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The Interactive Roles of Parental Rejection and Noradrenergic Activation on Aggression in At-Risk Youth

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Models of aggressive behavior posit that one's propensity for aggressive behavior depends on the interaction between one's neurobiology and environment (e.g., Volavka, 2002). The goal of the present research was to consider the interactive effects of noradrenergic activation (i.e., a metabolite of norepinephrine, 3-methoxy-4-hydroxyphenyglycol [MHPG]) and childhood maltreatment on aggressive behavior in at-risk youth. It was predicted that baseline levels of MHPG would moderate the relationship between parental neglect and aggression such that children with elevated MHPG and a history of neglect would show heightened levels of aggression.

Fifty-five "at risk" male youth ranging from 7 to 17 years of age (M=12.44) were recruited from disadvantaged neighborhoods and completed the Assessing Environments III survey (Berger et al., 1988) and Proactive and Reactive Aggression Scale (Dodge, 2003) measuring parental neglect and total aggression, respectively. Salivary measures of MHPG were assayed using high performance liquid chromatography with electrochemical detection (HPLC-ECD).

A hierarchical regression was conducted in order to examine the direct and interactive effects of parental neglect and baseline MHPG on aggression (Aiken & West, 1998). Block one controlled for the effect of parental punishment, while blocks two and three tested main effects for parental neglect and baseline MHPG, and block four tested their interaction. A significant effect was found for the interaction term, β=.37, $F(4,54)$=2.27, p=.03. Post hoc probing was conducted to confirm the presence of moderation by running simultaneous regressions using conditional moderators (high and low baseline MHPG variables) and graphing separate regression lines. Findings indicated that the relationship between parental neglect and high baseline MHPG was stronger, predicting higher aggression levels. These findings underscore the importance of examining the interactive effects of biological and environmental factors on aggression. In particular, the results suggest that lower noradrenergic activation may serve as a protective factor for aggression in neglected children.

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