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Maternal Major Depression and Synchrony of Facial Affect During Mother-Child Interactions

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Maternal history of Major Depressive Disorder (MDD) dramatically increases children's risk for developing depression, highlighting the critical need for further research on the specific processes involved in the intergenerational transmission of depression. Although previous research suggests that maternal depression may adversely affect the quality of mother–child interactions, less is known about the role of maternal MDD in the moment-to-moment changes in affect that occur during these interactions. The goal of this project, therefore, was to examine synchrony of facial displays of affect during a positive (Vacation Planning) and a negative (Issues Discussion) mother–child interaction, and how this synchrony may be impacted by maternal history of MDD. In doing so, we examined both concurrent and lagged synchrony of facial affect. We recruited 341 mother–child dyads (child average age = 9.30 years; 50.1% girls; 71.6% Caucasian) with and without a maternal history of MDD. Facial electromyography (EMG), continuously recorded during those tasks, was used to index mother and child facial affect. We found that a maternal history of MDD was associated with reduced concurrent synchrony and lagged synchrony (mother facial affect predicting changes in child facial affect) of positive affect during Vacation Planning. Reduced concurrent mother–child synchrony of positive affect during the discussion was also associated with an increase in child self-reported sad affect from before to after the discussion. These findings provide promising initial evidence for how the dynamic exchange of positive affect during mother–child interactions may be disrupted in families with maternal MDD history.

General Scientific Summary
The findings of this study suggest that maternal history of depression is associated with a potentially maladaptive pattern of dynamic exchange of emotions during mother–child interactions, specifically a diminished exchange of positive affect during pleasant discussions.

Keywords: emotional expressions, mother–child interaction, maternal depression, facial electromyogram (EMG), synchrony

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The authors declare that they have no conflict of interest. The study was approved by Binghamton University Institutional Board (IRB Protocol 1984-12). This project was supported by National Institute of Mental Health Grant MH098060 awarded to B.E. Gibb. We thank Ashley Johnson, Lindsey Stone, Andrea Hanley, Sydney Meadows, Michael Van Wie, Ariel Ravid, Devra Alper, Eric Funk, Effua Sosoo, Aliona Tsypes, and Aholibama Lopez for their help in conducting assessments for this project.

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Relation Between Cognitive and Behavioral Strategies and Future Change in Common Mental Health Problems Across 18 Years

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Major depressive disorder (MDD), generalized anxiety disorder (GAD), and panic disorder (PD), constitute common mental disorders that may have chronic and disabling courses. Cognitive and behavioral theories posit that lack of engagement in certain strategies (goal persistence, self-mastery, positive reappraisal) increases vulnerability toward these disorders. Further, scar effect theories assert that experiencing more of these disorders may diminish engagement in such strategies within individuals across time. However, dynamic longitudinal associations between cognitive–behavioral strategies (CBS) and disorder counts across adulthood are not well understood. Using bivariate latent difference score models, this study aimed to test the dynamic trajectories between disorder counts and each CBS across 18 years. Participants were 3,294 community-dwelling adults ages 45.62 years (SD = 11.41, range = 20–74; 54.61% female) who took part in 3 waves of measurement spaced 9 years apart. Self-mastery, disorder counts, and their change were not significantly related. However, higher within-subject increase in goal persistence (but not self-mastery or positive reappraisal) led to greater future decline in disorder counts, but not vice versa. Last, within individuals, greater prior levels of goal persistence and positive reappraisal predicted larger subsequent reduction in disorder counts, and vice versa. The reciprocal, bidirectional associations between specific CBS (goal persistence, positive reappraisal) and disorder counts support both vulnerability and scar models of depression and anxiety. Treatments for MDD, GAD, and PD should attempt to enhance perseverance and optimism. Theoretical and clinical implications are further discussed.

