, which ultimately predicted charitable giving. In study two ( $n = 51$ ), we replicated the structural equation model in study one. In addition, we found that severe adverse life events would lead to greater state compassion via increased dispositional compassion ( $r = .28$ ,  $p = 0.43$ ), which then predicted greater amounts of time in which participants of the study helped a stranger in need ( $r = .30$ ,  $p = .035$ ). Most studies have examined prosociality under a specific context (e.g. natural disasters). This study is the first to demonstrate a general relation between experiencing adversity and prosociality as well as the mechanisms that explain this relation.

## POSTER B-31

### INTERFERENCE FROM NEGATIVE DISTRACTORS AND RUMINATION IN GENERALIZED ANXIETY DISORDER

K. Lira Yoon<sup>1</sup>, Joelle LeMoult<sup>2</sup>, Atayeh Hamedani<sup>3</sup>, & Randy McCabe<sup>4</sup>  
<sup>1</sup>University of Notre Dame, <sup>2</sup>Stanford University, <sup>3</sup>McMaster University, <sup>4</sup>St. Joseph's Healthcare Hamilton

*Descriptors: generalized anxiety disorder, working memory, rumination*

It has been posited that difficulty ignoring irrelevant negative information underlies increased perseverative thoughts (e.g., rumination) in various forms of psychopathology, but this association has never been tested in generalized anxiety disorder (GAD). We examined whether difficulty ignoring irrelevant negative information—measured via working memory capacity (WMC) in the presence of negative, versus neutral, distractors—was associated with the levels of state rumination following stress exposure in GAD. Twenty-one participants with GAD and 27 healthy controls (CTL) completed an affective version of the reading span task followed by a psychosocial stressor. Participants then completed a recovery phase and rated the extent to which they engaged in rumination during the recovery phase. Consistent with our hypothesis, the Group x RSpan-Negative interaction significantly predicted state rumination. Simple slope analyses indicated that lower WMC in the presence of negative distractors was associated with greater state rumination in the GAD group,  $t(19) = -2.61$ ,  $\beta = -.51$ ,  $p = .017$ , but not in the CTL group,  $t(25) = .94$ ,  $\beta = .19$ ,  $p = .36$ . Controlling for individual differences in trait rumination did not change the results. This is the first study to demonstrate that greater interference from task-irrelevant negative information diminishes WMC and is associated with higher levels of state rumination in response to stress in GAD. Results of this study contribute to our understanding of mechanisms underlying repetitive thoughts in GAD.

This work is supported, in part, by the ADVANCE Rising Tide Center with funding from NSF Grant # 1008948.

## POSTER B-32

### THE IMPACT OF EXPERIENCE ON IMPLICIT AND EXPLICIT AFFECTIVE RESPONSES DURING ACTION OBSERVATION

Louise P. Kirsch<sup>1</sup>, Arielle Snagg<sup>2</sup>, Erin Heerey<sup>1</sup>, & Emily S. Cross<sup>3</sup>

<sup>1</sup>Bangor University, <sup>2</sup>Pomona College, <sup>3</sup>Bangor University & Radboud University Nijmegen

*Descriptors: affect, body movement, experience*

Perceiving others in action elicits explicit and implicit affective responses in observers. In the present study, we examined how these responses relate to observers' familiarity with the observed movements. We recorded facial electromyographic (EMG) responses in 25 experienced dancers and 26 non-dancers as they watched short videos of movements performed by professional dancers. Responses were recorded from the corrugator supercilii (CS) and zygomaticus major (ZM) muscles, both of which have been shown to be engaged during observation of affect-evoking stimuli. In the first part of the experiment, participants passively watched the videos. In the second part, they explicitly rated how much they liked watching each movement. We found different patterns of EMG responses among dancers and non-dancers, such that participants' explicit affective judgements of the movements were related to facial muscle activation (a measure of implicit affective judgement) only if they were generally familiar with the movement. We found a significant interaction between liking valence and dance experience for the ZM muscle ( $F(1,49) = 4.796$ ,  $p = 0.033$ ), and the CS muscle ( $F(1,49) = 4.438$ ,  $p = 0.040$ ). These findings advance our understanding of how we express affective responses when watching others in action. The findings have implications for the role of emotional valence during action perception engagement, as well as the psychology of art perception.

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## POSTER B-33

### UTILITY OF A LABORATORY-BASED MEASURE OF EMOTION REACTIVITY IN PREDICTING FUTURE SUICIDAL BEHAVIORS

Daniel D. Coppersmith<sup>1</sup>, Colten Karnedy<sup>1,2</sup>, Emily Carl<sup>1,2</sup>, Natasha Haradhvala<sup>1,2</sup>, Ivan W. Miller<sup>3</sup>, & Michael F. Arney<sup>3</sup>  
<sup>1</sup>Brown University, <sup>2</sup>Butler Hospital, <sup>3</sup>Butler Hospital and the Warren Alpert Medical School of Brown University

*Descriptors: suicide, emotion reactivity*

Emotion regulation dysfunction is central to many theories of suicide. This study examines the complexity and limitations of an empirical test of emotional reactivity in predicting suicidal behaviors. Participants (n = 66) were adults ages 18 to 70 (M = 42.15, SD = 12.39), admitted to a hospital either for ongoing suicide ideation (SI) or a suicide attempt (SA) in the past week. Participants underwent a baseline assessment of suicidality including laboratory-based tasks (i.e. Paced Auditory Serial Addition Task-Computer Version; PASAT-C). The PASAT-C, a behavioral task designed to induce frustration and emotional upset, has been characterized as a behavioral measure of emotion reactivity. Participants completed negative affect items from the PANAS at baseline and again at the end of each of the 3, increasingly difficult, phases of the PASAT-C. Follow-up assessments were conducted three weeks post-discharge. To prospectively predict suicide risk, a multiple regression with the dependent variable of severity of SI at the 3-week follow up and the independent factors of the different negative affect scores was run. Both anger,  $\beta = -.46$ ,  $t(37) = -2.71$ ,  $p < .01$ , and excitability,  $\beta = -.36$ ,  $t(37) = -2.36$ ,  $p = .03$ , predicted the severity of SI at follow up, but no significant results were found for a second multiple regression examining the number of SAs at the 3-week follow-up as a dependent variable. Findings suggest that emotions may be differentially associated with SI and SA, and that the reactivity of certain emotions may be predictive of future SI, but not SAs.

## POSTER B-34

### BASAL CORTISOL LEVELS AND STRESS-INDUCED CORTISOL RESPONSES ARE DIFFERENTIALLY RELATED TO PROCESSES UNDERLYING RECOGNITION MEMORY

Andrew M. McCullough, Maureen Ritchey, Ranganath Charan, & Yonelinas P. Andrew  
University of California, Davis

*Descriptors: episodic memory, cortisol, stress*

It is well established that effects of stress on memory are mediated in part by cortisol levels, yet very different relationships have been observed between cortisol and memory across studies. Understanding exactly how cortisol influences memory-related processes has broad implications for research domains including post-traumatic and chronic stress, as well as age-related memory deficits. Recognition memory is supported by recollection and familiarity, processes that have different neural substrates, and thus which may be differentially influenced by cortisol. We examined the effects of post-encoding stress on recognition memory in 50 young adults using a cold-pressor task, and measured cortisol before and after the encoding and stress tasks. Memory was tested 24 hours after encoding. Hierarchical regression analyses revealed that basal cortisol levels were negatively related to estimates of recollection ( $r^2 = .14$ ) and familiarity ( $r^2 = .07$ ). In contrast, the magnitude of cortisol response to stress was differentially related to recollection and familiarity, such that recollection had an inverted-U relationship with the magnitude of cortisol response ( $r^2 = .19$ ), while familiarity estimates increased linearly with the cortisol response ( $r^2 = .07$ ). This dissociation of the effects of cortisol on recollection and familiarity is likely related to different properties of the brain regions underlying those processes, and it suggests that one source of mixed evidence in the literature is the varying degree to which different memory tests are supported by recollection and familiarity.

Research funded by NIMH grant R01-MH059352-13.

## POSTER B-35

### COMPASSION-MEDITATION INCREASES THE DURATION OF CARDIOVASCULAR RECOVERY FOLLOWING AN ANGER INDUCTION.

Paul Condon, Ian Kleckner, Karen Quigley, Lisa Feldman Barrett, & David DeSteno  
Northeastern University

*Descriptors: meditation, compassion, cardiovascular*

Contemplative theories suggest that compassion practices are effective for managing anger. To test this possibility, participants (n=85) completed eight weeks of compassion- or mindfulness-based meditation or an active control. We then examined cardiovascular recovery following a real-world orchestrated scenario designed to induce anger after participants completed their respective course. We used a curve fitting approach to estimate the duration of time that passed between the peak response during the anger provocation and the final resting level post-anger. A one-way ANOVA revealed a significant effect of group on the duration of recovery,  $F(2,82)=3.27$ ,  $p=.10$ . Those in the compassion group experienced the longest duration of cardiovascular recovery following an anger provocation. Although compassion meditation did not prevent heightened arousal in response to an anger induction, results are comparable to findings that compassion training increases arousal in response to others suffering. These findings provide further support for differential effects of different contemplative practices.

Mind & Life Institute 1440 Award for Real World Contemplative Research.

## POSTER B-36

### EMOTIONS AND CONCERNS: SITUATIONAL EVIDENCE FOR THEIR SYSTEMATIC CO-OCCURRENCE.

Jozefien De Leersnyder, Peter Koval, Peter Kuppens, & Batja Mesquita  
University of Leuven

*Descriptors: emotion, culture, values & concerns*

People experience emotions when events are important to their concerns (e.g., goals, values). Yet, many emotion theories have treated different types of concerns as mutually interchangeable, that is, as not being associated with different categories of emotions. In the current research, we started from a different perspective and tested the hypothesis that the situational salience of self-focused concerns (e.g., ambition, success) is associated with disengaging emotions (e.g., pride, anger), whereas the salience of other-focused concerns (e.g., loyalty, helping) is associated with engaging emotions (e.g., closeness, shame). To this end, we conducted two retrospective self-report studies (Study 1: 188 Belgians; Study 2: 263 Belgians and 400 Turks), and an experience sampling study (Study 3: 101 Belgians). All studies provided convergent evidence for the predicted associations, both in (multilevel) regression analyses and in (multilevel) logistic regressions (odds ratio to observe the hypothesized versus the opposite pattern of associations: Study 1 = 4.464; Study 2 Belgian sample = 6.890, Turkish sample = 5.495; Study 3 = 1.901; all  $p \leq .001$ ). The current research thus provides first evidence for the idea that emotions and concerns are systematically linked to one another at a situational level. In doing so, the findings not only empirically validate the social engagement dimension of emotions (cf. Kitayama, Markus, & Kurokawa, 2000), but also encourages new ways of thinking about concerns as constitutive parts of emotional experience.

## POSTER B-37

### INDIVIDUAL DIFFERENCES IN REGULATORY FOCUS DIFFERENTIATE NEURAL RESPONSE TO REWARD

Matthew A. Scult, Annchen R. Knodt, Jamie L. Hanson, Minyoung Ryoo, R. Alison Adcock, Ahmad R. Hariri, & Timothy J. Strauman  
Duke University

*Descriptors: motivation, individual differences, regulatory focus*

Delineating individual differences in reward responsiveness can lead to a better understanding of motivated behavior. This study investigated the neural correlates of individual differences in promotion and prevention orientation as described by regulatory focus theory, which examines how individuals go about achieving their goals. Promotion focus has been associated with increased sensitivity to potential gain, while prevention focus has been associated with sensitivity to potential loss. Twenty-four subjects completed the Regulatory Focus Questionnaire as an index of promotion and prevention. The Monetary Incentive Delay (MID) task was used during fMRI scanning to investigate neural correlates of reward. Participants engaged in the MID task under instructions corresponding to promotion vs. prevention orientation in a within-subject design. The behavioral analyses extend previous work demonstrating that promotion is associated with an indiscriminately eager response style, while prevention orientation is related to more cautious and careful responding. Specifically, promotion orientation correlated with reaction time for all incentivized trials ( $b = -0.549$ ,  $p = 0.021$ ), while prevention orientation was selectively associated with reaction time to loss avoidance trials ( $b = -0.573$ ,  $p = 0.043$ ). Additionally, individuals with a stronger promotion orientation show a decreased ventral striatum response to gains ( $b = -0.528$ ,  $p = 0.034$ ). The results shed light on both potential mechanisms for and further characterization of individual differences in motivational style.

This work was supported by National Institute on Drug Abuse (NIDA) Grants P30 DA023026 and by R01 DA031579, which is supported by the National Institutes of Health Common Fund and managed by the OD/Office of Strategic Coordination (OSC). MS is supported by a National Science Foundation Graduate Research Fellowship. J.L.H. was supported by postdoctoral fellowships provided by the National Institute of Child Health and Human Development (T32-HD07376) and also National Institute on Drug Abuse (P30-DA023026).

## POSTER B-38

### DIFFICULTIES WITH THE DIFFICULTIES IN EMOTION REGULATION SCALE: PSYCHOMETRIC PROPERTIES OF THE DERS SHORT FORM

Sarah E. Victor & E. David Klonsky  
The University of British Columbia

*Descriptors: assessment, psychometrics, emotion dysregulation*

An essential contribution to the study of emotion dysregulation and psychopathology was the development of the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), a 36-item self-report measure widely used in emotion regulation research. In order to reduce participant burden associated with lengthy questionnaires and study protocols, we created a short-form of the DERS that retains its psychometric properties while halving its length. To do this, we created an 18-item version (DERS-SF) based on the original psychometric data and validated the new measure in a large sample. The DERS-SF items were selected by including 3 items from each of the 6 DERS subscales that had the highest item loadings for that subscale in the original published data. We then conducted a principal components analysis in a new sample ( $N = 1602$ ), which yielded the same factor structure. In this sample, the correlations between the DERS-SF subscale and total scores and the original scores were extremely high (correlations .92 or higher). Internal consistency for the DERS-SF total score was excellent (Cronbach's alpha = .91) and internal consistencies for the subscale scores were almost identical to those reported for the original form. The subscales showed similar patterns of inter-correlations, as well as similar relationships with a measure of Borderline Personality Disorder. The DERS-SF will provide researchers with more flexibility to assess emotion dysregulation in novel and interesting research projects.

## POSTER B-39

### BEYOND POLITE: SAYING THANK YOU BUILDS NEW RELATIONSHIPS

Lisa A. Williams<sup>1</sup> & Monica Y. Bartlett<sup>2</sup>  
<sup>1</sup>University of New South Wales, <sup>2</sup>Gonzaga University

*Descriptors: gratitude, affiliation, emotion expression*

The find-remind-and-bind theory of gratitude (Algoe, 2012) stipulates that expressing gratitude should serve to alert previously unacquainted peers to the potential for a high-quality social bond (i.e., a find function). This premise has not, as yet, been tested empirically. We redressed this gap in the literature. 70 participants first provided feedback to a purported high school student (whom they had not met) on their writing. At a second session, participants received a note from that high school student that contained an expression of gratitude or did not. Participants rated the high school student and, after ostensibly completing the study, were given an opportunity to leave their contact information for the student, which served as a behavioral measure of affiliation. In line with the proposed find function, thanked participants were more likely than nonthanked participants to provide the student with a means to contact them (effect size  $\phi = .26$ ). This experiment also provided evidence that perceptions of interpersonal warmth serve as the mechanism via which gratitude expressions facilitate affiliation: insofar as gratitude expressions signaled that the expresser was interpersonally warm, they prompted investment in the nascent social bond (bootstrapped indirect effect = .86). As such, these findings provide the first empirical evidence regarding one of the three central premises of the find-remind-and-bind theory of gratitude (Algoe, 2012) in the context of novel relationships.

## POSTER B-40

### EMOTION-REGULATION IMPEDES INHIBITORY-CONTROL: PSYCHOPATHIC TRAITS MODERATE ASSOCIATION IN AN EMOTIONAL STOP-SIGNAL TASK

Patrick L. Carolan, Killian Kleffner-Canucci, & Mario Liotti  
Simon Fraser University

*Descriptors: psychopathic personality, emotion-regulation, inhibitory-control*

Previous research with children has found that emotional-reactivity negatively impacts inhibitory-control during a stressful Go/No-go task. In the current study we extended this finding in adults, and examined whether psychopathic personality-traits moderate behavioral indices of this effect. A sample of 37 undergraduate students completed a battery of personality and temperament measures, including a self-report inventory of psychopathic traits. Each performed a frustrating emotional stop-signal task, during which they identified the genders of faces in a limited amount of time, but withheld responses when stimuli were followed by a stop-signal. Emotional reactivity was manipulated on each trial by presenting faces with differing emotional expressions (happy, angry, or neutral), and between blocks of the task by penalizing errors fairly or unfairly (making some highly stressful). Results showed that emotion-regulation demands negatively impacted task performance, with significantly more missed responses on go-trials featuring angry face than happy ones,  $t(31) = 3.111$ ,  $p = 0.014$ . Furthermore, higher false-alarm rates were found for stop-trials during stressful blocks, but this effect was only significant if performance was co-varied with psychopathic impulsivity,  $F(2,62) = 3.625$ ,  $p = .032$ , highlight the influence of individual differences on this association.

