The Research Round Up series helps to bridge the gap between academic researchers and busy professionals. This publication provides summaries of ten research studies from the field of trauma and childhood maltreatment published during the first two quarters of 2020.

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Several studies have shown that childhood maltreatment is associated with structural changes in several brain regions. In this study, DeRosse and colleagues (2020) examined whether self-reported experience of childhood maltreatment is linked to the quality of the connections between two key areas of the brain involved in processing rewards (the orbitofrontal cortex and the nucleus accumbens). A large group of adults (n=122) without current or a past history of mental health problems, underwent a Diffusion Tensor Imaging (DTI) scan. This is a magnetic resonance imaging (MRI) based technique used to get detailed information about the neural tissues through which messages pass between different areas of the brain. The researchers found that, after taking into account the effects of age and sex, a history of maltreatment was associated with poorer structural connections between the nucleus accumbens and the orbitofrontal cortex. Moreover, subsequent analyses showed that the overall severity of childhood trauma, rather than a specific type of maltreatment, drove this result. These findings indicate that early experiences of maltreatment may reduce the quality of the neural connections between brain regions that are central to reward processing. This is consistent with behavioural studies and with the functional neuroimaging literature which shows that a history of abuse and neglect is associated with alterations in brain activity during reward processing and associative learning. This study, therefore, contributes to the growing literature which suggests that early adverse experiences can lead to long-lasting alterations in reward processing, with potential impact on physical and mental health outcomes.

Individuals with a history of multiple forms of victimisation (i.e. polyvictimisation), including childhood maltreatment, are more likely to experience further victimisation and stressful life events in the future. Previously, researchers identified four potential pathways to such polyvictimisation: (1) living in a dangerous neighbourhood, (2) living in a dangerous family, (3) living in a chaotic or multiproblem family, and (4) having emotional and psychological symptoms. While the first three pathways suggest ecological processes, the fourth pathway implies that individual characteristics may increase vulnerability to victimisation and stressful life events across contexts. For example, the ability to perceive, anticipate, and avoid personal victimisation before it occurs may represent an individual protective factor. Using longitudinal data (n = 1986) from a twin study, Tanksley and colleagues (2020) examined the extent to which certain individual characteristics predict later victimisation. In particular, they explored the possible role of cognitive factors (general cognitive ability, theory of mind, self-control) and psychological symptoms (internalising and externalising psychopathology symptoms). They found that self-control, symptoms of conduct disorder, and anxiety were all related to polyvictimisation even after partially taking into account statistically for the role of family environment and genetic factors. After fully accounting for genetic factors, only self-control was a statistically significant predictor of polyvictimisation. In other words, the authors report a striking finding – that self-control is an individual protective factor that may reduce vulnerability to further victimisation despite early adverse experiences.


Complex trauma/maltreatment
Increased risk of further victimisation following childhood maltreatment
Exposure to childhood maltreatment during development is associated with greater risk of psychopathology regardless of when it occurs. However, it is unclear whether there are time-windows during development (known as sensitive periods) during which the harmful impact of early adverse experiences may be particularly potent. In their recent study, Dunn and colleagues (2020) performed analysis on a large sample (n= 4,580) to determine if there are time periods during which exposure to physical and sexual abuse are associated with a greater incidence of mental health difficulties. Timing of childhood abuse exposure was categorised by age of first exposure – very early (0–3 years), early (4–5 years), middle (6–7 years), and late (8+ years) childhood. In line with previous studies, childhood abuse exposure at any age was linked with increased internalising and externalising symptoms at 10 years of age. Moreover, the researchers found that very early childhood abuse exposure results in worse mental health outcomes. Further analyses suggested a latency between onset of maltreatment exposure and emergence of symptoms. *In summary, the results of this study suggest that childhood abuse increases the risk of later mental health problems irrespective of the developmental time-window in which it occurs. However, very early childhood may be a particularly sensitive period.*