General Scientific Summary

Greater within-subject increased goal persistence (but not positive reappraisal or self-mastery) led to larger future declines in disorder counts. However, within-subject change in disorder counts did not substantially influence future change in each cognitive or behavioral strategy. Further, higher initial levels of goal persistence and positive reappraisal (but not self-mastery) predicted subsequent larger decrease (or smaller increase) in disorder counts, and vice versa.

Keywords: chronicity, depression, anxiety, strategy, latent difference

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Major depressive disorder (MDD), generalized anxiety disorder (GAD), and panic disorder (PD) subsume a latent cluster distinctly marked by pervasive and dysregulated negative affect (Waszczuk, Kotov, Ruggero, Gamez, & Watson, 2017). These disorders place persons at risk for a wide array of cardiovascular, respiratory, neuroendocrine, and autoimmune diseases (Denollet, Pedersen, Vrints, & Conraads, 2013; Hausteiner et al., 2010). Moreover, such clinical syndromes incur substantial costs in terms of in-

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This study was conducted in compliance with American Psychological Association ethical standards in the treatment of human participants and approved by the Institutional Review Board (IRB). Informed consent was obtained from participants as per IRB requirements at Harvard University, Georgetown University, University of California at Los Angeles, and University of Wisconsin. Because this study used a publicly available data set, it was exempt from IRB approval.

Additional analyses, as well as all syntax, results, and Open Science Framework references, are provided in the online supplemental materials. The data used in this publication were made available by the Data Archive on University of Wisconsin—Madison Institute on Aging. Since 1995 the Midlife Development in the United States study has been funded by the John D. and Catherine T. MacArthur Foundation Research Network, National Institute on Aging Grant P01-AG020166, and National Institute on Aging Grant U19-AG051426. The original investigators and funding agency are not responsible for the analyses or interpretations presented here. The authors do not have any conflicts of interest or financial disclosures.

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Reward Processing and Future Life Stress: Stress Generation Pathway to Depression

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Blunted reward sensitivity and life stress are each depressogenic. Additionally, individuals with clinical and psychosocial vulnerabilities are prone to experience or evoke dependent life stressors (e.g., interpersonal conflict) that, in turn, increase depression risk. However, no previous study has investigated the role of neural vulnerability factors in generating life stress. Therefore, the current study investigated whether a neural measure of reward sensitivity prospectively predicts the generation of life stress, which in turn mediates effects of these neural processes on subsequent depression. Participants were 467 never-depressed adolescent girls. Using event-related potentials, neural sensitivity to the difference between monetary reward and loss (the Reward Positivity [RewP]) was assessed at baseline. Negative life events were assessed twice via interview over the ensuing 18 months, yielding an index of total life stress over the follow-up period. A self-report dimensional measure of depression symptoms was administered at baseline and follow-up. After accounting for baseline age, depression, and race, a blunted RewP predicted greater dependent, but not independent, life stress over the follow-up. Mediation analyses revealed a significant indirect effect of the RewP on follow-up depression through dependent, but not independent, life stress. Our results suggest that neural processing reward and loss plays a crucial role in depressogenic stress generation.

General Scientific Summary

The present study demonstrates that a blunted neural response to reward predicts the occurrence of behaviorally dependent stressful life events over the subsequent 18-months, and that this "stress generation" effect partially explains the association between neural reward dysfunction and later depression. These findings provide insight into one mechanism by which a blunted response to reward may contribute to the development of later depression.

Keywords: depression, life stress, reward positivity (RewP), reward processing, stress generation

Numerous studies indicate that life stress is implicated in the etiology of depressive disorders (Brown & Harris, 1978; Kendler, Karkowski, & Prescott, 1999). Dependent life events, in which the individual's actions may have contributed to the occurrence of the event (e.g., a relationship ending), are particularly influential in the onset of depression and tend to have a greater impact on depressive disorders than independent events (e.g., relocating to a new area due to a change in parent's job; Kendler et al., 1999). Stressful life events increase during adolescence (Ge, Lorenz, Conger, Elder, & Simons, 1994; Rudolph & Hammen, 1999), and