## POSTER B-41

### LANGUAGE DRIVES EMOTION PERCEPTION FOR ADULTS, BUT NOT FOR PREVERBAL INFANTS

Ashley L. Ruba<sup>1</sup>, Devin M.J. Ulrich<sup>2</sup>, Makeba P. Wilbourn<sup>2</sup>, & Lasana T. Harris<sup>3</sup>  
<sup>1</sup>University of Washington, <sup>2</sup>Duke University, <sup>3</sup>Leiden University

*Descriptors: expression, perception, development*

Successful social interactions depend on accurate emotion perception. According to some scholars, language drives emotion perception. In fact, research finds that emotion labels help children categorize emotional expressions, particularly same-valence expressions (e.g., anger/disgust). However, language may not influence emotion perception at every stage of development. Using a looking-time task, STUDY 1 found that preverbal infants (n=54) do not require language to form perceptual categories of anger and disgust expressions (p=.01). This study also found that infants are more proficient with categorizing familiarized faces compared to novel faces (p<.01). STUDY 2 extended these findings to determine whether adults would demonstrate similar proficiencies at categorizing familiarized anger and disgust faces when linguistic cues were removed. In a novel computerized paradigm, participants (n=102) were told they would have two seconds to sort "expressions" (Condition 1) or "anger and disgust expressions" (Condition 2). When primed with emotion words (Condition 2), participants were significantly more accurate at categorizing the expressions (p<.01). However, participants who were NOT primed with the emotion words (Condition 1) showed greater accuracy with familiarized faces (p=.02). Without linguistic priming, these adults, like infants, likely relied on perceptual cues (e.g., eyebrows) to categorize the expressions. Taken together, these findings support a new theoretical framework in which infants categorize emotional expressions perceptually, while adults rely on language.

## POSTER B-42

### EMBODIMENT OF SUBLIMINAL EMOTION WORDS

Amber L. Laurie<sup>1</sup>, Michael Ennis<sup>1</sup>, & Samuel Winer<sup>2</sup>  
<sup>1</sup>California State University, Chico, <sup>2</sup>Mississippi State University

*Descriptors: electromyography, embodiment, emotion*

Recently, researchers have suggested a more embodied approach to language and emotion. For example, Foroni and Semin (2009) presented participants with positive and negative words and found that positive words automatically increased zygomaticus activity and negative words increased corrugator activity. Similar results were found by Niedenthal, Winkielman, Mondillon, and Vermeulen (2009). However, both of these experiments presented participants with supraliminal words. It is still unknown if similar results would occur if emotional words were presented subliminally. If so, this would indicate that the embodiment of emotion is a preattentive process that occurs automatically. Corrugator and zygomaticus muscle activity was measured while two blocks of sixteen positive, sixteen negative, and sixteen neutral words were presented subliminally (8.3ms). Facial electromyography data for twenty participants has been analyzed. An ANOVA was used to analyze the difference in corrugator activity during the different word type presentations. No significant differences in corrugator activity were found among the three word types. However, although not significant, corrugator activity was slightly greater during the negative word trials compared to the positive word trials. An ANOVA was also used to analyze differences in zygomaticus activity among the word types, but again, no significant differences were found. The present research suggests that subliminal words do not initiate embodiment of emotion and that previous researchers' work may not be as robust as expected.

## POSTER B-43

### INDIVIDUAL DIFFERENCES IN AUTONOMIC RESPONSIVITY PERSIST FOLLOWING KETAMINE ADMINISTRATION

Gilda Moadab, & Eliza Bliss-Moreau  
University of California, Davis

*Descriptors: autonomic nervous system, ketamine, rhesus macaques*

Few methods exist to assess variation in animal affect without anthropomorphism. We have recently demonstrated that the macaque autonomic nervous system (ANS) responds to affective stimuli in a manner similar to humans (Bliss-Moreau et al., 2013) and relates to variation in affective and social behavior. As such, it possible that variation in macaque ANS activity might be an indicator of trait affective processing as has been proposed in humans. The goal of the present study was to evaluate whether individual differences in ANS responsivity observed in awake animals were present when animals are sedated with ketamine. We recorded electrocardiogram and cardiac impedance data from 7 macaques while they were awake (10 min), followed by a ketamine injection (5 mg/kg) after which we continued to record physiological data. Data collected during sedation were averaged into 3 sequential 10-minute bins. Parasympathetic activity (indexed by respiratory sinus arrhythmia) was highest in the 20 min following injection,  $F(1.84, 11.04)=5.60$ ,  $p=.02$ . Sympathetic activity (indexed by pre-ejection period) decreased across the experimental phases,  $F(1.28, 7.67)=11.56$ ,  $p=.008$ . Animals' responsivity was ranked for each phase of the experiment. There were no significant differences in ranks across phases, indicating that individual differences persist when animals are sedated. This allows for the possibility of collecting ANS data during routine health checks as a measure of individual differences in affective processing. Implications for animal models of affect will be discussed.

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## POSTER B-44

### THE ASSOCIATION OF INTRAPERSONAL AND INTERPERSONAL EMOTION REGULATION PROCESSES WITH DEPRESSION

Sarah Wagner<sup>1</sup>, Kera Mallard<sup>1</sup>, Ashley K. Randall<sup>2</sup>, Casey Totenhagen<sup>3</sup>, & Sarah R. Holley<sup>4</sup>

<sup>1</sup>San Francisco State University, <sup>2</sup>Arizona State University, <sup>3</sup>University of Alabama, <sup>4</sup>San Francisco State University

*Descriptors: emotion regulation, depression, dyadic coping*

There is a link between depression and intrapersonal emotion regulation strategies. For example, emotional suppression is associated with depression, whereas reappraisal is protective (Gross & John, 2003). Recent research has focused on interpersonal regulatory processes such as partner support for managing stress ("dyadic coping"). Studies show that negative dyadic coping (NDC) negatively affects psychological well-being, whereas supportive dyadic coping (SDC) is beneficial (e.g., Bodenmann, 2008). This study evaluated whether interpersonal emotion regulation (NDC, SDC) was associated with depression above and beyond intrapersonal emotion regulation (suppression, reappraisal). 249 couples completed a survey. Analyses were conducted separately for males and females using multiple regression models. In step 1, covariates (age, relationship length) were entered. In step 2, intrapersonal variables (suppression, reappraisal) were entered. In step 3, interpersonal variables (NDC, SDC) were entered. As expected, intrapersonal variables accounted for significant variance in depression for both males and females. Further, interpersonal variables accounted for additional variance in depression for males (R squared change equals .12, p less than .05) and for females (R squared change equals .06, p less than .05). There were no interaction effects between interpersonal and intrapersonal variables. This indicates that both interpersonal and intrapersonal regulation processes are uniquely associated with depression symptoms and would each be important therapeutic treatment targets.

## POSTER B-45

### THE FINANCIAL COST OF PRIDE: EXPANSIVE POSTURAL DISPLAYS SHOWN BY THE NEEDY REDUCE ALTRUISTIC GIVING

Daniel Randles, Conor Steckler, & Jessica L. Tracy  
The University of British Columbia

*Descriptors: nonverbal, pride, altruism*

Displaying the nonverbal pride expression communicates high status and competence, and confers a number of benefits, including increased social rank and followership. However, there may be situations in which displaying pride is maladaptive. Specifically, altruists might avoid helping pride displayers because these individuals appear low in need. To test this hypothesis, we examined whether pride displays shown by needy individuals, requesting donations through a micro-lending charity website, reduced the amount of aid they received. In Study 1 ( $N = 158$ ), greater pride—operationalized as chest expansion—displayed by male requesters in their online profile photos, predicted receiving less financial aid (log odds =  $-1.28$ ,  $p < .001$ ). We pre-registered predictions and analyses based on this finding, and then replicated the effect in Study 2 ( $N = 224$ ; log odds =  $-.41$ ,  $p < .001$ ). In Study 3, we compared more and less successful requesters, and found that successful requesters ( $N = 196$ ) showed less chest expansion than those who failed to obtain their requested loans over a one-month period ( $N = 281$ ;  $d = .22$ ,  $p < .05$ ). These findings suggest that displaying pride is costly in situations where help is sought. More broadly, they provide the first evidence that the pride expression influences moral decision-making.

## POSTER B-46

### NAVIGATING THE GLOBAL WORKPLACE: EMOTIONAL SWITCHING AMONG BICULTURAL ASIAN AMERICANS

Yun Lucy Zhang & Jeanne Tsai  
Stanford University

*Descriptors: culture, workplace contexts, emotional behaviors*

Showing emotionally appropriate behaviors is critical to interpersonal functioning, especially in workplace settings because they may be tied to occupational success (Sanchez-Burks & Uhlmann, 2005). However, there are cultural differences in the types of emotions that are valued across cultures: whereas European Americans value maximizing positive and minimizing negative states, East Asians endorse a balance of the two (Sims, et al., Under Review). Are bicultural East Asian Americans able to switch their emotions to fit their cultural context? Previous research has demonstrated switching of cognitive processes (Hong, Morris, Chiu, Benet-Martinez, 2000), but not emotional ones. To answer this question, 61 European Americans and 53 bicultural East Asian Americans were asked to apply to American and Chinese business internships. Consistent with the American emphasis on maximizing positive and minimizing negative, East Asian Americans used more positive (e.g., excited, interested, confident) and fewer negative (e.g., problem, obstacle, mistake) words in response to the American ad compared to the Chinese ad ( $F(1, 112) = 4.186$ ,  $p = .04$ , partial  $\eta^2 = .04$ ). In contrast, European Americans responded to the American and Chinese ads similarly ( $F(1, 112) = .05$ ,  $p = .83$ , partial  $\eta^2 = .00$ ). Together, these results suggest that individuals who are oriented to multiple cultures switch their emotions to fit the cultural context they are in.

## POSTER B-47

### EFFECT OF UNPREDICTABILITY ON RESPONSES TO AMBIGUOUS SOCIAL CUES

F. Caroline Davis<sup>1</sup>, Mital Neta<sup>2</sup>, M. Justin Kim<sup>3</sup>, Joseph M. Moran<sup>1</sup>, & Paul J. Whalen<sup>3</sup>

<sup>1</sup>US Army Natick Soldier Research, Development & Engineering Center, <sup>2</sup>University of Nebraska-Lincoln, <sup>3</sup>Dartmouth College

*Descriptors: amygdala, emotion, unpredictability*

The ability to predict our environment allows us to prepare for future events, maximizing our ability to gain reward or avoid threat. In contrast, unpredictable environments are anxiety-provoking and can elicit exaggerated emotional responses to aversive stimuli. Even neutral stimuli, when presented in an unpredictable fashion, prime anxiety-like behavior and elicit heightened amygdala activity. The amygdala plays a key role in initiating responses to stimuli that predict biologically relevant events. One example of such stimuli is facial expressions, which can be used as cues that convey information about the surrounding environment. While some expressions clearly signal negative (e.g., anger, fear) or positive (e.g., happy) events, other expressions (e.g., surprise) are more ambiguous in that they can predict either, depending on the context. Here, we use facial electromyography ( $N = 46$ ) and fMRI ( $N = 22$ ) to test whether unpredictability biases responses to surprised faces. We observed increased corrugator responses to predictable surprised faces, similar to happy faces, and decreased responses to unpredictable surprised faces, similar to angry faces. We also observed an interaction between predictability and time ( $F(1, 21) = 5.034$ ,  $p = 0.036$ ) where predictable surprised faces elicited moderate but sustained increases in amygdala activity, but unpredictable surprised faces elicited increased amygdala responses that habituated, similar to responses to fearful faces. These data suggest that unpredictability biases people toward negative interpretations of ambiguous social cues.

## POSTER B-48

### EMOTION-REGULATION AND INHIBITORY-CONTROL IN AN EMOTIONAL STOP-SIGNAL TASK: AN ERP STUDY

Killian Kleffner-Canucci, Patrick L. Carolan, & Mario Liotti  
Simon Fraser University

*Descriptors: event-related-potential, emotion-regulation, inhibitory-control*

Emotional reactivity has been shown to hinder inhibitory control during a stressful Go/No-Go task. Similarly, it has been suggested that emotionally salient but task irrelevant information can negatively impact task performance. In the current study we extend our understanding of the interplay between emotional processing and self-regulation by testing the change in processing of irrelevant, but salient, information during a demanding task. A sample of 27 undergraduate students had EEG recording during an emotional stop-signal task in which the gender of a face was identified in a limited amount of time, or responses were withheld if the face was followed by a stop-signal. Emotional reactivity was manipulated with differing facial expressions (Angry, Neutral). Additionally, the task was broken into three blocks, the first and third identical to each other, but the second designed to be more difficult in order to provoke frustration. Using event-related potentials, the average amplitude 200-300ms after face presentation was analyzed by emotion (Angry, Neutral) for each block. When task demands are reasonable, the Angry face resulted in a more positive amplitude at fronto-centro locations (FCz; first block  $t(26) = 2.9$ ,  $p = 0.007$ ; third block  $t(26) = 3.61$ ,  $p = 0.001$ ). However, when the task is extremely demanding, there is no difference between Angry and Neutral faces (FCz;  $t(26) = 1.48$ ,  $p = 0.15$ ), highlighting the dynamics of emotional processing and inhibitory control.

## POSTER B-49

### CAPTURING EMOTIONAL SUPPRESSION AS IT NATURALLY UNFOLDS IN COUPLE INTERACTIONS

Jordan D. Dworkin<sup>1</sup>, Marc S. Schulz<sup>2</sup>, Ginny Zimmerman<sup>2</sup>, & Robert J. Waldinger<sup>3</sup>  
<sup>1</sup>Haverford College, <sup>2</sup>Bryn Mawr College, <sup>3</sup>Massachusetts General Hospital

*Descriptors: suppression, couple interaction, coping*

Most research examining the consequences of suppressing emotional expression has focused on experimentally manipulated, conscious suppression. This study examined suppression as it naturally occurred in couple discussions (n=150) of an upsetting event. A Suppression Index (SI) was created by calculating the difference between continuous self-reports of emotion, obtained using cued recall, and coders' continuous ratings of expressed emotion during the conversations. All participants suppressed to some degree, with meaningful variation found both between individuals and within individuals across the conversation. There was some consistency in mean suppression across partners ( $r=.30$ ), as well as some evidence that the contextual factors that lead to suppression might differ by gender. Husbands suppressed more when their wives reported more negative affect ( $r=-.27$ ), while wives suppressed more when their husbands expressed more negative emotion ( $r=-.38$ ). Building on work on expressive flexibility (Bonanno et al., 2004) and on emotional inertia (Koval et al., 2014), autocorrelations on the SI were run to create a Suppressive Rigidity (sRig) score that gauges the degree to which suppression varied over the course of the conversation ( $r$  range =  $-.08$  -  $.85$ ). There was consistency in sRig across conversations (men:  $r=.43$ , women:  $r=.62$ ), suggesting that sRig captures stable individual differences. Additional analyses and discussion focus on examining proximal and distal social and motivational correlates of suppression and suppressive rigidity in the couple context.

## POSTER B-50

### THE EFFECT OF POSITIVE, NEGATIVE AND NEUTRAL MOOD ON SELF-REPORTED PERSONALITY

Anita S. Hibbert & E. David Klonsky  
University of British Columbia

*Descriptors: personality, mood, measurement*

Personality measures are widely used and are understood to capture stable traits. However, we have previously demonstrated small but significant changes in endorsement of several of the big five personality factors in response to positive versus negative mood inductions. A follow-up study was conducted in order to clarify whether these changes were being driven by positive moods, negative moods, or both. Participants were 131 undergraduates who completed 3 laboratory visits, at least 9 days apart. Mood was manipulated once during each visit using a counterbalanced task where participants wrote about a recent upsetting, happy or neutral memory. Self-reported personality traits were subsequently assessed using the 44-item Big Five Inventory. Repeated measures ANOVAs were conducted to investigate the impact of mood on personality ratings. In support of the original findings, participants rated themselves as more agreeable, extraverted and open to experience while in a positive mood, as compared to both a negative and neutral mood (post hoc  $ps < .05$ , Cohen's  $ds = 0.10-0.12$ ). Neuroticism demonstrated a marginally significant trend in which participants rated themselves as more neurotic while in a negative mood, as compared to both a neutral or positive mood (post hoc  $ps < .07$ , Cohen's  $ds = 0.09$ ). The current results indicate that positive moods may inflate participant ratings of more "positive" personality characteristics (e.g., agreeableness, extraversion, and openness). Conversely, negative moods may inflate ratings of "negative" personality characteristics (e.g., neuroticism).

## POSTER B-51

### REGULATION OF CRAVING INCREASES CHOICE OF HEALTHY FOOD

Rebecca G. Boswell & Hedy Kober  
Yale University

*Descriptors: cognitive reappraisal, craving, food*

More than 60% of U.S. adults are overweight. Rising rates of obesity have been attributed to an environment rich in food cues that increase craving for and choice of unhealthy food at the expense of healthy food. We've shown that cognitive strategies can be used to both up- and down-regulate self-reported craving for healthy and unhealthy foods. Here we tested (1) the effect of regulation of craving on food choice, and (2) whether this is related to body mass index (BMI). Participants from MTurk (N=450) chose between pairs of healthy and unhealthy foods, and then were randomized into three conditions: 1) POSITIVE, in which they were trained to think of the positive benefits of healthy food, 2) NEGATIVE, trained to think of the negative consequences of unhealthy food, or 3) LOOK, just look at food cues. All participants then completed 80 trials of the Regulation of Craving (ROC) task. On each trial, they viewed a picture of healthy or unhealthy food, and were instructed to use the strategy on which they were previously trained. Then, participants chose again between the same pairs of food. Training in POSITIVE and NEGATIVE cognitive strategies increased healthy food choices compared to the control condition, in which healthy food choices decreased [ $F(1, 449)=5.12, p=.006$ ]. There was no relationship between BMI and change in healthy food choices. These results replicated (N=275). Thus, choice for healthy vs. unhealthy food can be increased with brief training in cognitive strategies. These results have important clinical and public health implications and applications.

