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Behavioral Consequences of Dopaminergic Dysregulation Resulting from Violence-Induced Brain Trauma

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We use this protocol and it's working

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Abstract

This study protocol outlines the experimental procedures designed to assess the influence of trauma resulting from violence on dopamine activation and subsequent behavior. The experiment consists of three main stages, incorporating systematic review and meta-analysis.

This study aimed to investigate dopaminergic dysregulation caused by trauma induced by violence, and its subsequent behaviors. This study will conduct a systematic review and meta-analysis and incorporate correlation statistical analysis.

1 Papers will be obtained from MEDLINE, PubMed, PubMed Central, and PsycInfo. To find papers related to how violence-induced trauma can affect dopaminergic activation, the following terms will be used: trauma, violence, aggression, assault, abuse, conflict, stress, adversity, maltreatment, PTSD, dopaminergic function or system, and dopamine (activation). If the study participants are more than 20 years old, a follow-up study supporting the results will be included. The inclusion criteria will be animal studies and peer-reviewed articles. The exclusion criterion will be a non-peer-reviewed article or irrelevant research subject (not a rat model). The screening process will include the following steps: title and abstract screening, full-text review, and quality assessment. For quality assessment, prospective design, ascertainment of exposure, ascertainment of outcome, and control for confounding will be evaluated. To summarize the studies that are obtained, a narrative review of the association between violence-induced trauma and dopamine activation will be performed. The studies will be categorized according to the following categorization criteria: baseline vs. stimulus-induced and acute vs. chronic effects. The studies will be analyzed later using a fixed-effect model. The following equation will be utilized: Dopamine Activationi=α+β×Traumai+ϵi. Finally, Egger's test will be used to ensure the robustness of the results.

2 The relationship between dopamine activation and subsequent dopamine release behavior will be analyzed. This experimental stage will proceed through the same procedure as the first experiment, and the following terms will be utilized: dopamine activation from experiment 1. and behavior, abnormal behavior, behavioral disorders, psychiatric disorders, psychological disorders, anxiety, depression, aggression, impulsivity, compulsivity, emotional dysregulation, social withdrawal, and hyperactivity. Each subsequent behavior will be categorized for the result, where the category can only be formed with a minimum of 5 studies supporting each behavior. The following equation will be used for each category: Behaviori = γi + δ × Dopamine Activationi + vi.

3 Finally, the correlation between two results will be studied using Pearson's correlation for effect size to determine the correlation between the results of experiments 1 and 2, where R (metacor, metafor) will be utilized for this process. Correlation and coefficient intervals will be reported, and the results will indicate how violence-induced trauma can affect dopamine activation and subsequent behavior. The results will be reported using forest plots and charts.