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Findings from the current manuscript, including the stress generation effect of the RewP and the indirect effect of the RewP on subsequent depression via dependent life stress, were presented as a poster at the 32nd annual meeting of the Society for Research in Psychopathology. We gratefully acknowledge the support of all study participants. We are also indebted to the dedicated efforts of the ADEPT study coordinators and team for their work on the project. This study was supported by National Institute of Mental Health Grant R01 MH093479 awarded to Roman Kotov. All procedures in the current study (Personality Development and Vulnerability to First Episode Depression) were approved by the Stony Brook University Institutional Review Board.

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Anxiety Sensitivity and Intolerance of Uncertainty Facilitate Associations Between Generalized Pavlovian Fear and Maladaptive Avoidance Decisions

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Generalization of Pavlovian fear to safe stimuli resembling conditioned-danger cues (CS+) is a widely accepted conditioning correlate of clinical anxiety. Though much of the pathogenic influence of such generalization may lie in the associated avoidance, few studies have assessed maladaptive avoidance decisions associated with Pavlovian generalization. Lab-based assessments of this process, here referred to as aversive Pavlovian-instrumental covariation during generalization (APIC-G), have recently begun. The current study represents a next step in this line of work by conducting the first examination of anxiety-related dimensions of personality that may exacerbate APIC-G. Specifically, we test anxiety sensitivity (AS) and intolerance of uncertainty (IU) as moderators of relations between Pavlovian generalization and maladaptive avoidance decisions in 102 undergraduate students with wide-ranging levels of IU and AS. Results indicate a facilitative effect of AS on this APIC-G process, with AS strengthening relations between Pavlovian generalization and maladaptive generalized avoidance whether operationalizing Pavlovian generalization with psychophysiological (fear-potentiated startle) or behavioral measures. Additionally, IU was found to facilitate APIC-G when indexing Pavlovian generalization with behavioral but not fear-potentiated startle measures. Moderating effects of AS were most pronounced for stimulus classes bearing the highest resemblance to CS+, whereas effects of IU were most pronounced for the stimulus class with the highest level of threat ambiguity. Results implicate AS and IU as risk factors for the maladaptive decisional correlates of Pavlovian generalization and suggest that established associations between these traits and clinical anxiety may derive, in part, from their enhancement of maladaptive APIC-G.

General Scientific Summary

The generalization of fear from dangerous situations to resembling safe situations is a core feature of clinical anxiety, and much of the dysfunction from such generalization lies in its association with excessive avoidance. In the present study, we identify two personality-based risk factors for clinical anxiety (anxiety sensitivity [AS], intolerance of uncertainty [IU]) that facilitate the degree to which generalization of fear is associated with maladaptive avoidance decisions. Such findings implicate levels of IU and AS as cross-diagnostic indicators of the extent to which maladaptive generalized avoidance may be contributing to the symptom profile of a given anxiety patient.

Keywords: generalization of conditioned fear, behavioral avoidance, fear-potentiated startle, anxiety sensitivity, intolerance of uncertainty

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The transfer of fear from a learned danger cue to resembling safe stimuli, referred to as Pavlovian fear-generalization, is widely accepted as a pathogenic marker of anxiety pathology by clinicians and theorists alike (e.g., Craske et al., 2009; Ehlers & Clark, 2000; Foa, Steketee, & Rothbaum, 1989). Such generalization is thought to contribute to clinical anxiety by unduly increasing the number of innocuous environmental stimuli that are capable of eliciting and maintaining anxious distress. In support of this view, results across lab-based, case-control studies implicate heightened Pavlovian fear-generalization as a transdiagnostic correlate of clinical anxiety (Cha et al., 2014; Kaczkurkin et al., 2017; Lissek & Grillon, 2012; Lissek at al., 2010, 2014; Morey et al., 2015), but no such studies assess the avoidance decisions thought to accompany generalized Pavlovian fear in the anxiety disorders (e.g., Dymond, Dunsmoor, Vervliet, Roche, & Hermans, 2015; Ehlers & Clark, 2000; Foa et al., 1989; Pittig, Treanor, LeBeau, & Craske, 2018). This is a significant omission, given that much of the pathogenic

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This study was approved by the University of Minnesota Institutional Review Board (Protocol: 1503S66301; Title: "Personality, Decision-Making, and Fear-Learning").