In their practitioner review, Lacey & Minnis (2020) consider the strengths and limitations of adverse childhood experience (ACE) scores – an increasingly common and influential approach for measuring childhood adversity in public policy, research and clinical practice. The strength of this approach, according to the authors, lies in its wide availability, uncomplicated administration and simple understanding of the scores. Moreover, this tool has increased awareness of the link between early adversity and increased risk of a wide range of mental and physical health problems. However, the authors also highlight a number of limitations. For example, ACE scores are largely reliant on retrospective reports, which are likely to be biased/unreliable, and assume that each subtype of early adversity has the same association with later outcomes. Also, ACE screening measures do not consider the specific patterning of ACEs (e.g. which adversities co-occur) and overall there is an unclear rationale, according to the authors, for why the ten original ACEs categories were selected. This is perhaps linked to the lack of an internationally agreed definition of early adversity which then also leads to a lack of consistency in the items used in different ACE screening questionnaires. The review also highlights key messages for practitioners and identifies areas for future research. These include the need for longitudinal studies (with high quality prospective ACEs data) to examine the impact of ACEs’ co-occurrence, timing, frequency, duration and severity. The review also warns against deterministic and possibly stigmatising messages in clinical, public policy and public health settings. These, in the authors’ view, can occur especially when inaccurate and insensitive communication takes place in relation to risk/resilience and causation versus correlation. Finally, the review highlights the need for a broader focus on the structural ‘causes’ of ACEs, especially on issues such as poverty and inequality.


Readers interested in ACEs may wish to refer to the comprehensive ACE report published by the Early Intervention Foundation.
Childhood maltreatment is associated with an increased frequency and severity of interpersonal problems in adulthood. This has been proposed as a possible mediating factor between early adversity and later increased risk of mental health problems. In this investigation, Maier and colleagues (2020) examined whether alterations in interpersonal distance preference and the processing of social touch may underpin maltreatment-related maladaptive interpersonal behaviour. 92 adults with low, medium, and high levels of childhood maltreatment exposure were tested with an interpersonal distance paradigm and a social touch functional magnetic resonance imaging (fMRI) task during which they rated the perceived comfort of slow/affective touch (i.e. 5 cm/s) and fast/discriminative touch (20 cm/s). Individuals with more severe childhood maltreatment scores preferred larger interpersonal distance and experienced fast touch as less comforting compared with participants with no or moderate childhood maltreatment experiences. At the neural level, differences were observed in the right somatosensory and posterior insular cortex, which correlated with lower comfort ratings. This may reflect increased salience detection, or how the brain tells you what you should pay attention to, and a motor preparation, or how the brain prepares your body to move to initiate a flight/flight response. Moreover, severe childhood maltreatment was also associated with decreased activation in the right hippocampus in response to slow/affective touch which may reflect finding less comfort in gentle touch. In summary, childhood maltreatment was associated with a preference for a larger interpersonal distance and a tendency to experience fast touch as less comforting.

In the context of treatments for posttraumatic stress disorder (PTSD), sudden symptom improvements have been found to predict positive outcomes at the end of treatment. However, it remains less clear what cognitive factors may contribute to sudden improvements during treatments. In this study by Wiedemann and colleagues (2020), a large sample of PTSD patients received trauma-focused cognitive therapy for PTSD based on Ehlers and Clark’s (2000) cognitive model. This treatment aims to diminish the patient’s sense of current threat by modifying maladaptive meanings of the trauma. The researchers found that patients who experienced sudden improvements in symptoms (n= 76) during treatment reported better outcomes at the end of therapy and follow-up compared to a group of patients who did not experience sudden improvements during treatment (n=87). Moreover, the group of patients who experienced sudden improvements showed concurrent improvements in cognitive processes. These included a reduction in excessively negative appraisals about the self, others and self-blame, as well as an improvement in the memory characteristics, which included reductions in the vividness, disjointedness and perceived nowness of the trauma memories. Moreover, the researchers found that a reduction in excessively negative appraisals preceded the sudden improvement in symptoms during treatment. This study suggests that changes in negative trauma-related cognitive processes precede sudden therapeutic gains in PTSD symptoms.

