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Role of the Serotonin Transporter Gene in Resilience to Stress and Trauma: An Integrative Review

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Background

- Most people are exposed to potentially traumatic events at some point in their lives, but many are surprisingly resilient.
- Resilience is a complex, multi-dimensional construct.
- The heritability of resilience is 0.38 - 0.52 among US adults.
- Resilience is polygenic with at least 9 candidate genes.
- Serotonin Transporter-Linked Polymorphic Region (5-HTTLPR) is of increasing clinical interest.

Serotonin Transporter Gene

Results

- 26 articles met all criteria.
- 17 of 26 (65%) studies found that the individuals who carry the S allele of 5-HTTLPR were less resilient to stress and trauma.
- 4 of 26 (15%) studies found those who carry the S allele of 5-HTTLPR were more resilient.
- The remaining 5 publications (20%) did not find any differences in resilience between those with L or S alleles.

Discussion & Conclusion

- The hypothesis is partially supported by the analysis because the majority of the studies (17/26, 65%) found that S allele carriers are less resilient.
- Nevertheless, 4/26 (15%) of the studies found that S allele carriers are more resilient and 5/26 (20%) found no statistically significant association between 5-HTTLPR and resilience.
- 3 dimensions of the articles may explain the inconsistent results.
- (1) Definition of resilience:
  - No single agreed-upon definition of resilience.
  - Emergent resilience represents trajectories of positive adjustment in the context of chronic stressfull circumstances.
- (2) Minimal-impact resilience is applied in the context an isolated potentially traumatic event.

Hypothesis

- Little is known about whether individuals who carry the S allele of 5-HTTLPR are less resilient to stress and trauma compared to L allele carriers.
- Because evidence indicates that S allele carriers are at increased risk of psychopathology such as PTSD, it is hypothesized that S allele carriers are less resilient to stress and trauma compared to L allele carriers.

Methods

- PubMed, EMBASE, PsychINFO, and CINAHL databases were searched.
- Keywords: "serotonin transporter gene", "5-HTTLPR", "resilience".
- Inclusion criteria for the articles reviewed: (1) human subjects approved research, (2) published in English, (3) peer-reviewed research articles, (4) both 5-HTTLPR and resilience measured.
- The results of the literature search were analyzed and summarized in Table.

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Future studies should more clearly conceptualize and operationalize resilience, genotype rs25531, and investigate the environment in a full range in order to address the differential susceptibility.

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