

# Maternal Behavior Contributing to Early Life Adversity and the Subsequent Neural and Behavioral Effects on Rat Pups

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Maltreatment may arise in various forms, and not every case is as simple as violent behavior from parent to child. The purpose of this visual analysis study was to utilize images and videos of animals to identify maternal behaviors indicative of abuse or neglect, and examine the effects of these behaviors on the pups. Thirty-six videos of rat mothers interacting in a cage with their young pups were scored for specific behaviors, such as in and out of the nest, eating, or drinking. The conditions of both cages were the same in terms of size, food, and water, though the control group cage contained a sufficient amount of bedding while the experimental facility contained little to no bedding. In addition to this observation, two pups who had experienced abusive attachments were observed in a social interaction later in life to determine how the abuse affected their behavior. A second component of this study was that scans were observed from the brains of sixteen pups that were stained for C-fos. The expression of this gene was quantified to determine the neurological effects of abuse and neglect. In conclusion, mothers in cages with less bedding were more abusive and neglectful in that they exhibited many other self-related behaviors besides paying attention to their pups. Pups who had experienced abusive attachments behaved inadequately in social situations, though no large difference could be seen between C-fos levels in the brains of pups who experienced abusive attachments and those who did not. Therefore, mothers in adverse environments tend to exhibit more abusive and neglectful behaviors towards their pups, and this causes a significant behavioral, though not neural, effect on the pups later in life.

## Awards Won:

Second Award of \$2,000

American Psychological Association: Certificate of Honorable Mention