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Background: Bile acids, mainly ursodeoxycholic acid (UDCA) and its conjugated species glyoursodeoxycholic acid (GUDCA) and tauroursodeoxycholic acid (TUDCA) have long been known to have anti-apoptotic, anti-oxidant and anti-inflammatory properties. Recent studies have started to investigate the effect of UDCA, GUDCA, TUDCA on the same mechanisms in the brain.

Methods: A total of thirty-five studies were identified through databases, investigating the role of the UDCA, GUDCA and TUDCA in the regulation of apoptosis, oxidative stress and inflammation, in pre-clinical models of neurological, neurodegenerative and neuropsychiatric disorders.

Results: Findings show that UDCA reduces apoptosis, reactive oxygen species (ROS) and tumour necrosis factor (TNF)- α production in neurodegenerative models; GUDCA decreases lactate dehydrogenase, TNF- α and interleukin (IL)-1 β production in neurological models; TUDCA reduces ROS and IL-1 β production in neurodegenerative models, and decreases apoptosis and TNF- α production, and increases glutathione production in neuropsychiatric models.

Conclusion: Overall, this review confirms the therapeutic potential of UDCA, GUDCA and TUDCA in neurological, neurodegenerative and neuropsychiatric disorders.

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Inflammatory reactivity to the influenza vaccine is associated with avoiding strangers and approaching close others

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Background: Recent pre-clinical data suggest that increases in inflammation may not uniformly lead to social withdrawal. However, no known human research has examined the association between inflammation and approach and withdrawal behavior, nor how that behavior may differ based on whether the target is a close other or stranger.

Methods: 31 adult participants received the influenza vaccine to elicit a mild inflammatory response. Participants provided blood samples before and 24 hours after the vaccine, and completed a computer task assessing automatic approach and withdrawal behavior toward a close other and strangers.

Results: Greater increases in interleukin-6 (IL-6) following the vaccine were associated with more accurately avoiding strangers, $b = .13$, $p = .06$, and less accurately approaching them, $b = -.15$, $p = .02$. IL-6 increases were also associated with faster reaction times approaching a close other, $b = -.411.64$, $p = .03$.

Conclusion: These findings reveal that increases in IL-6 following the influenza vaccine are associated with behavior suggesting vigilance in avoiding unfamiliar social targets and approaching close

others. This adds to a growing literature suggesting that inflammation is linked with both social withdrawal and social approach, depending on the target.

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Impact of Loneliness on Diurnal Cortisol in Youth during COVID-19

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Background: Loneliness is associated with psychopathology in youth, though we do not know how loneliness gets under the skin in ways that impact long-term health and development. Loneliness may influence youths' patterns of diurnal cortisol, a predictor of health across the lifespan. The COVID-19 pandemic represents a salient period in which to study this question as the physical-distancing measures put in place to contain the virus have resulted in greater loneliness in youth.

Methods: We examined the prospective association between loneliness and diurnal cortisol in youth during the COVID-19 pandemic using hierarchical linear modelling.

Results: Greater loneliness was associated with higher levels of cortisol at waking, $B = 0.10$, $p = .002$, and a blunted cortisol awakening response, $B = -0.003$, $p = .003$, a pattern of functioning that increases risk for adverse mental and physical health outcomes across the lifespan.

Conclusion: This study is the first to examine the association between loneliness and diurnal cortisol in early adolescence and identified a mechanism contributing to biological markers of distress during the COVID-19 pandemic. Findings underscore the importance of developing and distributing strategies to mitigate feelings of loneliness among youth.

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Variation of stress and mental health measures in dyads of parents and children during the onset of the COVID-19 pandemic compared to a baseline: an opportunity study

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To assess the impact of the COVID-19 pandemic on stress and mental health using a baseline measure, we designed an opportunity study in which dyads of parents ($N = 133$, 74% mothers) and children (59% girls, 11-12y/o) from a research project conducted in 2019 (baseline) were recontacted for data collection during the onset of the pandemic in April 2020 (T2) in Canada. Dyads completed self-report measures of perceived stress, anxiety and emotion regulation (ER) strategies. Mixed ANOVAs revealed an increase in parents' stress ($p < .001$, $n^2p = .27$) and state anxiety ($p < .001$, $n^2p = .16$) compared to baseline, but not in their children (resp. $p = .19$, $p = 0.28$). Dyads' anxiety sensitivity remained unchanged (resp. $p = .03$, $p = .28$). Parents showed similar use of ER strategies ($p = .22$) while children showed similar use of cognitive reappraisal ($p = .32$) but less emotional suppression ($p = .005$, $n^2p = .06$) and co-rumination ($p < .001$, $n^2p = .18$) at T2 compared to baseline. Finally, parental and children scores on mental health measures were not correlated at either time. Our results suggest that during the onset of the pandemic, parents and children responded differently in terms of stress and mental health and used different emotion regulation strategies.