## POSTER B-52

### MALADAPTIVE BEHAVIOR IN AUTISM SPECTRUM DISORDER: THE ROLE OF EMOTION EXPERIENCE AND EMOTION REGULATION

Yael Enav<sup>1</sup>, Andrea C. Samson<sup>1</sup>, Ihno A. Lee<sup>1</sup>, Jennifer M. Phillips<sup>2</sup>, Antonio Y. Hardan<sup>2</sup>, & James J. Gross<sup>1</sup>

<sup>1</sup>Stanford University, <sup>2</sup>Stanford University School of Medicine

*Descriptors: emotion regulation, autism spectrum disorder, clinical*

Maladaptive behavior is common in Autism Spectrum Disorder (ASD), but the factors that drive maladaptive behavior in ASD are currently not well understood. The goal of the present study was to examine the associations among emotion experience, emotion regulation, and maladaptive behavior in higher functioning individuals with ASD vs. typically developing participants (TD). Thirty-four children and adolescents with ASD and 28 group-matched TD participants and their parents completed measures of emotion, emotion regulation, and maladaptive behavior. Mediation analyses were used to identify indirect effects of emotion experience and regulation on the association between group and maladaptive behavior. In the mediation model, in which cognitive reappraisal was the first mediator and negative emotion the subsequent mediator on the association between group and maladaptive behavior, a significant indirect effect traveling through cognitive reappraisal and negative emotions was identified ( $a1d21b2 = .88, 95\% CI [.35; 2.28]$ ). This suggests that individuals with ASD made less use of cognitive reappraisal, and had increased negative emotion experience, which was associated with more maladaptive behavior. Treatments targeting adaptive emotion regulation may therefore lead to lower negative emotions and may reduce maladaptive behaviors in individuals with ASD.

## POSTER B-53

### IMPLICIT ATTITUDES TOWARDS EMOTIONS AND EMOTIONAL PERCEPTION

Liat Netzer & Maya Tamir  
The Hebrew University of Jerusalem

*Descriptors: attitudes, emotional expressions*

Implicit attitudes have been linked to biases in the processing of attitude-relevant information. This investigation assessed implicit attitudes toward emotions and tested whether such attitudes are linked to biases in the processing of emotion-relevant information. We measured attitudes towards fear (Study 1,  $N = 50$ ) or disgust (Study 2,  $N = 38$ ), using a single category IAT, and assessed the speed with which participants were able to detect emotional expressions in videos of faces morphing from a neutral to an emotional expression. In Study 1, more favorable attitudes towards fear were related to faster recognition of fear ( $r = -.26$ ,  $p = .067$ ), but not happiness ( $r = -.09$ ) or anger ( $r = -.03$ ). In Study 2, more favorable attitudes towards disgust were related to faster recognition of disgust ( $r = -.35$ ,  $p = .032$ ), but not fear ( $r = -.06$ ) or anger ( $r = -.05$ ). These results demonstrate that the processing of emotional information is linked to how people evaluate that emotion, even implicitly. These findings point to the importance of understanding the nature and implications of attitudes toward emotions, both explicit and implicit.

The research was supported by the Israel Science Foundation (grant # 794/11).

## POSTER B-54

### EMPATHY IN ADOLESCENCE: NEURAL BASIS AND TRAINING VIA A NOVEL VIDEO GAME

Tammi R.A. Kral, Enrique Solis, Constance A. Steinkuehler, Lisa Flook, Kurt D. Squire, & Richard J. Davidson  
University of Wisconsin-Madison

*Descriptors: empathy, adolescence, training*

Empathy is critical for navigating our social world, particularly for adolescents who are often entering new relationships. Research indicates that neural systems underlying perspective taking, such as medial prefrontal cortex (mPFC), and regions supporting emotional embodiment, such as premotor cortex (PMC), are active when adults empathize. These regions have distinct developmental paths and may be differentially engaged in adolescents. It is unknown if adolescents utilize both of these networks when empathizing. We extended research on neural systems supporting empathy to an adolescent population with an empathic accuracy (EA) task, and tested if EA and related neural activity improved by training via a novel video game, Crystals of Kaydor (Crystals). Players learned to recognize six basic emotions, to gauge emotion intensity and to collaborate to help others. Before and after 2 weeks of play participants completed an EA task during an fMRI scan. Participants randomly assigned to play Crystals ( $N=27$ ) with better EA post-intervention had increased activity in left PMC compared to participants in an active control group ( $N=25$ ), while controlling for baseline measures ( $df=47$ ,  $p=0.023$ ). PMC is involved in emotional embodiment, and thus Crystals may train some participants to use an embodiment strategy. We also found the first evidence that adolescents recruit brain regions in perspective taking and embodiment networks when empathizing using a voxelwise analysis (corrected at  $\alpha = 0.05$ ), as well as an a-priori region of interest analysis for mPFC ( $N = 116$ ,  $p = 0.003$ ).

This work was supported by a Gates Foundation grant OPP1033728 to RJD, and a core grant to the Waisman Center from the National Institute of Child Health and Human Development (NICHD) P30 HD003352 to Marsha Seltzer.

## POSTER B-56

### SALIVARY BIOMARKERS OF NEURAL HYPERVIGILANCE

Seunghyeon A. Yoon<sup>1</sup>, Jenna K. Rieder<sup>1</sup>, Emma M. Millon<sup>2</sup>, & Mariann R. Weierich<sup>3</sup>  
<sup>1</sup>The Graduate Center of the City University of New York, <sup>2</sup>Hunter College of the City University of New York, <sup>3</sup>Hunter College of the City University of New York, The Graduate Center of the City University of New York

*Descriptors: vigilance, immunoassay, fMRI*

Limbic and regulatory brain areas are overly reactive to affective information in stress states and related disorders, and people who are exposed to extreme stressors can experience generalized vigilance for non-existent threat. However, we do not yet have a reliable and accessible marker for hypervigilance in trauma-exposed persons. Cortisol (HPA-axis) has been examined as a potential biomarker for stress-related symptoms, with inconsistent results. More recently, alpha amylase (sAA; SNS) has emerged as a promising candidate biomarker. We compared both candidates as predictors of neural vigilance to affective information (i.e., greater amygdala and cognitive control region activation for negative information) and generalized neural vigilance for non-existent threat (i.e., greater amygdala and control activation to novel and/or neutral information). Seventeen women with prior trauma exposure provided saliva samples before, during, and after describing their traumatic event during a clinical interview. In a later session, participants viewed novel and familiar affective scenes during fMRI. For hypervigilance to affective information, sAA predicted rostral MFG activation for novel negative scenes ( $r=.53$ ). For hypervigilance for non-present threat, sAA reactivity predicted amygdala ( $r=.54$ ) and lateral OFC ( $r=.68$ ) activation for novel neutral scenes. Cortisol was not related to hypervigilance. The data suggest that sAA could be a biomarker for heightened vigilance to actual threat information, and also for maladaptively vigilant affective responses in the absence of threat.

## POSTER B-57

### SHUTTING DOWN AS AN EMOTION REGULATION CHOICE: ASSOCIATIONS WITH CLINICAL STATUS AND PHYSIOLOGICAL REACTIVITY

Steven J. Freed<sup>1</sup>, Jonathan M. DePierro<sup>1</sup>, Thomas E. Kraynak<sup>2</sup>, Wendy M. D'Andrea<sup>1</sup>, & Greg J. Siegle<sup>2</sup>

<sup>1</sup>The New School for Social Research, <sup>2</sup>University of Pittsburgh School of Medicine

*Descriptors: psychophysiology*

Previous research has found that deploying emotion regulation strategies as a way of coping with emotional images leads to changes in self-reported emotion and psychophysiological reactivity. Past work has primarily focused on the effects of reappraisal and distraction. However, other emotion regulation strategies, such as "shut-off" (spacing out or going numb), are commonly reported but underrepresented in the literature. The present study examined the frequency and physiological effects of choosing shut-off as compared to reappraisal and avoidance strategies. We used a modified version of Sheppes' emotion regulation task, wherein participants were able to choose one of these three strategies to cope with negative images. Preliminary analysis using clinical and non-clinical participants ( $N = 42$ ; mean age = 33.26,  $SD = 11.58$ ) reveals that participants were more likely to use reappraisal while viewing images with high emotional intensity than with low-intensity images. Clinical participants were more likely to choose "shut-off" during low intensity images. There were no between-group differences for avoidance. In the entire sample, the use of shut-off was associated with significantly lower HR in the last seconds of picture viewing as compared to reappraisal ( $t[41] = 2.76$ ,  $p = .006$ ) and avoid ( $t[41] = 3.02$ ,  $p = .004$ ). Notably, larger samples are needed to examine whether participants who shut down during high intensity images also display decreases in HR. These analyses suggest that shutting down is associated with decreased arousal-related processing of emotional information.

NIMH 1R01MH096334-01.

## POSTER B-58

### TELL ME MORE, TELL ME MORE: DO CAPITALIZING SOCIAL INTERACTIONS INCREASE MOTIVATED BEHAVIOR TOWARDS NONSOCIAL POSITIVE EXPERIENCES?

Jasmine Mote, Jessica Yu, & Ann M. Kring  
University of California, Berkeley

*Descriptors: capitalization, motivation, positive emotion*

Capitalization refers to sharing a positive personal experience with another individual and reaping emotional benefits from the interaction over and above the positive emotion felt from the experience alone. However, these beneficial outcomes are only present when an individual shares with someone who responds in an enthusiastic and engaged manner (Gable et al., 2006). We were interested in whether capitalization's benefits extend to nonsocial behavior related to motivation. Specifically, we predicted that a capitalizing interaction with a stranger would lead to more motivated behavior towards positive, nonsocial emotional experiences. Participants completed a laboratory task where they were asked to exert physical effort (pressing computer keys) to view amusing and neutral films. Participants either engaged in a capitalizing social interaction with the research assistant (n=39), a neutral interaction (n=41), or a control questionnaire condition (n=44). People in the capitalization condition reported a greater increase in positive emotion ( $p = 0.05$ ) and reported feeling more connected with the research assistant ( $p < 0.003$ ) following the interaction compared to the other conditions. However, there were no differences in button-pressing behavior towards either amusing or neutral films between the groups. This study contributes to the literature on capitalization by showing that while capitalization has many interpersonal benefits, its benefits do not appear to include specific increases in motivation towards positive, nonsocial experiences within a novel laboratory task.

## POSTER B-59

### HOW DO CHILDREN'S HEDONIC AND EUDAIMONIC MOTIVES RELATE TO THEIR PSYCHOSOCIAL FUNCTIONING?

Amy L. Gentzler<sup>1</sup>, Meagan A. Ramsey<sup>1</sup>, Chit Yuen Yi<sup>1</sup>, Cara A. Palmer<sup>2</sup>, & Karena M. Moran<sup>1</sup>

<sup>1</sup>West Virginia University, <sup>2</sup>University of Houston

*Descriptors: hedonic or positive affect, eudaimonic, children*

The pursuits of both hedonia (pleasure, relaxation) and eudaimonia (meaningful life, learning skills) are central to well-being (Deci & Ryan, 2008). Yet, highly prioritizing one's own hedonia may result in negative behaviors, such as too much self-indulgence and self-focus, which could be linked to broader maladaptive outcomes (e.g., poorer health, low empathy). Because little is known about these motives and outcomes in children, we collected data from 76 children (aged 7-12) and their mothers. Children reported on their hedonic and eudaimonic motives (Huta & Ryan, 2010), depressive symptoms (Weissman et al., 1980), and self-worth (Harter, 2012). Mothers completed the Social Skills Improvement System (Gresham & Elliot, 2008), which includes several scales about children's positive and negative functioning (e.g., cooperation, empathy, self-control, externalizing, internalizing). Children who reported higher hedonic motivation reported lower depressive symptoms ( $r = -.34, p = .003$ ), but were rated by mothers as having lower empathy ( $r = -.31, p = .009$ ), and self-control ( $r = -.28, p = .017$ ). Children reporting higher eudaimonic motivation reported higher self-competence ( $r = .36, p = .001$ ), and were rated higher on assertion ( $r = .28, p = .019$ ) and engagement ( $r = .25, p = .036$ ) by their mothers. These results show preliminary support for the hypothesis that hedonic motivation is tied to both positive and negative outcomes in children. Further analyses will explore curvilinear relationships, a proportion score to account for both motives, and potential moderating factors.

## POSTER B-60

### THE EFFECTS OF OXYTOCIN ON PREFERRED INTERPERSONAL SPACE: A PHARMACOLOGICAL NEUROIMAGING STUDY

Daniela Cohen<sup>1</sup>, Anat Perry<sup>1</sup>, Gadi Gilam<sup>2</sup>, Naama Maysel<sup>1</sup>, Talma Hendler<sup>2</sup>, & Simone Shamay-Tsoory<sup>1</sup>

<sup>1</sup>University of Haifa, <sup>2</sup>Tel Aviv University

*Descriptors: oxytocin, neuroimaging, interpersonal space*

Background: Interpersonal distance, a space two people share, creates and defines the dynamics of social interactions. Oxytocin (OT) plays a key role in social behavior, and it has been recently suggested that it increases the salience of social agent. The study examined if the administration of OT would have a differential effect on the preferred space between friends and strangers. We hypothesized that two systems mediate interpersonal distance preference, the social cognition system (prefrontal cortex) and the threat system (amygdala) and that OT would modulate these networks. Methods: Within-subject crossover design, 19 subjects were scanned, while performing an interpersonal distance task following the administration of either placebo or OT. The task involved watching different protagonists (friend or stranger) approaching the participant, and stopping them when feeling uncomfortable. Results: Behavioral results demonstrated that the friend was stopped at the closest distance, and stranger at the furthest. The fMRI results show an interaction between the effects of OT upon the different protagonists. The right amygdala, parahippocampal gyrs, anterior and posterior cingulate, and the left medial prefrontal cortex, were found to be more active following the administration of OT. Conclusions: The findings suggest that OT affects the activity of brain networks related to social cognition and threat. It is concluded that OT, which enhances the salience of social agents, modulates interpersonal distance between individuals depending on the relationship with the protagonist.

## POSTER C-1

### DISTINCTIVE FRONTAL ELECTROPHYSIOLOGICAL CORRELATES OF EARLY PROCESSING OF PHYSICAL THREAT WORDS DISTINGUISH A SUBLIMINAL AND SUPRALIMINAL EMOTIONAL STROOP TASK IN HIGH TRAIT ANXIETY PARTICIPANTS

Isabel Taake & Mario Liotti  
Simon Fraser University

*Descriptors: event-related potentials, clinical anxiety, attentional bias*

Enhanced electrophysiological early frontal responses to threat stimuli in individuals with clinical and trait anxiety (Taake et al., 2009; Pauli, 2005) confirm the notion that hypervigilance to threat results from an early stage, likely pre-attentive processing of threat information. Here, we examined whether threat words presented below perception threshold would also lead to enhanced early frontal ERPs in high Anxiety Sensitivity (AS) individuals. ERPs were recorded while healthy students with high ( $n=22$ ) and low AS ( $n=21$ ) performed a hybrid version of the emotional Stroop task in which they viewed blocks of threat and positive words intermixed with neutral words under two conditions: Supraliminal or subliminal. A RT effect was present only in the supraliminal condition as a block effect in both groups ( $p<.05$ ). While a frontal EAP (200-320 ms) was enhanced to threat stimuli in both conditions in the high group, an even earlier frontal positivity was present only in the subliminal condition (130-200 ms). In contrast, a later LPP (350-550 ms) was present only in the supraliminal condition, and did not differ among groups. Importantly, while both subliminal and supraliminal conditions gave rise to early frontal positivities to threat words, only in the subliminal version the effect started earlier, and affected all trials within the threat blocks, suggesting that hypervigilance to threat extends to all stimuli potentially threatening, in the absence of their conscious recognition. This study may have important implications for studying attentional bias in Panic Disorder.

Canadian Institutes of Health Research.

## POSTER C-2

### INTERPERSONAL INSTRUMENTAL EMOTION REGULATION

Liat Netzer<sup>1</sup>, Gerben A. Van Kleef<sup>2</sup>, & Maya Tamir<sup>1</sup>  
<sup>1</sup>The Hebrew University of Jerusalem, <sup>2</sup>University of Amsterdam

*Descriptors: emotion regulation, motivation, social interactions*

This investigation was designed to test whether people are motivated to regulate the emotions of others to promote their own instrumental benefits. In 2 studies, we tested whether participants would be motivated to increase unpleasant emotions in others, when they expected to benefit from it. Specifically, we tested whether participants are motivated to expose others to anger-inducing stimuli, when the aggressive behavior of others (i.e., playing an aggressive computer game) could benefit (vs. harm) participants financially. In two studies ( $Ns = 40$  and  $64$ ) participants tried to increase anger in another when they expected to benefit from it, but decrease anger when they expected to suffer from it. These patterns were obtained despite the fact that it led participants to make their allies feel worse and their rivals feel better. In Study 1 participants tried to increase anger in partners but not in rivals (means = 4.75 and 2.55 respectively),  $F(1, 38) = 19.56, p < .001$ . Furthermore, in Study 2 we found that the extent to which participants were motivated to increase anger in the other was moderated by the extent to which they believed anger in the other would be beneficial to them,  $t(60) = 3.67, \beta = .31, p = .001$ . These findings demonstrate that instrumental motives can determine the way people regulate the emotions of others, whether friends or foes.