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Pleasant Olfactory Cues Can Reduce Cigarette Craving

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Cigarette craving is a cardinal feature of smoking, which is the leading preventable cause of death. Despite its clinical relevance, there remains a pressing need to develop new approaches for controlling craving. Although olfactory cues (OCs) are especially well suited to reduce affectively charged cravings, there has been surprisingly little research on the topic. We investigated the strategic use of OCs to reduce cigarette craving. Abstinent smokers (N = 232) initially sampled and rated a series of OCs. Participants then were exposed to in vivo smoking cues, which produced robust cigarette cravings. During peak craving, they were randomly assigned to sniff one of three types of OCs (all of which they had previously sampled) while their craving, and a set of responses thought to be associated with craving, were assessed. OCs that a participant had rated as pleasant reduced craving more than did exposure to odor blank (i.e., neutral) or tobacco-related OCs. This effect persisted over the course of 5 min. In addition, smokers with the most specific autobiographical memory systems were most responsive to the craving-reducing effects of pleasant OCs. About 90% of participants reported they could imagine using a pleasant OC to curb their craving in the natural environment. The present data suggest that OCs show promise for controlling cravings and highlight the need to conduct further research to test whether OCs may prove useful alone or in combination with existing approaches as a smoking cessation intervention.

General Scientific Summary

Given observed relations between craving and smoking relapse, novel approaches to craving relief are sorely needed. This laboratory study revealed that, following exposure to a lit cigarette to generate a peak craving state in abstinent smokers, the strategic use of olfactory cues reduced craving throughout the course of a 5-min assessment. These findings support continued investigation of olfactory cues as a potential component of a smoking cessation intervention.

Keywords: cigarette, smoking, tobacco, craving, olfaction

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Smoking rates have fallen over the past 50 years; nevertheless, nearly 40 million Americans still smoke (Jamal et al., 2016), a fraction of the billion smokers worldwide (World Health Organization, 2008). Smoking is the chief preventable cause of death in the United States (Centers for Disease Control and Prevention, 2014). Most adult smokers want to quit, and about half report trying in the past year (Centers for Disease Control and Prevention, 2011). Yet nearly half who try to quit relapse within 2 weeks. Even with nicotine replacement, relapse is common, leading to calls for new treatments (Baker et al., 2011). Novel interventions are urgently needed to help the millions who wish to quit, and psychology's emergence as a hub science supports its unique role in this

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Mary A. Marchetti is now at the Counseling Psychology Program, College of Education, University of Oregon.

The self-reported urge data reported here were presented in a symposium at the annual meeting of the Society for the Study of Motivation, May 24 2018, San Francisco, CA. This study received approval from the University of Pittsburgh Institutional Review Board study PRO13110547.

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Alterations in Facial Expressivity in Youth at Clinical High-Risk for Psychosis