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A tale of two pandemics: enhancing the immune system by addressing sedentary behaviors

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Background: The prognosis after a Sars-Cov-2 infection is substantially worse for individuals suffering from a non-communicable disease associated with the rampant sedentary pandemic characterized by insufficient physical activity (e.g. cardiovascular disease, obesity, diabetes). The HPA-axis, a prominent structure in aligning metabolic and inflammatory processes, is considered instrumental in this relation.

Methods: However, theoretically this provides a promising opportunity to strengthen immune functioning: reversing sedentary behaviors. A literature review was performed to investigate this hypothesis.

Results: Scientific evidence shows that interrupting prolonged sitting combined with moderately intensive exercise (~30minutes every day: walking, cycling), potentially extended with 2/3 sports activities every week (~45minutes, Heart Rate Reserve ~70%), provides an optimal exercise protocol to support immune functioning. Small but significant positive effects on immune markers are generally reported within 3 to 12 weeks.

Conclusion: On a population scale and under pandemic conditions reducing sedentary behaviors and promoting physical exercise are likely to have a significant positive effect on the overall health prognosis.

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Immune Activation among Maltreated and Non-maltreated Children

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Background: Child maltreatment has widespread biological and social impacts with consequences for social and academic functioning as well as physical and emotional health outcomes. Little is known about maltreatment impacts on immune function in young children. This study examined immune activation following routine inoculation among maltreated and non-maltreated children.

Methods: Children aged 12-60 mos were recruited from general pediatric and child protection team clinics (N=35; 43% female). Physical abuse/neglect was verified from child protective service records. Blood samples were collected prior to influenza immunization, and 4- and 8- week follow-up. Influenza IgG and IgM levels were quantified by enzyme-linked immunosorbent assay and analyzed for change over time, controlling for age and sex.

Results: Maltreated and non-maltreated children showed different patterns of immune activation following routine immunization. Case report data supported the efficacy of booster doses.

Conclusion: These findings suggest maltreatment has direct impacts on immune system reactivity to immunization, with potential impacts for health.

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Using ecological momentary assessment to track how contemplative mental training is implemented into everyday life

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Scientific investigations of the effects of meditation-based mental training are increasingly relying on studies in naturalistic settings. Ecological momentary assessment (EMA) approaches are well-suited to explore training-induced mental states (i.e., affect, thought content, stress experience), and the degree to which training effects carry over to practitioners' daily routines. We will present findings from the ReSource Project, a large-scale, longitudinal 9-month mental training study. We compared results from an EMA study (N=289) with previous ReSource findings on stress, affect and thought content, which were gathered using complementary methods (retrospective assessments, acute stress in the TSST, and acute practice effects (pre vs. post meditation session)). While our findings corroborate prior evidence suggesting differential effects of distinct mental training modules on arousal states and present-moment focus, effects on acute stress reactivity and associated cortisol levels did not translate to ecological contexts. Together, our results suggest partial overlap regarding presence-focus and arousal, but an overall limited generalizability of mental training effects from acute laboratory stress to individuals' daily lives.

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Sex differences in a double-blind randomized clinical trial with minocycline: pilot findings on the key role of the immune system in treatment-resistant depressed female patients

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Background: The Minocycline in Depression (MINDEP) study is a 4-weeks double-blind, placebo-controlled clinical trial, investigating the efficacy of minocycline in treatment resistant depressed (TRD) patients with major depressive disorder, and C-reactive protein (CRP) \geq 1mg/L.

Methods: We explored sex differences in the effects of study arms and CRP groups (CRP \geq 3mg/L; CRP < 3mg/L) on HAMD-17 variation from baseline to week-4.

Results: Independent samples t-test detected a significant difference between minocycline (M) and placebo (PL) groups only in males but not females, with M group (N=8) showing greater improvement in comparison with PL group (N=9) (p=0.046).