## POSTER C-3

### THE EFFECTS OF STUDY INSTRUCTION AND CUE SPECIFICITY ON EMOTIONAL MEMORY ENHANCEMENT—PERCEPTUAL VS. CONCEPTUAL DECISIONS

Sarah M.E. Scott & Elizabeth A. Kensinger  
Boston College

*Descriptors: affect, recognition, valence*

In what instances are emotional memories more likely to be remembered than neutral memories? The present study examined the effect of two factors: Experiment instructions (perceptual vs. conceptual decision) and the match of the format between studied stimulus and retrieval cue. Participants viewed positive, negative, and neutral stimuli, half as photo objects and half as verbal referents (e.g., kitten, spider). Different groups were instructed to make a perceptual decision, about either the orientation ( $N=24$ ) or the shape ( $N=17$ ) of the stimulus, or to make a conceptual decision, about the animacy ( $N=24$ ) or environmental context ( $N=17$ ) of the stimulus. During a surprise memory test, some retrieval cues matched the modality of the study stimuli (photo, word) and others mismatched. For both perceptual decisions, negative items were remembered better than neutral when the retrieval cue matched the format of the studied item ( $p<.001$ ). When cues mismatched, this emotional memory benefit was eliminated. For conceptual encoding, emotional memory was never enhanced when cues matched, regardless of the encoding decision. By contrast, when the cues mismatched, animacy (but not environmental context) decisions led to better memory for negative items than for neutral items ( $p<.01$ ). Thus, varying encoding and retrieval circumstances influence the impact of emotion on memory; moreover, while perceptual encoding effects may generalize across task instructions, conceptual encoding effects may be task-specific.

## POSTER C-4

### OPPOSING SHORT- AND LONG-TERM EFFECTS OF REM SLEEP ON EMOTION RESPONDING: PRELIMINARY EVIDENCE FOR AN ACTIVATION-ATTENUATION EFFECT OF REM SLEEP ON EMOTIONAL PROCESSING

Gabriela G. Werner, Simone R. Dichtl, Manuel Schabus, Jens Blechert, & Frank H. Wilhelm  
University of Salzburg

*Descriptors: emotional processing, rem sleep*

Rapid eye movement (REM) sleep has been postulated to facilitate emotional processing of negative stimuli. However, empirical evidence is mixed and it is currently unclear under which conditions higher amounts of REM sleep lead to decreased or increased emotional response. We proposed that the time delay between REM sleep and the measurement of emotional reactivity (ER) is a crucial factor and hypothesized that ER will be enhanced directly after REM sleep (short-term sensitization), but will be decreased in the long-term (habituation effect). Here, 73 healthy young women watched negative and neutral pictures before a polysomnographically recorded nap. Picture aversiveness ratings immediately after awakening and aversiveness ratings of picture memories on subsequent days were correlated with REM duration during the nap. As expected, we found higher aversiveness ratings with higher amounts of REM sleep directly after awakening ( $r = .24, p = .040$ ), whereas aversiveness ratings of picture memories on subsequent days were decreased with higher amounts of REM sleep ( $r = -.32, p = .009$ ). Results indicate that REM sleep may exert a sensitization effect on processing of emotional stimuli in the short-term and this effect of REM appears to facilitate emotional processing during subsequent nights.

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## POSTER C-5

### IS THERE A SOCIAL DIMENSION OF EMOTION? USING NOVEL METHODOLOGICAL APPROACHES TO REVISIT THE STRUCTURE OF AFFECT

Anthony C. Santistevan<sup>1</sup>, Lisa A. Williams<sup>2</sup>, & Eliza Bliss-Moreau<sup>3</sup>  
<sup>1</sup>Columbia University, <sup>2</sup>University of New South Wales, <sup>3</sup>University of California, Davis

*Descriptors: structure of emotion, social emotion, quantitative methods*

Over the past century, great debate has ensued regarding the fundamental properties of emotions. The idea that two properties—valence and arousal—represent those fundamental properties has had substantial staying power in the literature. Investigations supporting the two-property claim typically evaluate the structure by having participants rate the similarity of a small number of emotion stimuli. Similarity judgments are then analyzed using multidimensional scaling (MDS) revealing fundamental properties (i.e., dimensions) of emotion. It is possible that small sets of emotion stimuli artificially limit the dimensions of emotion that can be identified. We utilized a novel methodological approach that allowed for us to increase the number of emotion stimuli used to 41. Each participant rated a subset of the total pairs. We applied this method to evaluate whether a dimension representing the “socialness” of emotion might arise as the result of inclusion of emotion words that represent “social emotions.” Participants (N = 308) evaluated the similarity of 41 emotion terms (of which 41% were “social emotions”). The resulting structure of emotion was best described by two dimensions—valence and arousal (RSQ = 0.96). Contrary to predictions, there was not evidence for a third dimension corresponding to socialness. Furthermore, we demonstrate how different distributions of emotion terms in affective space can arise through alternative model specifications in MDS. We provide recommendations for specifying these models and provide SAS code for reproducing our methodology.

## POSTER C-6

### POSITIVE BIAS WHEN RESOLVING VALENCE AMBIGUITY IN HEALTHY AGING

Tien T. Tong<sup>1</sup>, Xuan Zhang<sup>2</sup>, Jonathan B. Freeman<sup>2</sup>, & Maital Neta<sup>1</sup>  
<sup>1</sup>University of Nebraska-Lincoln, <sup>2</sup>New York University

*Descriptors: ambiguity, valence bias, aging*

Although some facial expressions of emotion have a clear valence (angry, happy), others (e.g., surprise) have predicted both positive (e.g., birthday party) and negative (e.g., car accident) events for us in the past. As such, when presented without a clarifying context, these expressions are stably interpreted as positive by some people, and as negative by others. Despite these individual differences, the more automatic interpretation is negative, and positivity appears to require regulation. Interestingly, extant research has shown that, compared to young adults, older adults experience more positive emotions, and are better at emotion regulation. The present study investigated whether this increase in emotion regulation would result in a positive bias when resolving valence ambiguity. Eighty participants (aged 19-71, 41 females) were recruited through Amazon Mechanical Turk. Stimuli included faces and scenes with a clear and ambiguous valence. Participants used a mouse to rate each item as positive or negative. Consistent with previous work, we found that the valence bias (i.e., tendency to interpret ambiguity as positive or negative) was consistent across faces and scenes ( $r(78) = 0.34, p < 0.01$ ). Importantly, age correlated with valence bias for both faces ( $r(78) = -0.33, p < 0.01$ ) and scenes ( $r(78) = -0.32, p < 0.01$ ), such that older adults showed a more positive bias. Taken together, these results suggest that older adults not only attend to, and remember, positivity more than negativity, but they also tend toward a positive interpretation of valence ambiguity.

## POSTER C-7

### CLOUDY WITH A CHANCE OF FEELINGS: AFFECTIVE FORECASTING AS A RESOURCE FOR SITUATION SELECTION

Victoria A. Floerke, Lara Vujovic, & Heather L. Urry  
Tufts University

*Descriptors: situation selection, affective forecasting, SOC-ER*

Situation selection, an emotion regulation strategy in which one chooses situations based on their potential to elicit certain emotions, might have advantages over other strategies. Thus, understanding resources necessary for situation selection is crucial. We hypothesized that being better at affective forecasting, a potential resource reflecting the ability to predict how a given situation will make one feel, would be associated with situation selection. To test this hypothesis, 53 participants forecasted how positive, negative, and aroused they expected to feel during a subsequent stress test. After the test, they rated how they actually felt. Forecasting success was expressed as  $|actual - forecast|$ ; lower forecasting scores indicate greater success. In a separate video task, we recorded which of several clips (positive, negative, and neutral) they would choose to view. Overall, participants' affective forecasts were inaccurate, all  $ps < .01$ . Participants who were better at forecasting arousal during the stress test selected more negative relative to neutral clips during the video task,  $B = -.43, p = .024$ . This result is consistent with the idea that affective forecasting is a resource for situation selection. However, the findings are correlational and specific to arousal forecasting and negative situation selection. This specificity was not predicted on a priori grounds; replication is warranted.

U.S. Army Natick Soldier Research, Development, & Engineering Center (NSRDEC)

## POSTER C-8

### DOES EMOTION REGULATION MEDIATE THE LINK BETWEEN NEUROTICISM AND DEMAND-WITHDRAW?

Samuel C. Stark<sup>1</sup>, Alina Belohavek<sup>2</sup>, & Sarah Holley<sup>2</sup>  
<sup>1</sup>San Francisco State University, <sup>2</sup>San Francisco State University

*Descriptors: emotion regulation, neuroticism, close relationships*

A harmful pattern that is common during relationship conflict is termed “demand-withdraw.” Here, one partner blames or pressures while the other partner avoids or withdraws (Christensen, 1988). Research on factors underlying this deleterious pattern suggests that those higher in neuroticism (i.e., the tendency toward negative affectivity and emotional instability) engage in more demanding and withdrawing behaviors (Caughlin & Vangelisti, 2000). Neuroticism is also negatively associated with the ability to regulate emotions (Gross & John, 2003), which in turn is known to play a crucial role in facilitating adaptive relationship interactions (Levenson et al., 2013). This study examined whether emotion regulation mediated the association between neuroticism and demand-withdraw. Participants included 526 undergraduate students (264 men, 286 women). All measures were obtained via self-report. Mediation analyses were conducted using bootstrap confidence intervals to evaluate significance; analyses controlled for age, relationship length, gender, and sexual orientation. Results showed that emotion regulation mediated the association between neuroticism and the self-demand/partner-withdraw pattern (95 percent CI: 0.12, 0.29), as well as the partner-demand/self-withdraw pattern (95 percent CI: 0.13, 0.30). These results suggest that the link between neuroticism and demand-withdraw is accounted for by emotion regulation abilities. Thus, improving emotion regulation for people high in neuroticism may help decrease problematic demand-withdraw interactions during relationship conflicts.

## POSTER C-9

### THE IMPACT OF EGO DEPLETION AND MORAL CONCERNS ON MEMORY FOR FACES AND MORAL INFORMATION ABOUT OTHERS

Emmanuel Edward S. Te, Krystal Akbar, & Marisa R. Knight  
University of San Francisco

*Descriptors: morality, recognition, ego depletion*

The present study brings together moral, evolutionary, and cognitive perspectives to ask how moral concerns shift with ego depletion, as seen in face recognition and recalling associations between individuals and morally-charged behaviors. Participants (N = 127, female = 106, age M = 18.28) completed either an ego depletion or a control task, and then associated neutral white male faces paired with behaviors that violated, upheld, or were neutral along the moral concerns of Harm (H), Fairness (F), Loyalty (L), Authority (A), and Purity (P) (Moral Foundations Theory, MFT; Graham et al., 2011). They then were given an old/new recognition test for the faces. Participants had higher recognition accuracy for faces paired with moral-upholding behaviors (M = 0.71, SE = 0.02) and moral violations (M = 0.72, SE = 0.02) relative to neutral behaviors (M = 0.67, SE = 0.02). Liberals had higher recognition accuracy for faces paired with HF behaviors in both the ego depletion (M = 0.72, SE = 0.03; Conservative: M = 0.62, SE = 0.03) and control conditions (M = 0.69, SE = 0.03; Conservative: M = 0.61, SE = 0.03). Conservatives had higher recognition accuracy for faces paired with LAP behaviors relative to HF behaviors, with a larger difference in the ego depletion condition (M = 0.75, SE = 0.03; HF: M = 0.62, SE = 0.03) relative to control (M = 0.68, SE = 0.03; HF: M = 0.61, SE = 0.03). Differences proposed by MFT in moral concerns between liberals and conservatives were consistent with face recognition accuracy patterns observed and were strengthened as a result of ego depletion.

## POSTER C-10

### DISGUST REACTIVITY AND THE INSULA

Alice Verstaen<sup>1</sup>, Janet A. Eckart<sup>1</sup>, Luma Muhtadie<sup>1</sup>, Marcela C. Otero<sup>1</sup>, Claudia M. Haase<sup>2</sup>, Virginia E. Sturm<sup>3</sup>, Bruce L. Miller<sup>3</sup>, & Robert W. Levenson<sup>1</sup>  
<sup>1</sup>University of California, Berkeley, <sup>2</sup>Northwestern University, <sup>3</sup>University of California, San Francisco

*Descriptors: disgust, insula, neural correlates*

Disgust is an emotion that warns us about potential contamination (Rozin & Fallon, 1987), producing a distinctive facial expression (wrinkled nose) and a physiological response that is often felt viscerally. Disgust has been linked to various brain regions including the insula, which is involved in the processing and integration of visceral sensations (Craig, 2009). Despite this, few studies have examined the link between insula degeneration and the experience, physiology, and expression of disgust. We studied a sample of 74 patients with neurodegenerative diseases (frontotemporal dementia, corticobasal dementia, progressive supranuclear palsy, Alzheimer's disease) and controls that were heterogeneous as to levels of insula damage. Subjects viewed films that elicit high levels of disgust and sadness. Emotional reactivity was measured using self-report, physiology, and facial behavior. Regional brain volumes (for insula, putamen, pallidum, caudate, and amygdala) were determined from structural MRIs using the FreeSurfer method. Results indicated that smaller insula volumes were associated with reduced disgust responding for self-report ( $\beta = -.331^*$ ), and physiological reactivity ( $\beta = .392^*$ ). In terms of specificity of findings, insula volume did not predict sadness reactivity, and disgust reactivity was not predicted by putamen, pallidum, and caudate volumes (lower self-reported disgust was associated with smaller amygdala volume). These findings underscore the important role that the insula plays in the physiology and experience of disgust.

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## POSTER C-11

### COGNITIVE COSTS OF REAPPRAISAL VARY ACCORDING TO STIMULUS CHARACTERISTICS AND REAPPRAISAL EXPERIENCE

Mark Ste Marie, Daniela Corno, & Catherine N.M. Ortner  
Thompson Rivers University

*Descriptors: reappraisal, cognitive costs, everyday reappraisal*

Regulating emotions can be effortful. There are few studies examining whether the cognitive costs of emotion regulation vary according to stimulus intensity and valence, or how prior regulation experience might modulate these costs. Participants (N = 85) viewed scenes varying in valence and arousal. For each photo, they reappraised the scene, suppressed their emotional expressions, or viewed the photo. Simultaneously, they performed a simple reaction time task to assess the cognitive costs of emotion regulation. Participants rated the intensity and pleasantness of their feelings to each photo. Then, they rated their use of reappraisal and suppression in everyday life. Reaction times were slower during reappraisal than viewing, partial eta-squared = .26. For men, the costs of reappraisal were lower for low than high arousal negative pictures, partial eta-squared = .16. Reappraisal led to greater decreases in intensity ratings for high than low arousal positive pictures for men, Cohen's d = .50, and for high than low arousal negative pictures for women, Cohen's d = .60. Everyday use of reappraisal predicted reaction times during reappraisal, when controlling for speed during viewing,  $r(85) = .23$ ,  $p = .018$ . The study provides a direct test of how stimulus intensity and valence modulate the cognitive costs of reappraisal. Men expended less effort in reappraising low than high arousal negative pictures, without compromising a decrease in negative feelings. In addition, experience with reappraisal in daily life was associated with lower costs of reappraising.

This research was supported in part by an Insight Development Grant from the Social Sciences and Humanities Research Council, Canada.

## POSTER C-12

### THE ROLE OF FACIAL MIMICRY IN LOW-LEVEL EMOTION PERCEPTION

Adrienne Wood, Paula Niedenthal, & Gary Lupyan  
University of Wisconsin-Madison

*Descriptors: facial mimicry, categorical perception, facial expression*

Previous work documenting the role of facial mimicry in emotion recognition has relied primarily on high-level labeling tasks, so the question remains whether facial mimicry only alters higher order representations of emotion categories or if it also shapes low-level expression perception. 122 participants completed an XAB paradigm using morphed faces on a continuum from "sad" to "angry" and an Identification Task in which they indicated whether each morphed face was "sad" or "angry." Half of the participants wore a gel facemask. While previous work using this product suggests it amplifies facial feedback and thereby improves performance on an emotion-labeling task (Neal & Chartrand, 2011), the current study found the gel mask decreases accuracy on low level perception tasks that rely on detecting more subtle cues. Specifically, we used generalized linear mixed effect binomial models and found that control subjects were 1.34 times more likely to make an accurate response compared to gel subjects across the sad-angry morph continuum,  $z(122) = 2.39$ ,  $p = .017$ . Crucially, there was no effect of the gel mask on performance on a comparable, non-face morph continuum (horse to cow). The gel also altered performance on the Identification Task, such that gel subjects made less categorical responses than controls for the emotion stimuli only. While it is unclear why the gel facemask appears to improve "emotion recognition" on some tasks but actually decreases performance on others, we conclude that altering facial feedback affects even low-level emotion perception and judgment.

## POSTER C-13

### THINKING ABOUT A LIMITED FUTURE REDUCES THE NEGATIVITY OF YOUNGER AND OLDER ADULTS' RECALL: SUPPORT FOR SOCIOEMOTIONAL SELECTIVITY THEORY

Sarah J. Barber<sup>1</sup>, Philipp C. Opatz<sup>2</sup>, Bruna Martins<sup>2</sup>, Michiko Sakaki<sup>3</sup>, & Mara Mather<sup>2</sup>

<sup>1</sup>San Francisco State University, <sup>2</sup>University of Southern California, <sup>3</sup>University of Reading

*Descriptors: aging, positivity effect, socioemotional selectivity theory*

Compared with younger adults, older adults have a relative preference to remember positive over negative information. This is known as the "positivity effect," and is typically explained by evoking socioemotional selectivity theory. According to this theory, as people get older they perceive time as being limited. This prompts people to prioritize achieving emotional gratification, leading to increased positivity. The current study tested this by manipulating younger ( $n = 80$ ) and older adults' ( $n = 79$ ) time horizons before an emotional memory task. To do this, participants reflected on either having six months left to live (Limited Time Horizon condition) or on living to the age of 120 in good health (Expanded Time Horizon condition). Participants then saw positive, negative, and neutral pictures that they subsequently tried to recall. We then conducted a 2 (Age group) X 2 (Time Horizon condition) X 2 (Valence) repeated-measures ANCOVA on the proportion of the items recalled that were positive versus negative (with recall time as a covariate). Results revealed a significant interaction between time horizon condition and valence,  $F(1, 154) = 4.98, p = .027$ , which did not interact with age,  $F < 1$ . Consistent with socioemotional selectivity theory, participants' recall was proportionally more negative,  $F(1, 154) = 5.47, p = .02$ , and less positive,  $F(1, 154) = 3.47, p = .06$ , in the expansive time horizon condition than in the limited time horizon condition. Thus, regardless of chronological age, reflecting on a limited future reduces the negativity of participants' recall.