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Negative symptoms, such as blunted facial affect, are core features of psychotic disorders that predict poor functional outcome. However, it is unknown whether these impairments occur prior to the onset of psychosis. Understanding this phenomenon in the psychosis risk period has significant relevance for elucidating pathogenic processes, as well as potential for informing a viable new behavioral marker for broader social dysfunction and clinical course. The current study sought to determine the nature of facial expression deficits among individuals at clinical high-risk (CHR) for developing psychosis using a comprehensive approach, incorporating clinical interview ratings and automated facial expression coding analysis. A total of 42 CHR and 42 control participants completed clinical interviews and digitally taped segments were submitted into an automated, computerized tool to assess for 7 facial expressions (joy, anger, surprise, fear, contempt, disgust, sadness). Furthermore, relationships between facial expressions and social functioning and available scores on a psychosis conversion risk calculator from a total of 78 participants (39 CHR and 39 controls) were examined. Relationships between measures were also investigated (data was available for the Prodromal Inventory of Negative Symptoms among 33 CHR and 25 controls). Findings from clinical interview indicated that the CHR group exhibited elevated blunting. Furthermore, automated analyses showed that the CHR group displayed blunting in expressions of joy but surprisingly, increased anger facial expressions. Lastly, irregularities in facial expressions were related to decreased social functioning and increased psychosis conversion risk calculator scores, signaling heightened likelihood of conversion to psychosis. These findings suggest that alterations in facial expressivity occur early in the pathogenesis of psychosis and provide evidence for the efficacy of higher resolution measures of facial expressivity in psychosis research.

General Scientific Summary
These findings are significant in that they indicate blunting in facial affect occurs prior to the onset of psychosis and are related to clinical course and outcome. These data also shed light on methodological approaches for assessing facial expressivity and the pathogenesis of psychosis, more broadly.

Keywords: clinical high-risk, schizophrenia, facial expressions, negative symptoms, functioning

This study suggests that individuals at clinical high-risk (CHR) for psychosis exhibit alterations in facial expressivity which are related to impairments in social functioning and increased psychosis conversion risk calculator scores.

Negative symptoms are core features of psychotic disorders that predict a number of poor clinical outcomes and are resistant to currently available treatments (Fervaha, Foussias, Agid, & Remington, 2014; Foussias, Agid, Fervaha, & Remington, 2014; Kirk-

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Emotional False Memory in Autism Spectrum Disorder: More Than Spared

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To advance what is known about how emotions affect memory in autism spectrum disorder (ASD), we examined emotional false memory for negative, positive, and neutrally valenced photographs comprising scripts of everyday events in a verbal IQ-case matched sample of youth ages 8–14 with ASD ($N = 38$) and typical development (TYP, $N = 38$). The groups exhibited many similarities. Their task performance during a recognition task including previously seen and unseen photographs was largely comparable. They evidenced high hit rates for previously viewed photographs, and low false alarm rates for lure photographs that were inconsistent with the scripts. Both ASD and TYP groups showed relatively higher false alarms for lure photographs depicting previously unseen causes of scenario outcomes (causal errors) compared to errors for script-consistent lure photographs that showed extra potentially related events (gap-filling errors). In both groups, task performance was associated with verbal working memory, but not attention deficit hyperactivity, anxiety, or depression symptoms. However, the ASD group made more causal and gap-filling errors on negative and positive, but not neutral, lures compared to TYP, indicating that viewing emotionally valenced stimuli made it harder to discriminate previously seen and unseen photographs. For the ASD group, task performance was associated with compulsive, ritualistic, and sameness behaviors and stereotypic and restricted interests. Findings suggest that the integration of cognition and emotion in ASD is altered and associated with the presence of repetitive behaviors. The impact of these results on the lives of individuals with ASD and implications for psychosocial interventions are discussed.

General Scientific Summary
The current study shows that youth with ASD are able to remember many aspects of scripts of common everyday events similarly to those with TYP. However, when emotional versus neutral materials are presented as lures, youth with ASD perform more poorly than TYP, suggesting that the presence of emotional materials may distort memory for emotional everyday events in those with ASD.

Keywords: memory, adolescence, emotion, autism, gist

Memories for emotion-laden events are important for the human experience. Most people vividly remember the joy associated with experiencing love, winning prizes or seeing new beautiful places, as well as the pain associated with loss, loneliness, and disappointment. These emotional memories help organize our sense of who we are, and are critical determinants of our approach and avoidance behaviors as we navigate the world (Eaton & Anderson, 2018).

A considerable body of research has examined the interplay between emotions and memory throughout the life span in indi-

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