Single incident trauma/PTSD

A review of psychological interventions for posttraumatic stress disorder and depression amongst refugees

Child, adolescent, and adult refugees represent a vulnerable population for the development of mental health problems, including posttraumatic stress disorder (PTSD) and depression. In this review, Kip and colleagues (2020) conducted a meta-analysis of randomised control trials (RCTs) to determine the efficacy of psychological interventions for PTSD and/or depression in refugees. They were able to identify 17 RCTs—14 with adult (aggregate n = 1,108 participants) and 3 with young refugees (aggregate n = 151). The outcome of the meta-analysis revealed that interventions for adult PTSD and depression led to a large improvement in symptoms in this population. This seemed to persist over an average follow-up period of 6 months. However, the considerable methodological variability between studies and differences in intervention models (such as EMDR, narrative exposure therapy and interpersonal therapy) suggests that the efficacy of psychological interventions may vary and this needs to be further investigated. Moreover, the limited number of trials with young refugees precluded the authors from drawing any initial conclusion regarding the potential efficacy of psychological interventions for this age group. Overall, the findings suggest that psychological interventions can effectively reduce symptoms of both PTSD and depression in adult refugees. However, the considerable differences between studies suggest that the treatment efficacy may vary depending on intervention models and settings.

Existing studies have documented alterations in immune-related inflammatory responses among individuals with posttraumatic stress disorder (PTSD). Immune-related inflammation, and in particular the chemical messengers that regulate the immune system response, can directly affect brain regions that have been implicated in the development of PTSD. Therefore, it is possible that alterations in the immune system that regulates inflammatory responses may confer increased risk for the emergence of PTSD symptoms. However, only a few investigations have examined if differences in inflammatory responses may predict future PTSD symptoms. In this recent study, Michopoulos and colleagues (2020) found that levels of immune-related inflammation immediately after trauma exposure predict future symptoms of PTSD. In particular, the concentrations of proinflammatory messenger TNFα and IFNγ in the immediate aftermath of trauma were lower in individuals who later developed chronic PTSD. Although elevated inflammation is often considered to be a pathogenic factor, in this study reduced inflammation/immune response in the immediate aftermath of trauma was identified as a risk factor for future PTSD. According to Christine Heim (2020) this counterintuitive finding reminds us that appropriate and time-limited elevated biological responses to adverse events are not always a sign of damage and can have adaptive functions. Overall, the findings suggest that assessing the level of immune-related inflammatory responses immediately after trauma exposure may help us to identify individuals at greater risk of developing PTSD in the future.

In this study, Mary and colleagues (2020) studied the brain network involved in memory retrieval among survivors of the 2015 Paris terrorist attacks. Participants underwent a functional magnetic resonance imaging (fMRI) scan during which they were asked to suppress the emergence of memories of previously learned word-object pairs. Among individuals without PTSD, attempts to prevent the emergence of memories into consciousness was associated with a significant reduction in the strength of the communication between a region of the brain involved in regulating memory retrieval (the dorsolateral prefrontal cortex - DLPFC) and regions involved in memory processing (such as the hippocampus). In contrast, this was not observed among individuals with PTSD. In other words, the communication between these two brain regions did not reduce in the same way for those with PTSD, giving some clues about why they might have less control over intrusive memories. Additional analyses revealed that the successful control over intrusive memories in individuals without PTSD was associated with the ability of the DLPFC to reduce the activation in the hippocampus and precuneus, two key regions associated with the reexperiencing of traumatic memories. In summary, alterations in the communication between the DLPFC and other memory processing regions, such as the hippocampus, may underlie a general deficit in the inhibitory control of intrusive memories in PTSD.

Single incident trauma/PTSD

Genetic factors may contribute to negative memory bias in posttraumatic stress disorder

Alterations in memory processing, including a bias towards negative and threatening material, are considered to be a core feature of posttraumatic stress disorder (PTSD). In this study, Hori et al., (2020) explored if the association between PTSD and negative memory bias could be explained, in part, by genetic predisposition. The researchers decided to focus on one particular gene called the brain-derived neurotrophic factor (BDNF) gene. This gene is known for its role in the development, growth, survival and function of neurons in brain regions associated with memory processing.

The researchers found that, in line with previous studies, PTSD patients showed significantly greater negative memory bias compared to controls. Moreover, they found that the presence of a ‘riskier’ variation of the BDNF gene (called Val66Met) among PTSD patients was linked with greater negative memory bias. **This study is the first one to identify that genetic factors may increase the vulnerability to memory processing biases in PTSD.**

Hori, H., Itoh, M., Yoshida, F., Lin, M., Niwa, M., Hakamata, Y., ... Kim, Y. (2020). The BDNF Val66Met polymorphism affects negative memory bias in civilian women with PTSD. *Scientific Reports, 10*(1), 3151. doi:10.1038/s41598-020-60096-1