This work was supported by grants from the National Institute on Aging (grant numbers R01-AG025340, R01-AG038043, and K02-AG032309).

## POSTER C-14

### VALIDATING FACEREADER RECOGNITION SOFTWARE

Carla P. Saldaña  
California State University, Chico

*Descriptors: electromyography, facial expressions, software validation*

FaceReader is software designed to identify six emotional facial expressions from video recordings. Our lab has previously found that FaceReader is a valid measure of some posed expressions and the goal of the current research is to examine FaceReader's ability to measure nonposed, spontaneous expressions. While being video recorded, 11 participants watched three short amusing videos, three short disgusting videos, and three short mixed (i.e., amusing and disgusting) videos. Facial electromyography (EMG) measurements of the zygomaticus major (i.e., the cheek muscle) and the corrugator supercilii (i.e., the brow muscle) were simultaneously recorded. We found that there is significantly less corrugator activity when FaceReader claims happiness and not disgust  $r(4) = -.153, p < .001$ .

## POSTER C-15

### ATTENTIONAL BIAS TO NEGATIVE INFORMATION AND DIFFICULTIES IN CONSCIOUS AWARENESS CONTRIBUTE TO THE VARIABILITY OF FAILURES IN SUSTAINED ATTENTION

Lydia C. Rodriguez-Corcelles, Frances M. Vega-Carrasquillo, Monica C. Acevedo-Molina, Dimayra Rivera-Lopez, & Giovanni Tirado-Santiago  
University of Puerto Rico

*Descriptors: attentional bias, mindfulness, sustained attention*

Rumination and worry are cognitive styles that are exacerbated in depression and anxiety. Rumination is an excessive thinking about negative self-referential information. Worry is an uncontrollable thinking about potential negative consequences of actions or events. These cognitive styles entail attentional biases that hinder affect impairing the ability to focus on adaptive strategies that impact well-being. We aimed to assess how these thinking patterns may contribute to failures in attention that could lead to errors in everyday performance. To test this we translated into Spanish and validated four self-report instruments (alphas ranging from .85-.89) that measure cognitive styles related to attention, and administered them to 463 college undergraduates. We used the Attention-Related Cognitive Errors Scale to assess everyday performance errors related to brief failures in sustained attention. The Mindful Attention Awareness Scale measures the ability to consciously self-regulate attention. We also used the Rumination sub-scale of the Rumination and Reflection Questionnaire and the Penn State Worry Questionnaire. Multiple regression analysis showed that the predictors explained 33.8% of the variance in everyday attentional errors ( $R^2 = .342, F(3,458) = 79.442, p < .001$ ). Thus our model suggests that while difficulties in conscious awareness increase attentional errors, attentional biases associated with rumination and worry generate a cognitive load that impairs everyday tasks. Models like this may contribute to develop profiles that will better inform clinical interventions.

## POSTER C-16

### CUTE CARS: REVEALING IMPLICIT AND EXPLICIT PERCEPTIONS OF AUTOMOBILES

Nadia R. Danienta<sup>1</sup>, Stephanie D. Preston<sup>1</sup>, & B. Keith Payne<sup>2</sup>  
<sup>1</sup>University of Michigan, <sup>2</sup>University of North Carolina, Chapel Hill

*Descriptors: faces, vehicles, perception*

Past research has revealed a predisposition to detect human faces and be sensitive to baby-like "cuteness." While facial and cute features are typically associated with humans, they can also be perceived and positively appraised in inanimate objects possessing similar features. For example, people prefer stuffed animals with extreme neotenous features like large, round heads and eyes. Cars can also possess cute features like highly rounded shapes and can exhibit face-like features like a mouth or smile. How do these human-like attributes influence people's perception of cars? In this study, participants classified vehicles as pleasant or unpleasant and safe or risky, using implicit ( $N = 194$ ) and explicit ( $N = 227$ ) versions of the Affect Misattribution Procedure (AMP; Payne et al., 2005). The 50 vehicles varied in the degree to which they possessed face-like attributes and separate participants ( $N = 40$ ) rated all vehicles on the degree to which they had a face, mouth, smile, or looked "cute." Results suggested that females implicitly favored vehicles with human-like qualities, especially "smiling" fronts ( $p < .05$ ). Moreover, actual female vehicle sales could be predicted by the extent of vehicle neoteny, such as being rounded, with a short front end, and having a "mouth" ( $ps < .05$ ). Males did not prefer such cars but implicitly perceived "cute" cars with rounded shapes as safer ( $p < .05$ ). Theories from evolution and biopsychology can be applied to predict human product preferences, with effects that may be even more pronounced when the level of awareness is low.

## POSTER C-17

### IS DIVERSITY THE SPICE OF LIFE? EMO DIVERSITY IN BIPOLAR 1 DISORDER

Alta du Pont & June Gruber  
University of Colorado Boulder

*Descriptors: psychopathology, emotion experience, emodiversity*

Previous research has indicated that emodiversity, defined as the variety and relative abundance of emotions that a person experiences, is associated with improved mental and physical health (Quoidbach et al., 2014). Though these robust benefits have been documented in large community samples, research has not yet examined whether emodiversity is equally prevalent in populations characterized by severe emotion disturbance. Given the central role of emotional impairment in bipolar I disorder (BD) and major depressive disorder (MDD), the present study aimed to extend previous research by examining emodiversity in individuals with remitted BD (n = 28) and remitted MDD (n = 30) as compared with healthy controls (n = 29). Consistent with previous work, healthy controls with higher levels of emodiversity showed lower levels of anxiety. However, contrary to previous findings, individuals with higher levels of emodiversity in both clinical groups showed higher levels of subsyndromal mood symptoms. These findings suggest that while emodiversity may be coincide with beneficial outcomes for healthy community samples, it may be associated with less adaptive outcomes for individuals with severe psychopathology who may not be able to reap the benefits from having a greater diversity of emotional experiences.

## POSTER C-18

### THE INFLUENCE OF COMPETITION AND COMPETENCE ON EMPATHY

Erika Weisz<sup>1</sup>, Mina Cikara<sup>2</sup>, Erik C. Nook<sup>2</sup>, & Jamil Zaki<sup>1</sup>  
<sup>1</sup>Stanford University, <sup>2</sup>Harvard University

*Descriptors: empathy, competition, competence*

Empathy, the ability to understand and share others' internal states, comprises multiple related but distinct subcomponents, including experience sharing (vicariously experiencing others' internal states) and mentalizing (explicitly considering others' internal states). Further, these empathic processes are likely driven by motives. Here, we examined one source of motivation—competition—on empathy in dyadic interactions. Participants (n = 304) were told that they would play a game with another participant (in reality, they were interacting with a computer), and randomly assigned to have a competitive, cooperative or neutral interaction with their partner. Although there was no significant difference in experience sharing between the cooperative and neutral groups, the mean score for participants in the competitive group was lower than both the neutral group (t = -1.98, p < .001) and the neutral condition (t = 1.82, p = .07). The average mentalizing score from the neutral group was higher than the competitive group (t = 2.28, p < .001) and mentalizing (r = .27, p < .001). Together, these results suggest that competition differentially influences experience sharing and mentalizing, and indicate that competence may be an important factor bearing on the manifestation of empathy.

## POSTER C-19

### LONG TERM MEDITATION PRACTICE PREDICTS CHANGES IN AMYGDALA RECOVERY FROM EMOTIONAL STIMULI

Brianna S. Schuyler<sup>1</sup>, Tammi R.A. Kral<sup>1</sup>, David M. Perlman<sup>1</sup>, David R.W. Bachhuber<sup>1</sup>, Melissa A. Rosenkranz<sup>1</sup>, Donal G. MacCoon<sup>1</sup>, Antoine Lutz<sup>2</sup>, & Richard J. Davidson<sup>1</sup>

<sup>1</sup>Center for Investigating Healthy Minds, University of Wisconsin-Madison, <sup>2</sup>Lyon Neuroscience Research Center

*Descriptors: amygdala, recovery, meditation*

An important constituent of well-being and resilience is the rapidity with which an individual recovers from adversity. In previous work we found that more rapid recovery from negative stimuli is associated with less neuroticism and with greater conscientiousness, both of which are associated with resilience. Here we used functional magnetic resonance imaging (fMRI) to assess the neural impact of long-term meditation practice on recovery from a negative challenge. We studied amygdala activation in response to negative images in 30 long-term meditators and 120 meditation-naïve individuals. We hypothesized that meditation experience would lead to greater recovery from an emotional challenge, as measured by the temporal dynamics of amygdala BOLD signal. To test this hypothesis, we compared the amygdala signal in response to an emotional stimulus during an initial reactivity period and a subsequent recovery period. Taken as a group, long-term meditators do not differ from meditation-naïve individuals in initial reactivity or subsequent recovery. However, greater lifetime hours of practice predicts greater recovery from negative (r = -0.433, p = 0.024) and neutral (r = -0.428, p = 0.026) images. In contrast, amygdala response to positive stimuli was not related to practice hours. Greater lifetime hours of practice also predicts less self-reported neuroticism (r = -0.452, p = 0.017) and unpleasantness in response to pain (r = -0.506, p = 0.036). These measures also show a relationship with greater amygdala recovery, but tests for formal mediation were not significant.

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## POSTER C-20

### PEER VICTIMIZATION MODERATES THE RELATIONSHIP BETWEEN COGNITIVE REAPPRAISAL AND CHANGES IN PARASYMPATHETIC ACTIVITY

Kara A. Christensen<sup>1</sup>, Amelia I. Aldao<sup>1</sup>, Margaret A. Sheridan<sup>2</sup>, & Kate A. McLaughlin<sup>3</sup>

<sup>1</sup>The Ohio State University, <sup>2</sup>Boston Childrens Hospital, <sup>3</sup>University of Washington

*Descriptors: cognitive reappraisal, peer victimization, respiratory sinus arrhythmia*

The emotion regulation strategy of cognitive reappraisal has been associated with adaptive physiological outcomes (i.e., higher respiratory sinus arrhythmia [RSA]; Volokhov & Demaree, 2010). However, its correlates and effects may be dependent upon contextual factors (Troy et al., 2013). One context for adolescents is peer victimization. Participants were 157 adolescents (56% female; mean age = 14.9 years, 40.5% White). They completed: 1) the Cognitive Emotion Regulation Questionnaire (Garnefski et al, 2001), which we used to create a reappraisal composite score from selected subscales, and 2) the Revised Peer Experiences Questionnaire (Prinstein et al., 2001), which assesses types of peer victimization. They participated in the Trier Social Stress Task (TSST; Kirschbaum et al., 1993) while we recorded ECG. We found significant two-way interactions between habitual reappraisal and each type of victimization when predicting RSA during the speech and math portions of the TSST. Using the Johnson-Neyman technique, we found that for high victimization participants, reappraisal was associated with greater RSA withdrawals (i.e., adaptive outcome) (regions of significance from z = 1.19 to 1.78; all p's < .05). For low victimization participants, reappraisal was associated with maladaptive blunted RSA reactivity (regions of significance from z = -1.24 to -.99; all p's < .05) In non-victimised adolescents, habitual reappraisal may reflect difficulties responding to challenges. For victimized adolescents, habitual reappraisal may protect against physiological dysregulation.

## POSTER C-21

### MULTIMODAL EMOTION ENHANCED MEMORY: CONGRUENT VS. INCONGRUENT CROSS PROCESSING EFFECTS ON RECALL

Darin R. Brown<sup>1</sup> & Joel Ellwanger<sup>2</sup>

<sup>1</sup>University of New Mexico, <sup>2</sup>California State University, Los Angeles

*Descriptors: emotion, multimodal processing, memory*

Emotion-enhanced memories are defined by enhanced encoding due to some aspect of emotional content. Since real emotional events are processed through the integration of multiple sensory modalities, the current study examined the relationship between multimodal affective processing and memory. Eighty-one participants were presented simultaneous visual and auditory stimuli that were either valence congruent or valence incongruent. Results indicated that congruent multimodal pairings led to significantly better memory. These results suggest that the nature of emotional processing systems may not only rely on a simple additive model of sensory input, but instead on the quality and congruency of emotional content. Based on these results, a future direction of this research will examine neurophysiological recordings to determine the mechanisms underlying this valence-specific effect.

## POSTER C-22

### EMOTION COPING MEDIATES THE LINK BETWEEN DIURNAL CORTISOL ACTIVITY AND DEPRESSION IN LGB EMERGING ADULTS

Luis A. Parra<sup>1</sup>, Timothy S. Bell<sup>1</sup>, Michael Benibgui<sup>2</sup>, & Paul D. Hastings<sup>1</sup>

<sup>1</sup>University of California, Davis, <sup>2</sup>The Center for Optimal Living, New York

*Descriptors: diurnal cortisol, coping style, depression*

Lesbian, gay, and bisexual (LGB) individuals report higher levels of interpersonal conflicts (D'Augelli, 2002), which could adversely impact HPA regulation, a physiological response that has been linked to depression (Guerry & Hastings, 2011). Emotion-oriented coping can be maladaptive over time, as evidenced by its link with depression (Endler & Parker, 1990). LGB individuals employ emotion-oriented coping more often than their heterosexual counterparts (Sandfort et al., 2009), but studies have not examined if this plays a role in the link between diurnal cortisol slopes and depression. We hypothesized that emotion-oriented coping would mediate the link between diurnal cortisol slopes and depression in LGB individuals. Method: LGB women (n=28) and men (n=35) (M=21.3 years, SD=2.6) completed the Beck Depression Inventory and the Coping Inventory for Stressful Situations, and provided six saliva samples collected between waking and evening which were assayed for cortisol levels. Results: Flatter cortisol slopes, emotion-oriented coping, and depression were all positively inter-correlated. Flatter cortisol slopes were not related to depression,  $\beta=0.02$ ,  $z=0.167$ ,  $p=.87$ , when emotion-oriented coping was included in the model. Sobel's test confirmed significant mediation,  $z=2.32$ ,  $p=.02$ . Discussion: These findings suggest LGB individuals' employment of emotion-oriented coping may explain the link between flattened cortisol slopes and depression. Teaching LGB individuals healthier coping strategies may help to mitigate the negative psychopathological effects of chronic stress.

## POSTER C-24

### I SUPPRESS, YOU SUPPRESS, WE ALL SUPPRESS: THE SOCIAL PROJECTION OF EXPRESSIVE SUPPRESSION USE

Liana Gheorma<sup>1</sup>, Arman D. Catterson<sup>2</sup>, Laura P. Naumann<sup>3</sup>, & Oliver P. John<sup>2</sup>  
<sup>1</sup>University of California, Irvine, <sup>2</sup>University of California, Berkeley, <sup>3</sup>Nevada State College

*Descriptors: suppression, regulation, perception*

While the negative outcomes of expressive suppression use are well established in the literature, it remains uncertain why people still use this maladaptive emotion regulation strategy when other less costly strategies exist. Over two studies, we attempt to investigate whether people's perception of others' suppression use may affect their own use of suppression. In Study 1, we recruited 196 participants using Amazon Mturk. Participants read a hypothetical scenario in which they were having lunch with their friends, and rated how much they would suppress their emotions and how much they believe their friends they would suppress their emotions in that specific situation. We found a significant, positive relationship between the amount a participant said they would use suppression, and the amount that the participant expected other people to use suppression ( $\beta=0.80$ ,  $p=0.01$ ). In Study 2, we sought to replicate these effects in a real-life social interaction. We had 212 participants form into 36 groups of 4-6 people, interacted for 45 minutes and then rated themselves and each other on a variety of measures. Using Social Relations Model (SRM) effects, we found a significant, positive relationship between a participant's self-reported use of suppression and his or her perception of others' suppression use ( $\beta=0.82$ ,  $p=0.01$ ). These findings suggest that one reason people use suppression is that they believe others use suppression, creating a possible vicious cycle of suppression. These results also hold implications for future intervention studies.

## POSTER C-25

### ATTENTIONAL CONTROL OVER THREATENING DISTRACTERS IN PSYCHOTIC DISORDERS

Prerona Mukherjee, Amri Sabharwal, Akos Szekely, Roman Kotov, & Aparajita Mohanty  
Stony Brook University

*Descriptors: schizophrenia & psychosis, emotion regulation, social cognition*

Attentional control—the ability to bias attention towards the task-relevant dimension while ignoring the task-irrelevant dimensions—is impaired in psychoses, particularly in the presence of potent emotional distractors. However, the underlying mechanisms are unknown. We examined the neural circuitry implementing attentional control while individuals with schizophrenia (N=25), psychotic bipolar disorder (N=18), and healthy adults (N=29) attended to identity of faces while ignoring their expressions, which were attended to identity of faces while ignoring their expressions, which were emotional or neutral. Results showed that emotional expressions slowed identity decisions, and this effect was greater in schizophrenia than bipolar, and in bipolar than healthy ( $p=.016$ ). Accuracy behaved the same ( $p=.044$ ). In emotional condition group modulated functional connectivity of the amygdala with the dorsal anterior cingulate cortex (dACC; -10 29 47, K=464), and dorso-medial prefrontal cortex (DMPFC; -12 46 33, K=434), Alphasim corrected at .005. These findings indicate the amygdala, which is important in evaluating the saliency of emotional expressions, has lower functional connectivity with dACC and DMPFC, regions involved in implementing attentional control distractors, in psychotic disorders, especially schizophrenia. Connectivity was also modulated by measures of behavior and functioning. This suggests disruption of attentional control due to emotional distractors is present in bipolar disorder as well as schizophrenia, and reflects lower fronto-limbic connectivity in psychosis.

## POSTER C-26

### KNOWING WHEN TO HOLD THEM, KNOWING WHEN TO FOLD THEM: GERMAN AND JAPANESE SCRIPTS FOR ANGER AND SHAME IN ROMANTIC RELATIONSHIPS

Michael Boiger<sup>1</sup>, Michaela Riediger<sup>2</sup>, Yukiko Uchida<sup>3</sup>, & Batja Mesquita<sup>1</sup>  
<sup>1</sup>University of Leuven, <sup>2</sup>Max Planck Institute for Human Development, <sup>3</sup>Kyoto University

*Descriptors: culture, interaction, close relationships*

Most emotions unfold in interaction with others. Therefore, people's relational goals may shape which emotions are expressed as well as how interaction partners respond to each other. We tested this assumption by exploring German and Japanese scripts for anger and shame interactions between romantic partners. Because anger is beneficial for the German goal of relational autonomy and harmful for Japanese harmony seeking, we expected anger to be more commonly experienced and reciprocated in German than Japanese scripts. For shame, which is more instrumental for relational harmony, we expected the opposite pattern. Moreover, because autonomy becomes more and harmony less important with age, we expected corresponding age differences. N=344 German and Japanese younger and older adults indicated for 8 anger (or shame) situations how intensely they would respond with anger/shame and to what extent they would expect their partner to reciprocate the emotion. Consistent with our predictions, Germans (vs. Japanese,  $b = .97, p < .001$ ) and younger adults (vs. older adults,  $b = .59, p < .001$ ) reported more intense anger. Unexpectedly, all groups expected anger to be reciprocated by their partner. Partially supporting our predictions, only Japanese expected shame to be reciprocated by their partner (younger:  $b = .29, p < .001$ ; older:  $b = .21, p < .002$ ), but shame intensity was the lowest in this group. Our findings, while not integrally supportive of the hypotheses, are consistent with the idea that relational goals shape emotional interactions across cultures and the life span.

## POSTER C-27

### AFFECTIVE MECHANISMS IN MICROLENDING: FROM BRAIN ACTIVITY TO AGGREGATE BEHAVIOR

Alexander Genevsky & Brian Knutson  
Stanford University

*Descriptors: prosocial lending, nucleus accumbens, scaling*

Humans sometimes give to others whom they may never meet or know. Sharing resources with strangers eludes explanation by theories that assume individuals choose purely on the basis of self-interest. To the extent that microloans impose costs on individual lenders, they represent a prosocial (or other-focused) form of lending. Neurobehavioral research suggests that affect can promote prosocial motivations, but has not established whether these mechanisms extend to large-scale scenarios involving significant financial incentives. In two studies, we show how the neural mechanisms of affect influence and predict real-world microlending behavior. First we use a large real-world Internet database of microloan requests ( $n=13,500$ ) to identify affectively impactful loan features with significant economic implications. Then we predict aggregate lending behavior with neural activity from a "focus group" of laboratory subjects ( $n=28$ ). Positive (but not negative) affective features of photographs (but not text) predicted loan request funding rate ( $t=4.34, p<0.01$ ). In the neural focus group, brain activity (i.e. in the nucleus accumbens) predicted aggregate funding rate, above and beyond behavioral choices ( $t=2.08, p=0.035$ ). Together, these findings highlight affective neuroscience's potential to account for aggregate behavior, to theoretically identify psychological mechanisms that motivate prosocial lending, and to practically improve the construction of effective funding appeals.

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## POSTER C-29

### THE ERQ-OTHER: ADAPTING THE ERQ TO MAKE OTHERS THE FOCUS OF INDIVIDUAL DIFFERENCES IN EMOTION REGULATION PROCESSES

Fausto J. Gonzalez & Oliver P. John  
University of California, Berkeley

*Descriptors: emotion regulation, individual differences*

Most emotion regulation research has focused on intrapersonal processes, rather than on the interpersonal aspects of emotion regulation. We address individual differences in the ways people try to regulate the emotions of others with the ERQ-Other, a version of the ERQ (Gross & John, 2003) adapted across 4 samples (total N=950) to study interpersonal regulation. Because we expected Acceptance to be a particularly common interpersonal regulation strategy, we added two forms, Simple Acceptance (accepting another's emotions with no expressive attempts at regulation) and Meta-Acceptance (attempting to get another person to accept their emotions). Participants completed the new ERQ-O, and psychological and social outcome variables. The 4 new scales were internally consistent (across samples average: Reappraisal  $\alpha=.80$ , Suppression  $\alpha=.77$ , Simple acceptance  $\alpha=.80$ , Meta-acceptance  $\alpha=.84$ ) and formed 4 distinct factors. Attempts to regulate the emotions of another person (Suppression mean=2.6, SD=1.13; Reappraisal mean=5.15, SD=.84; Simple acceptance mean=5.08, SD=.85) showed a healthier pattern than self-regulation (Suppression mean=3.80, SD=1.17; Reappraisal mean=4.94, SD=.94; Acceptance mean=4.42, SD=.86). Peer reports indicated that simple acceptance (correlation=.38), more than reappraisal (correlation=.16), was associated with perceptions that someone "is able to put emotionally difficult events into proper perspective," illustrating that interpersonal regulation processes have different implications for social outcomes than their intrapersonal counterparts.

## POSTER C-30

### HOW AND WHEN TRAIT ACCEPTANCE MATTERS FOR DAILY EMOTIONS AND THE DEVELOPMENT OF DEPRESSION

Lahnna I. Catalino, Eli Puterman, & Elissa Epel  
University of California at San Francisco

*Descriptors: acceptance, stress*

Acceptance is the tendency to be receptive to one's thoughts and feelings. Although no research has illustrated exactly how acceptance reduces negative emotional experience, researchers argue that acceptance may "work" by reducing rumination. In this study, we assessed the extent to which participants ruminated in response to the most stressful event of their day for seven consecutive days, in a sample of 183 women varying in chronic stress. We found that people high on trait acceptance experienced lower average negative affect in the evening, and this was mediated by lower average reports of rumination in response to daily stressors (confidence interval of indirect effect:  $-.08$  to  $-.03$ ). We also discovered that acceptance may be particularly predictive of negative affect for individuals who, on average, perceive their daily stressors to be more overwhelming (unstandardized coefficient:  $-.002$ ). Last, acceptance predicted depressive symptomology nine months later, and this effect was mediated by average, daily negative affect (confidence interval of indirect effect:  $-.08$  to  $-.03$ ). Taken together, these findings illustrate the beneficial role the individual difference, acceptance, plays in alleviating negative affect and depressive symptomology.

## POSTERC-31

### THE RISK OF UNKNOWN FEELINGS: GRANULARITY AND DEPRESSIVE SYMPTOMATOLOGY IN PEOPLE AT FAMILIAL RISK FOR SCHIZOPHRENIA

Erik C. Nook<sup>1</sup>, David Dodell-Feder<sup>1</sup>, Juston Osborne<sup>2</sup>, Lynn E. DeLisi<sup>3</sup>, & Christine I. Hooker<sup>1</sup>

<sup>1</sup>Harvard University, <sup>2</sup>College of William and Mary, <sup>3</sup>Boston VA Medical Center, Harvard Medical School

*Descriptors: granularity, depression, schizophrenia*

It is easy to understand why having relatives with schizophrenia increases one's risk for schizophrenia. However, it is less obvious why a genetic risk for schizophrenia also increases one's risk of developing mood disorders such as depression. Interestingly, mounting evidence suggests that the ability to specifically identify one's emotions, a skill called "granularity," may buffer individuals from mental illness. Here we tested whether low granularity explains the increased intensity of mood disorder symptoms in people with familial high risk for schizophrenia (FHR). Nineteen FHR participants who have at least two relatives with schizophrenia and 17 healthy controls rated their experience of 20 emotions over 28 days. We computed each participant's granularity score by reverse scoring intraclass correlations between all emotion ratings, and we measured depression symptoms using the Beck Depression Inventory (BDI). As expected, FHR participants had both greater depression and lower granularity scores than healthy controls ( $p < .05$ ). Further, across all participants, depression was negatively associated with granularity ( $r = -.62, p < .001$ ). We used a mediation model to test whether increased BDI scores in FHR participants were explained by their lower granularity, and a bootstrapped SOBEL mediation revealed a significant indirect effect ( $p = .02$ ). These data suggest that reduced emotion granularity may explain why individuals at risk for schizophrenia are more likely to develop mood disorders, an insight that could prompt early intervention strategies.

## POSTER C-33

### AN ECOLOGICAL SYSTEMS VIEW OF SOCIAL EMOTIONS: EVIDENCE FROM AMERICANS, JAPANESE, AND UYGHUR AND HAN CHINESE

Ross W. Buck<sup>1</sup>, Yi Wang<sup>1</sup>, Makoto Nakamura<sup>2</sup>, Yuping Jing<sup>3</sup>, & Edward T. Vieira<sup>4</sup>

<sup>1</sup>Univ of Connecticut, <sup>2</sup>Utsunomiya University, <sup>3</sup>Xinjiang University, <sup>4</sup>Simmons College

*Descriptors: social emotions, cultural universality, higher-level emotions*

The ecological systems view posits eight primary social emotions to emerge naturally from universal ecological contingencies involving social comparisons of relative success or failure (Buck, Emotion: A Biosocial Synthesis, 2014). These form four twins (in English): pride/arrogance, guilt/shame, envy/jealousy, and pity/scorn. They are displayed by dominance-submission behaviors. This implies two hypotheses about the cultural universality of social emotions: the hypothesis of universal labeling that there should be words describing the eight fundamental interpersonal contingency unions, and the hypothesis of universal dynamics that these words should be interrelated similarly; in all nations, cultures, languages, and historical times. These were tested in samples from four cultures-languages: America, Japan, and Uyghur and Han samples in China. Judges responded in their native language to scenarios involving social comparison with another person who achieved relative success or failure by own efforts or by chance. Judges indicated how they would feel about that person and how that person in turn would feel toward them, using the eight primary social emotions. Results indicated that words corresponding to the primary social emotions existed in each culture, and that generally they were interrelated similarly as expected. For example, across the four groups twins were positively related (Average  $r = .708$ ), as were mirror converse emotions that are hypothesized by the model (Average  $r = .756$ : e.g., if P is proud/arrogant, the Comparison Other will tend to feel envy/jealousy).

## POSTER C-34

### INTERACTIONS BETWEEN ADAPTIVE AND MALADAPTIVE EMOTION REGULATION STRATEGIES PREDICT DEPRESSION AND QUALITY OF LIFE IN GENERALIZED ANXIETY DISORDER

Andre Plate<sup>1</sup>, Amelia Aldao<sup>1</sup>, Jeannie Quintero<sup>2</sup>, & Douglas S. Mennin<sup>2</sup>

<sup>1</sup>The Ohio State University, <sup>2</sup>City University of New York-Hunter College

*Descriptors: emotion regulation, generalized anxiety disorder, adaptive and maladaptive regulation strategies*

Recent work on emotion regulation (ER) has shown that people's ability to flexibly implement ER strategies from their repertoire is associated with better mental health (e.g., Bonanno & Burton, 2013). Furthermore, recent studies have shown that adaptive strategies (e.g., reappraisal) tend to have stronger negative associations with psychopathology when individuals are also substantially using maladaptive strategies (e.g., suppression) (in healthy individuals: Aldao & Nolen-Hoeksema, 2012; in socially anxious individuals: Aldao, Jazaieri, Goldin, & Gross, 2014). We expanded upon this work in two ways: 1) by focusing on a sample of 108 individuals diagnosed with generalized anxiety disorder (GAD), and 2) by assessing not only symptoms (in this case, depression, BDI, Beck et al., 1979), but also quality of life (QOLI; Frisch, 1994). As predicted, we found significant two-way interactions between adaptive and maladaptive strategies ( $p < .04$ ). Using the Johnson-Neyman technique for regions of significance (PROCESS; Hayes, 2013), we found that, in individuals who reported high levels of maladaptive strategies (at  $z > -.87$ ), there was a negative association between adaptive strategies and depression. Moreover, these individuals who reported high levels of maladaptive strategies (at  $z > -.17$ ) also demonstrated a positive association between adaptive strategies and quality of life. These findings suggest that the use of adaptive strategies in individuals with GAD might be particularly beneficial despite maladaptive strategy use.

## POSTER C-35

### APPRAISAL IN ACTION: HABITUAL USE, TASK-BASED IMPLEMENTATION, AND ASSOCIATIONS WITH PSYCHOLOGICAL FUNCTIONING

Sarah R. Cavanagh<sup>1</sup>, Philipp C. Opitz<sup>2</sup>, Jeffrey L. Birk<sup>3</sup>, Maryna Raskin<sup>4</sup>, & Heather L. Urry<sup>4</sup>

<sup>1</sup>Assumption College, <sup>2</sup>University of Southern California, <sup>3</sup>Teachers College, Columbia University, <sup>4</sup>Tufts University

*Descriptors: emotion regulation, cognitive reappraisal, depression*

Appraisal is a process of attributing meaning to situations that contributes strongly to emotion. Cognitive reappraisal (CR), or revising original appraisals to alter emotion, is linked with psychological health. Research on CR has relied on self-reported habitual use or instructed real-time use. We know little about whether habitual use is linked with the tendency to actually use appraisal-based processes when confronted with an emotional event, whether this real-time use is associated with adaptive outcomes, and how each may relate to vulnerability for emotional disorders like depression. We evaluated habitual use, real-time use, and psychological functioning in people with ( $n=37$ ) and without ( $n=44$ ) a history of depression. We measured habitual use with the ERQ and real-time use with a picture-based task. For some trials, participants were instructed to make themselves feel "better" using any method they wished and report what they did via open-ended written responses. Based on these responses, we coded how frequently participants reported appraisal-based actions. Habitual use was not related to real-time use ( $r = -.12, p = .31$ ). Higher habitual use ( $\beta = -.24, p = .03$ ) predicted lower depressive symptoms. Higher habitual use ( $\beta = .29, p = .001$ ) and higher real-time use ( $\beta = .95, p = .009$ ) both predicted higher well-being. Depression history did not influence these relationships. These results further support the association between appraisal/CR and health, and indicate a need for more research on the association between self-reported use and actual practice.

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## POSTER C-36

### THE REGULATION OF EMOTIONAL EXPRESSIVE BEHAVIOR AND SUBJECTIVE EXPERIENCE: UNIFIED OR DISTINCT CAPACITIES?

Zhuoying Zhu & George A. Bonanno  
Columbia University

*Descriptors: emotion regulation, flexibility, expression and experience*

Theory and research on emotion regulation (ER) have shifted from an emphasis on adaptiveness of specific regulatory strategies to flexible regulation. One component underpinning regulatory flexibility is the diverse array of ER abilities people have at their disposal to meet the multitudinous and dynamic situational demands. The majority of previous studies have focused on the regulation of subjective emotional experience, however, the ability to regulate emotional expressive behavior per se has also been found to promote psychological health. As various forms of psychopathology are characterized by ER difficulties manifested in either distinct emotional response channels (e.g., intact/heightened subjective experience but flattened facial emotional expression in schizophrenia) or across multiple modalities (e.g., dampened positive experience and expression in Major Depressive Disorder), it is important to delineate regulatory abilities between different response systems. The present study compared a task when participants were instructed to up- and down-regulate their emotional facial expressions, as coded by naturalistic observers, and a task when participants were instructed to up- and down-regulate their subjective feelings as measured by electromyographic corrugator response. The results showed that upward and downward ER abilities were negatively correlated within each response channel, and the abilities to increase or decrease emotion were moderately positively correlated across expressive and affective regulation. The results suggest that regulation in different emotional response channels are separable but also reflect a broader, unified capacity. The findings could facilitate understanding ER deficits in psychopathology as well as inform treatments for enhancing ER.

## POSTER C-37

### PILOTING AN E-TRIER: COMPARING THE EFFECTS OF FACE-TO-FACE VERSUS ONLINE ELICITED SOCIAL STRESS ON EMOTION IDENTIFICATION

Anna Rabasco, George Humphrey, & Erin S. Sheets  
Colby College

*Descriptors: social stress, emotion identification, online communication*

Online communications have become a ubiquitous way of socializing for many individuals, changing the way in which they may experience social stress. As of now, the Trier Social Stress Test (TSST), proven to elicit social stress, has only been conducted in face-to-face and virtual reality environments. Additionally, it is unknown whether stress experienced face-to-face versus online differentially effects the interpretation of others' emotions. The current research piloted the effectiveness of an online text-based version of the TSST, the e-Trier. Participants were randomly assigned to a control (low stress) condition, original TSST, or e-Trier, which took place over Google Chat instant messaging. Similar to the original TSST, participants in the e-Trier condition completed mental arithmetic and then wrote about their qualifications for their dream job while receiving regular prompts but no positive feedback. Following the social stress elicitation, participants were asked to identify the emotion expressed by ambiguous, digitally morphed angry-fearful faces. Data collection is ongoing and will be completed by November 2014 (N=60). Preliminary analyses support the effectiveness of the Trier ( $F(2,11) = 4.24, p = 0.04$ ). The traditional TSST and e-Trier are hypothesized to elicit more stress than the control condition. Participants experiencing greater stress are expected to exhibit a bias toward identifying anger in ambiguous expressions. If effective, the e-Trier will help to elucidate how social stress manifests in online communication, including cyber-bullying.

## POSTERC-38

### INCREASING THE POSITIVE AND DECREASING THE NEGATIVE: EMOTION REGULATION USING COGNITIVE REAPPRAISAL AND FMRI

Jennifer D. Townsend, Nathalie Vizueta, Susan Y. Bookheimer, & Lori L. Altshuler  
UCLA

*Descriptors: cognitive reappraisal, emotion regulation, fmri*

Investigating neural mechanisms underlying emotion regulation is essential for understanding adaptive emotional processing and identifying factors contributing to psychopathology and its treatment. We used fMRI during two cognitive reappraisal tasks to study negative and positive emotion processing and regulation. Stimuli came from the International Affective Picture System (IAPS). 50 healthy participants completed a down-regulation of negative emotion task (mean age=39.4; 23F/27M); 35 participants also completed an up-regulation of positive emotion task (IAPS). Both tasks contained 3 conditions: Look Neutral, Look Positive/Negative and Increase Positive/Decrease Negative. After each image, participants rated their emotional responses. Behavioral data analysis revealed significantly higher subjective positive ratings ( $p < 0.001$ ) after up-regulation trials compared with simply viewing positive images. Similarly, less self-reported distress was observed following down-regulation trials ( $p < 0.001$ ). Areas unique to processing and regulating positive emotion included medial prefrontal cortex (BA6/10), and the anterior (BA24/32) and posterior cingulate (BA23/31). During both regulation tasks, regardless of emotion valence, participants significantly activated bilateral inferior frontal cortices (IFC: BA44/45/47). Direct comparisons of negative vs. positive emotion processing showed bilateral IFC activity also seen during cognitive reappraisal, suggesting automatic and conscious regulation of negative emotion may occur in healthy individuals via common neural substrates.

## POSTER C-39

### PSYCHOLOGICAL ESSENTIALISM OF EMOTIONS IN CHINESE SAMPLES

Nicole Betz<sup>1</sup>, Junchen Shang<sup>2</sup>, Kristen Lindquist<sup>3</sup>, & Lisa F. Barrett<sup>1</sup>

<sup>1</sup>Northeastern University, <sup>2</sup>Chinese Academy of Sciences, <sup>3</sup>University of North Carolina, Chapel Hill

*Descriptors: essentialism, categorization and reasoning, cross-cultural*

Psychological essentialism describes the tendency for individuals to assume a core, underlying essence that is shared by members of a category and gives rise to observable features. Recent research has demonstrated that American participants hold essentialist beliefs about emotions. The current research aimed to investigate essentialist beliefs about emotions in another cultural context, China. Two Chinese samples (N=51 per sample) completed an online self-report measure of psychological essentialism where they rated traits associated with essentialist beliefs for items from three broad categories: bodily states (i.e., hunger), cognitions (i.e., memories) and emotions (i.e., fear). The rated essentialist traits were fit into one of two dimensions of essentialism: analogy, suggesting a belief in similarity across category members, and homology, suggesting a belief in the naturalness of a category. We found evidence that our Chinese participants did endorse essentialist beliefs about emotion categories, and that homology and analogy scores for emotions differed. Across samples, Chinese participants viewed emotion items as more analogous ( $M=4.94, SD=.68$ ) than homologous ( $M=4.39, SD=.68$ );  $t(92)=-10.08; p < .001$ . While prior American samples showed differences in bodily state and emotion scores across the two dimensions, we found less of a distinction between analogy score of emotions ( $M=4.95, SD=.68$ ) and bodily state ( $M=5.1, SD=.77$ ) categories;  $t(92)=1.93; p=.056$ . These results set the stage for future research investigating cultural influences on the essentialism of emotions.

## POSTER C-40

### THE UNDERLYING DIMENSIONS OF PERSON PERCEPTION FROM VOICE VERSUS FACE

Xuan Zhang<sup>1</sup> & Lisa Barrett<sup>2</sup>  
<sup>1</sup>Boston College, <sup>2</sup>Northeastern University

*Descriptors: person perception, voice, face*

Do people judge a person similarly from voice versus face? This study explored and compared the underlying dimensions of person perception from voice and face. In Study 1, 66 participants freely described their first impression of a person from either voice or face, generating 3960 descriptions for voice and 4085 descriptions for face. All descriptions were classified into distinct categories, among which 14 person perception categories were selected. In Study 2, 172 participants rated on a 9-point Likert scale for the 14 categories. Two Principal Component Analyses revealed two similar underlying structures for voice and face, both having two dimensions, which we named "sociable-boring" and "nice-mean." However, some interesting differences existed: 1) for voice, Dominant loaded together with Sociable, Confident, etc., while for face it loaded together with Mean; 2) while Intelligent loaded evenly on two dimensions for voice, it loaded mostly with Caring, Trustworthy, and Conscientious for face.

## POSTER C-41

### MOVING TOWARD BUT LOOKING AWAY: INDUCED APPROACH MOTIVATION DECREASES ATTENTION TO POSITIVE STIMULI

Hannah Raila & Brian J. Scholl  
Yale University

*Descriptors: visual attention, eye tracking, approach and avoidance*

One of the ways that emotion influences our lives is by directing our visual attention. For example, when we are happy, we tend to look more at positive stimuli, but when we are anxious, we tend to look more at negative stimuli. These pairings seem natural, in part because emotions themselves are so naturally characterized by their valence—as positive (e.g. happiness) or negative (e.g. anxiety). But emotions also differ in their motivational orientation (being approach-oriented or avoidance-oriented), so that two emotions with opposite valences can both be approach-oriented (as with happiness and anger). Here we explore whether motivational orientation can influence attention directly and independently of valence. Subjects were induced to have an approach ( $n = 20$ ), avoidance ( $n = 20$ ), or control ( $n = 20$ ) mindset—in a way that did not also change the valence of their emotional state. Subjects then viewed pairs of photographs that differed in their emotional content (positive, negative, or neutral) while their sustained overt attention was measured with eye tracking. Surprisingly, approach-minded subjects looked less at positive (vs. neutral) scenes, compared to a control group,  $p = .015$ . (No such difference occurred for avoidance-minded subjects.) This counterintuitive pattern might be explained by the notion that even neutral stimuli are viewed in a more positive light when we are approach-minded. We conclude that the influence of emotion on attention is controlled not just by valence, but also by motivational state alone.

## POSTER C-42

### EMPATHY FOR POSITIVE AND NEGATIVE AFFECTIVE STATES IN SOCIAL ANXIETY DISORDER

Maria A. Mateen<sup>1</sup>, Amanda S. Morrison<sup>1</sup>, Faith A. Brozovich<sup>1</sup>, Jamil Zaki<sup>1</sup>, Philippe R. Goldin<sup>2</sup>, & James J. Gross<sup>1</sup>  
<sup>1</sup>Stanford University, <sup>2</sup>UC Davis

*Descriptors: empathy, anxiety*

Social anxiety disorder (SAD) is associated with excessive theorizing about others' state of mind (Hezel & McNally, 2014), suggesting intact cognitive empathy (CE). Less is known about affective empathy (AE), or the extent to which individuals with SAD vicariously experience the emotions they identify. Given that SAD is associated with increased negative and decreased positive emotionality, we hypothesized that individuals with SAD would show impairments in AE for positive emotion, but no impairments in AE for negative emotion or for CE. Participants with SAD ( $n=32$ ) and matched healthy controls completed the PANAS and the empathic accuracy task (Zaki et al. 2008), in which they watched videos of targets describing a positively or negatively valenced emotional experience. Participants continuously rated either the target's (TA) or their own affective state (OA). CE was defined as the correlation between TA and the targets' self-ratings. AE was defined as the correlation between OA and the targets' self-ratings. A 2 Group x 2 Valence ANOVA on AE revealed a significant interaction,  $F(1, 124) = 4.028, p < .05$ . Follow-up t-tests revealed that the groups differed significantly in AE on positive videos,  $t(124) = 3.04, p < .01$ , but not negative videos,  $t(124) = 0.20, p > .80$ . This interaction remained significant when controlling for the effect of trait positive affect,  $p = .047$ . Parallel analyses on CE revealed non-significant main and interaction effects,  $ps > .55$ . Therefore, SAD may be associated with a decreased ability to vicariously experience others' positive emotions.

## POSTER C-43

### HOW DO PLEASANT EXPERIENCES COMPARE? EXAMINING THE NEURAL BASES OF AESTHETICS AND AMUSEMENT

Christine Wilson-Mendenhall<sup>1</sup>, Nicole Betz<sup>1</sup>, Maria Gendron<sup>1</sup>, Ajay Satpute<sup>2</sup>, & Lisa Barrett<sup>1</sup>

<sup>1</sup>Northeastern University, <sup>2</sup>Pomona College

*Descriptors: affect, reward*

Neuroscience often reduces subjectively pleasant experiences to a unitary reward system in the brain, without considering differences in these experiences. In an fMRI study ( $N = 26$ ), we examined two very different kinds of pleasant experience: visual aesthetics and conceptual amusement. We made use of the simple visual and novel conceptual features of "doodle" designs, which are meaningless visual designs that only become interpretable (and often amusing) when a caption is supplied. Aesthetic color versions of the designs were initially presented without captions to evoke pleasant sensory experiences, and then verbal captions were presented with the same designs (classic "doodles") to evoke pleasant conceptual experiences. Participants rated the feeling evoked by each design after viewing each block of images. While viewing the color designs and while viewing the conceptual designs, activity in subcortical regions involved in reward processing (e.g., ventral putamen) increased as the intensity of participants' pleasant feelings increased ( $p < .05, 20$  contiguous voxels). Activity in key regions of the salience network (e.g., amygdala, anterior insula) also correlated with subjective pleasantness ratings, with color pleasantness associated with more dorsal activity, and with conceptual pleasantness associated with more ventral activity. Consistent with this dorsal-ventral gradient, fronto-parietal regions involved in attention were associated with color pleasantness whereas "default" network regions involved in social inference were associated with conceptual pleasantness.

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## POSTER C-44

### A MOMENT OF CONSCIOUSNESS: THE EFFECT OF TIMING ON AFFECTIVE VISION

Lauren Sears, Jolie Wormwood, Erika Siegel, Justin Kopec, Karen Quigley, & Lisa Feldman Barrett  
Northeastern University

*Descriptors: affect, CFS*

Previous research has shown that unseen affective information influences person perception, but the temporal boundaries of this effect are unknown. The current experiment utilized continuous flash suppression (CFS) to present affective information outside of conscious awareness. In the task, invisible smiling, scowling, or neutral faces were presented to one eye while a consciously perceived neutral face was presented to the other eye. Participants (N=34) rated the likeability, reliability, and trustworthiness of the seen, neutral face. The seen neutral faces were presented at three different timing intervals: 150ms before, 150ms after, and concurrent with the unseen affective faces. As predicted, results revealed that neutral faces paired with unseen smiling faces were perceived as significantly more trustworthy, reliable, and likable than those paired with unseen scowling faces, but only in the concurrent timing condition. There was no effect of unseen face type on person perception in the other timing conditions. These data suggest that affective information presented outside of awareness exerts its strongest influence on the perceptions of neutral faces when it is presented during the same moment of consciousness. This indicates that our effect is not the result of priming and that the unseen affective information may actually influence person perception by influencing what the seen neutral face looks like at the perceptual level.

## POSTER C-45

### THE ROLES OF AGE AND MOTIVATION IN THE USE AND EFFECTIVENESS OF SITUATION SELECTION

Kimberly M. Livingstone & Derek M. Isaacowitz  
Northeastern University

*Descriptors: emotion regulation, aging, goals*

Situation selection is an emotion regulation strategy in which people enter into or avoid situations based on anticipated emotional effects, and is theorized to be effective for both younger and older adults (Urry & Gross, 2010). Socioemotional selectivity theory (SST) suggests that the pro-hedonic goals of older adults are chronically activated, whereas those of younger adults are active in only some contexts (Mather & Carstensen, 2005). We hypothesized that younger adults (YAs) would engage in pro-hedonic situation selection only when the situation called for it, whereas older adults (OAs) would engage in it regardless of situational goals. To test this, we instructed YAs (N=69) and OAs (N=76) to minimize their negative emotions (regulate) or to choose what interested them (just view) while they chose stimuli (videos, articles, slideshows) of varying valences to view for 15 minutes. We also tested how situation selection influenced mood by having participants rate their mood after every item. A significant age x goal x valence interaction on choice,  $F(2,268)=4.04$ ,  $p=.02$ , showed that YAs in the just view condition chose more negative items than YAs in the regulate condition and OAs in both conditions, who did not differ. Multilevel modeling showed that negative choices predicted negative mood,  $t(137)=-8.17$ ,  $p<.001$ , and positive choices predicted positive mood,  $t(137)=9.02$ ,  $p<.001$ ; this did not interact with age or goal. These findings suggest that pro-hedonic situation selection is effective across age groups, but that OAs are more likely to spontaneously use it.

## POSTER C-46

### PARSING POSITIVITY IN THE BIPOLAR SPECTRUM: EXAMINING THE EFFECT OF CONTEXT ON SOCIAL JUDGMENTS

Andrew D. Peckham, Timothy R. Campellone, Steven Wandrey, & Sheri L. Johnson  
University of California, Berkeley

*Descriptors: bipolar spectrum, context, positive emotion*

Recent research suggests that family members of those with bipolar disorder (BD) are more likely to endorse being highly social and confident (Higier et al., 2014). Models of BD vulnerability emphasize both reward and positive affect (PA); this study tested the influence of reward context and PA on social judgments in people at risk for BD. Using the Hypomanic Personality Scale and a familial history of BD survey, we recruited 92 low risk and 61 high-risk participants who also completed a state PA measure (PANAS). Participants viewed 24 faces with calm expressions on the computer and made judgments related to trust, likability appraisals (ratings of liking others and extent to which others like them), and approach behavior for each face. Next, participants were asked to imagine themselves in rewarding, prosocial, or neutral scenes, and the 24 faces were re-presented after each scene. Regardless of context (reward/prosocial/neutral), repeated measures (baseline/post-context) ANOVA showed that the at-risk group reported being more likely to approach others,  $F(1, 149) = 18.55$ ,  $p < .001$ , and endorsed liking others and thinking others liked them more  $F(1, 149) = 9.59$ ,  $p < .01$ . Group differences seem driven by PA: in the at-risk group, PA was correlated with appraisal ( $r_s > .40$ ,  $p_s < .001$ ) and approach ratings ( $r_s > .41$ ,  $p_s < .001$ ;  $r_s$  were non-significant in the low-risk group and significantly less robust than the at-risk group). Social judgments seem tied to state PA in this population; future work is needed to replicate these findings in people meeting clinical criteria for BD.

NIMH 5T32MH089919 to both ADP and TRC.

## POSTER C-47

### A FLEXIBLE INFLUENCE OF AFFECTIVE FEELINGS ON CREATIVE AND ANALYTIC PERFORMANCE

Jeffrey R. Huntsinger & Cara Ray  
Loyola University Chicago

*Descriptors: affect as information, cognitive performance*

Considerable research shows that positive affect improves performance on creative tasks and negative affect improves performance on analytic tasks. Common explanations of these results emphasize that positive affect and negative affect directly trigger different styles of cognitive processing. The present research examined if affective feelings may have flexible, rather than fixed, effects on cognitive performance. Consistent with the idea that positive and negative affect signal the value of accessible processing inclinations, the influence of affective feelings on performance on analytic or creative tasks was flexibly responsive to the relative accessibility of different styles of processing. In Experiments 1 (N=85) and 2 (N=206) when a global processing orientation was accessible happy participants generated more creative uses for a brick (Exp. 1) and successfully solved more remote associates and insight problems (Exp. 2) than those in sad moods. When a local processing orientation was accessible this pattern reversed (affect x processing style interactions Exp. 1 and 2,  $F(1, 81)=8.92$ ,  $p=.004$ , and  $F(1, 202)=15.72$ ,  $p<.001$ ). In Experiments 3 (N=215) and 4 (N=127) when a heuristic processing style was accessible happy participants were more likely to commit the conjunction fallacy (Exp. 3) and showed less pronounced anchoring effects (Exp. 4) than sad participants. When a deliberative processing style was accessible this pattern reversed (affect x processing style interactions Exp. 3 and 4:  $B=-0.65$  (SE=.246), Wald Chi-square=7.05,  $p=.008$  and  $F(1, 123)=12.98$ ,  $p<.001$ ).

## POSTER C-48

### SOCIAL-EMOTIONAL FLUENCY (SEF): SELF REPORT AND BEHAVIORAL CODING

Ashley M. Motlong & Jo-Anne Bachorowski  
Vanderbilt University

*Descriptors: social interactions, affect-related signals*

Social-emotional fluency (SEF) is a term we use to describe individual differences in the quality and dynamics of emotion-related communication. Compared to those low in SEF, people high in SEF are thought to have larger and more flexible social-emotional "toolkits" that they draw from to display the right sorts of behavior at the right times. This range and flexibility are expected to be especially evident in socially ambiguous or awkward situations. As first steps towards construct validation of the SEF construct, we have developed a SEF self-report questionnaire (i.e., SEF Scale) and behavioral coding scheme. The SEF Scale has good psychometric properties: Across three studies, the scale has excellent internal consistency (Cronbach's  $\alpha = .92$ ), three reliable factors (Adaptability, Expressivity, and Receptivity), and good convergent and discriminant properties. Video data for the behavioral coding scheme were collected from individuals who participated in a mock interview for a peer-mentor position. Facial movements, hand gestures, eye gaze, and nonverbal vocalizations were coded in 1-s increments over three 30-s segments. Preliminary inter-rater reliability was adequate (median ICC(2,1) = .80, range .23-.99). Results from these studies suggest that SEF is a distinct and measurable construct that captures the quality and timing of signals in social interactions.

## POSTER C-49

### EMOTIONAL AROUSAL DISRUPTS SUBSEQUENT TOP-DOWN SELECTIVE ATTENTION IN YOUNGER AND OLDER ADULTS

Matthew R. Sutherland<sup>1</sup>, Douglas A. McQuiggan<sup>1</sup>, Jennifer D. Ryan<sup>1</sup>, & Mara Mather<sup>2</sup>

<sup>1</sup>Rotman Research Institute at Baycrest, <sup>2</sup>University of Southern California

*Descriptors: attention, learning and memory, cognitive aging*

Previous work indicates that emotional arousal enhances later memory for high priority stimuli but also impairs later memory for low priority stimuli (Sakaki, Fryer, & Mather, 2014; Sutherland & Mather, 2012). But what if priority has not yet been established? Arousal tends to impair top-down executive function and so it may be more difficult to selectively focus on one item over another after a brief surge of arousal. We examined whether exposure to a positive or negative picture would influence older and young adults' ability to subsequently selectively focus on a goal-relevant item and remember it later. For both age groups arousal reduced eye movements to, and recognition memory for, goal-relevant neutral stimuli. These results suggest that arousal impairs initiation of selective attention and that arousal's impact on subsequent top-down attention and memory encoding are preserved in older age.

## POSTER C-50

### INFLUENCES OF AROUSAL, COGNITIVE DEMAND, AND WORKING MEMORY LOAD ON EMOTION REGULATION STRATEGY CHOICE

Philipp C. Opitz<sup>1</sup>, Sarah J. Barber<sup>2</sup>, Heather L. Urry<sup>3</sup>, & Mara Mather<sup>1</sup>

<sup>1</sup>University of Southern California, <sup>2</sup>San Francisco State University, <sup>3</sup>Tufts University

*Descriptors: emotion regulation choice, selection, optimization and compensation with emotion regulation, cognitive reappraisal*

People can regulate their emotions using a variety of emotion regulation (ER) strategies. Two frameworks make predictions about which factors lead people to choose one ER strategy over another. First, the emotion regulation (ER) choice framework suggests that people select ER strategies that either allow them to engage with or disengage from situations; it further suggests that people prefer disengagement strategies when arousal and/or cognitive demand are high, and/or when motivational relevance is low. Second, the selection, optimization, and compensation with emotion regulation (SOC-ER) framework suggests that people choose strategies based on available resources. In the present study, we tested hypotheses relevant to both frameworks by identifying the factors associated with choosing situation-focused reappraisal (an engagement, resource demanding, ER strategy) and choosing strategy distraction (a disengagement, less-resource demanding, ER strategy). Using a picture-based task, we found that factors derived both from the ER choice framework (arousal, cognitive demand) and the SOC-ER framework (working memory load) affect ER choice. Participants ( $N = 49$ ) were more likely to choose distraction (and less likely to choose reappraisal) under high arousal than low arousal ( $p < .001$ ), under high cognitive demand than low cognitive demand ( $p < .001$ ), and under high working memory load than low working memory load ( $p = .007$ ). We did not find evidence of interactive effects between the two frameworks. Collectively, our results support both the ER choice and SOC-ER frameworks.

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## POSTER C-51

### DIARY OF AN AWE-STRUCK KID: INVESTIGATING THE EFFECT OF THE EMOTION OF AWE ON CURIOSITY USING DIARY METHODOLOGY

Craig L. Anderson, Amie M. Gordon, & Dacher Keltner  
UC Berkeley, Department of Psychology

*Descriptors: curiosity, awe, diary methodology*

The present work uses daily diary methodology to build on previous work at the trait level establishing the effect of awe on curiosity. First, we test if dispositional awe-proneness predicts the daily experience of curiosity. Secondly, we examine if daily experiences of awe predict daily experience of curiosity. **Methods.** 106 students participated in a study consisting of completing trait measures and a 14-day daily diary: 1,366 diary responses were collected. Each day of the diary participants reported how much awe, pride, amusement, compassion, and happiness they experienced that day. In terms of daily curiosity participants responded to one item from the Curiosity and Exploration Inventory that had been modified to fit the daily diary format. **Trait-level analyses.** 1) Dispositional awe-proneness is positively related to daily experience of curiosity ( $B = .62, p < .001$ ); 2) controlling for openness to experience and general positive affect the effect of awe on curiosity remained ( $B = .49, p < .001$ ); and 3) controlling for six other discrete positive emotions the effect of dispositional awe on daily curiosity remained ( $B = .31, p = .025$ ). **State-level analyses.** 1) Daily experience of awe positively predicted daily curiosity ( $B = .35, p < .001$ ); 2) controlling for general positive emotion (i.e. happiness) the effect of awe on curiosity remained ( $B = .27, p < .001$ ); and 3) the effect of awe on curiosity remained after controlling for all other discrete positive emotions assessed in the daily diary ( $B = .24, p < .001$ ).

Templeton Foundation; Greater Good Science Center.

## POSTER C-52

### BE HAPPY AND GET MORE: RESPONSES TO POSITIVE AFFECT AND POSITIVE INTERPERSONAL EVENTS IN LATE ADOLESCENTS

Jessica L. Hamilton<sup>1</sup>, Jonathan P. Stange<sup>1</sup>, Michael Vanderlind<sup>2</sup>, Andrew A. Gepty<sup>1</sup>, Hallie S. Avizad<sup>1</sup>, Lyn Y. Abramson<sup>3</sup>, & Lauren B. Alloy<sup>1</sup>  
<sup>1</sup>Temple University, <sup>2</sup>Yale University, <sup>3</sup>University of Wisconsin-Madison

*Descriptors: positive emotion, positive events, depression*

Although the occurrence of positive events may protect against depression (Lakdawalla, 2008), little research has evaluated factors that contribute to the occurrence of positive interpersonal events. Given research indicating that dampening predicts more dysphoric mood and amplifying positive affect increases positive mood (Gilbert et al., 2013; Raes et al., 2012), the present study evaluated whether responses to positive affect (dampening, emotion-focused, self-focused) predicted the occurrence of positive interpersonal events. A total of 260 late adolescents (Mean age = 18.16 years; 69% female) completed a measure of responses to positive affect at Time 1. At Time 2, participants completed a questionnaire and interview about positive interpersonal events that occurred since Time 1. Path analyses indicated that greater dampening of positive affect predicted fewer positive interpersonal events ( $\beta = -.28, p < .001$ ). In contrast, responses to positive affect that were emotion-focused ( $\beta = .26, p < .01$ ) predicted a greater number of positive interpersonal events. There was no effect of self-focused responses to positive affect on subsequent positive events. Findings suggest that dampening positive affect may reduce future positive events, whereas amplifying positive affect may actually contribute to more positive interpersonal events in the future. Better understanding the role of responses to positive affect in the occurrence of life events and psychopathology may be an important avenue for future research to aid in the development prevention and intervention programs.

This work was supported by National Institute of Mental Health grants MH77908 and MH102310 to Lauren B. Alloy. Jessica L. Hamilton was supported by National Research Service Award 1F31MH106184 from NIMH.

## POSTER C-53

### GENDER DIFFERENCES IN EMOTIONAL GRANULARITY ARE PRESENT ONLY IN RETROSPECT

Maria Gendron, Katie Hoemann, & Lisa Feldman Barrett  
Northeastern University

*Descriptors: emotion experience, granularity, gender*

People who are granular experience emotional states in a discrete and precise manner that is finely tuned to situations. We investigated whether stereotypes about gender differences may extend to emotional "granularity." 18 male and 33 female participants completed three granularity measures: (1) the RDEES, a retrospective and global measure of emotional experience (of particular interest is the differentiation sub-scale), or (2) momentary-ratings of emotional experience through the Experience Sampling Method (ESM) over a one to two week period. Consistent with predictions, we found that men ( $M=4.0319, SD=1.19261$ ) reported having less differentiated emotional lives than women ( $M=4.6367, SD=1.01716$ ) on the RDEES,  $t(49)=-1.909, p=0.031$ . In granularity derived from momentary ratings, no gender differences emerged (positive granularity:  $M=0.2741, SD=0.09761$ ; negative granularity:  $M=0.2172, SD=0.13311$ ) and females (positive granularity:  $M=0.2798, SD=0.08608$ ; negative granularity:  $M=0.2084, SD=0.12024$ ); positive granularity  $t(48)=-0.214, p=0.416$ ; negative granularity  $t(48)=0.236, p=0.4075$ . These results are consistent with prior findings that men and women do not differ in the intensity of their emotional experience when responding in the moment, but do when assessed in a global and retrospective manner (Barrett et al., 1998). Overall, these data suggest that gender stereotypes likely inform men and women's understanding of their emotional lives, without necessarily impacting the degree of differentiation in the experiences of emotion themselves.

## POSTER C-54

### CAN AWARENESS OF YOUR BODY CHANGE HOW YOU FEEL? EXPLORING HOW INTEROCEPTIVE SENSITIVITY INFLUENCES AFFECTIVE REACTIVITY

Justin Kopec, Erika H. Siegel, Jolie B. Wormwood, Lauren Sears, Karen Quigley, & Lisa F. Barrett  
Northeastern University

*Descriptors: affective reactivity, interoception*

We explored the relationship between the ability to perceive changes in body state (interoceptive sensitivity) and the intensity and variability in responses to evocative stimuli (affective reactivity). We predicted that interoceptive sensitivity would moderate the relationship between physiological responsiveness and self-reported affect. To assess interoceptive sensitivity, participants ( $N=104$ ) completed a heartbeat detection (HBD) task. They were asked to determine whether a series of audio tones were concurrent or not with their own heartbeat. To measure affective reactivity, participants were presented with evocative pictures and sounds and they self-reported valence and arousal while a variety of peripheral physiological responses were recorded. HBD sensitivity moderated the relationship between facial muscle activation in the corrugator supercilii and zygomaticus major muscle groups and corresponding valence ratings, as well as the relationship between cardiac impedance measures (i.e. stroke volume, cardiac output, and left ventricular ejection time) and corresponding arousal ratings. These relationships were stronger for individuals who were more interoceptively sensitive. Importantly, HBD sensitivity remained a significant moderator of these relationships even when controlling for gender, BMI, and self-reported body vigilance. These data are the first to demonstrate that interoceptive sensitivity can moderate the relationship between physiological reactivity and self-reported valence, and so fill an important gap in the existing literature.

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## POSTER C-55

### THE EFFECTS OF RACE-BASED SOCIAL REJECTION ON TASK-RELATED AND NOCTURNAL AUTONOMIC FUNCTIONING

Benjamin D. Greenberg<sup>1</sup>, Jon-Thomas Duldulao-Lee<sup>2</sup>, Abdiel Flores<sup>3</sup>, Wendy Berry Mendes<sup>2</sup>, & Aric A. Prather<sup>2</sup>

<sup>1</sup>University of California, Berkeley, <sup>2</sup>University of California, San Francisco,

<sup>3</sup>Columbia University

*Descriptors: race, autonomic functioning, rejection*

African Americans (AAs) are at greater risk for cardiovascular disease compared to Caucasians (CAs); however, the underlying mechanisms accounting for this health disparity is unknown. Perceived discrimination may be an important contributor and while research demonstrates that discrimination is linked to alterations in autonomic functioning, e.g., reduced heart rate variability (HRV), which in turn is related to cardiovascular risk, the bulk of these studies are cross-sectional. The goal of this ongoing study is to test whether race-based social rejection (RBR), manipulated experimentally in participants' home, results in reduced HRV measured in response to the RBR and nocturnally across the night in a sample of AA and CA men and women compared to an undisturbed baseline. In total, 36 participants (50% AA) were randomized to either RBR or a same-race rejection (SRR), comprised of adapted Cyberball and a social rejection speech tasks, carried out surreptitiously via off-site confederates. Autonomic functioning was measured continuously during a resting baseline, during the task and across the night using a Polar heart rate monitor strap. Preliminary results suggest that the rejection paradigm led to task-related reductions in HRV. These data were contrasted with HRV measures obtained the day prior where the participant was exposed to a neutral task (i.e., watching a nature video). Findings from this study provide preliminary evidence critical to understanding how race-based rejection and autonomic functioning may underlie racial inequalities in cardiovascular health.

## POSTER C-56

### SOCIAL NORMS SHIFT PREFERENCES FOR HEALTHY AND UNHEALTHY FOODS

Emma M. Templeton & Jamil Zaki  
Stanford

*Descriptors: social norms, conformity, food preferences*

Recent research shows that social norms influence individuals' preference for particular foods (e.g., Fuji apples and Alfalfa sprouts), suggesting that norms might be used in interventions to encourage healthy eating. But a successful intervention must do more than change preferences for particular foods, and instead should increase individuals' general preferences for healthy foods. The present study directly investigates the feasibility of such an intervention by using a rule-based norm. Participants rated their preferences for a series of healthy and unhealthy foods and then learned about their peers' preferences for those same items. In fact, peer feedback was manipulated such that half of participants were exposed to a healthy norm (i.e., the group consistently rated healthy foods higher than unhealthy foods) and half of participants were exposed to an unhealthy norm (i.e., the group consistently rated unhealthy foods higher than healthy foods). There was a norm by food interaction ( $F(1,86)=14.21, p < .001$ ) such that participants in both norm conditions rated healthy foods similarly, but participants in the unhealthy norm condition preferred unhealthy foods ( $M=4.80, SD=0.80$ ) more than participants in the healthy norm condition ( $M=3.91, SD=1.00$ ),  $t(43) = -3.27, p < .01$ . These preferences extended to a novel set of food items, suggesting that participants conformed to a general rule rather than simply updating their preferences for particular items. These preferences also persisted three days after exposure to norms, suggesting avenues for powerful health interventions.

Department of Defense.

## POSTER C-57

### USING EYE TRACKING TO INVESTIGATE CHILDREN'S AND ADULTS' PERSPECTIVE TAKING IN EMOTIONAL SITUATIONS

Hannah J. Kramer, Kristin H. Lagattuta, & Liat Sayfan  
University of California, Davis

*Descriptors: eye tracking, theory of mind, affective forecasting*

We explored which aspects of past emotional events children and adults find most relevant when predicting people's future-oriented mental states. We tracked eye movements while 4- to 11-year-olds and adults ( $N=248$ ) predicted and explained target characters' thoughts (bad, good), emotions (worried, happy), and decisions (approach, avoid) upon re-encountering a perpetrator whose actions caused them positive emotions twice (PP), negative emotions twice (NN), or positive and negative emotions (NP, PN). The perpetrator appeared on one side of two past event images and the target on the other. Participants also completed a theory of mind task. We computed an attention bias to the perpetrator (looking time to perpetrator-LT to target)/(LT to total scene). A 4(age) x 2(sex) x 2(timing: initial, recent) x 4(trial: PP, NN, NP, PN) ANOVA revealed main effects of age, trial, and timing, qualified by a Trial x Timing interaction ( $F_s > 3.22, p_s < .024$ ). All age groups exhibited a perpetrator bias, and this bias strengthened with age. Participants looked to perpetrators more when they caused negative versus positive emotions and when their actions shifted from helpful to harmful (or vice versa). Controlling for age, participants with superior theory of mind exhibited a stronger perpetrator bias ( $R^2=.07, \beta=.18, p=.014$ ). Advances in social cognition enable children to better simulate another's perspective in emotional contexts—by stepping into the target's "shoes" and focusing outward on what he or she experienced. Negative or inconsistent events facilitated this perspective-taking approach.

National Science Foundation.

## POSTER C-58

### EXAMINING THE INFLUENCE OF EMOTIONAL DISPLAYS ON PROCESSES UNDERLYING MOTIVATION FOR SOCIAL ENGAGEMENT IN RECENT-ONSET SCHIZOPHRENIA

Timothy R. Campellone<sup>1</sup>, Eehwa Ung<sup>2</sup>, Madison Takeuchi<sup>2</sup>, Brandy Truong<sup>2</sup>, Charlie Ward<sup>2</sup>, & Danielle A. Schlosser<sup>2</sup>

<sup>1</sup>University of California, Berkeley, <sup>2</sup>University of California, San Francisco

*Descriptors: schizophrenia, social motivation, emotional displays*

People with schizophrenia often have decreases in motivation, which are thought to be due in part to difficulties using rewarding outcomes to guide behavior. Social interactions, however, provide additional information to help guide motivational processes, namely a social partner's emotional display. In this study, we investigated three aspects of social motivation: anticipated pleasure, decision-making, and effort expenditure. To date, 13 people with recent-onset schizophrenia (ROS) and 27 controls have completed a computerized task where they interacted with social partners represented by either a smiling or neutral facial display. Repeated interactions with each partner allowed us to investigate the influence of emotional displays on each motivational process using mixed effects regression models. Compared to controls, ROS have difficulties using rewarding outcomes to inform the anticipation of pleasure,  $B = -.65, SE = .28, p = .02$ , and effort,  $B = -19.0, SE = 4.86, p < .01$ , which trends towards an association with social functioning ( $r = .47, r = .31$ , respectively). Interestingly, these group differences do not appear to be the result of difficulties using emotional displays as both groups anticipate more pleasure,  $B = 1.77, SE = .21, p = .02$ , and expend more effort for smiling partners,  $B = -3.48, SE = 1.89, p = .02$ . These findings suggest that using a social partner's emotional display to guide aspects of motivation is largely intact and may be associated with social functioning in ROS and may be leveraged as part of interventions aimed at boosting social motivation.

NIMH 5T32MH089919 to TRC NIMH R34 to DAS.

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