

## Adolescent-Parent Relationship as the Most Important Factor in Preventing Mood Disorders in Adolescents: An Application of Artificial Intelligence to Social Studies

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**Abstract :** Introduction: One of the most difficult times in a person's life is adolescence. The experiences in this period may shape the future life of this person to a large extent. This is the reason why many young people experience sadness, dejection, hopelessness, sense of worthlessness, as well as losing interest in various activities and social relationships, all of which are often classified as mood disorders. As many as 15-40% adolescents experience depressed moods and for most of them they resolve and are not carried into adulthood. However, (5-6%) of those affected by mood disorders develop the depressive syndrome and as many as (1-3%) develop full-blown clinical depression. Materials: A large questionnaire was given to 2508 students, aged 13-16 years old, and one of its parts was the Burns checklist, i.e. the standard test for identifying depressed mood. The questionnaire asked about many aspects of the student's life, it included a total of 53 questions, most of which had subquestions. It is important to note that the data suffered from many problems, the most important of which were missing data and collinearity. Aim: In order to identify the correlates of mood disorders we built predictive models which were then trained and validated. Our aim was not to be able to predict which students suffer from mood disorders but rather to explore the factors influencing mood disorders. Methods: The problems with data described above practically excluded using all classical statistical methods. For this reason, we attempted to use the following Artificial Intelligence (AI) methods: classification trees with surrogate variables, random forests and xgboost. All analyses were carried out with the use of the mlr package for the R programming language. Results: The predictive model built by classification trees algorithm outperformed the other algorithms by a large margin. As a result, we were able to rank the variables (questions and subquestions from the questionnaire) from the most to least influential as far as protection against mood disorder is concerned. Thirteen out of twenty most important variables reflect the relationships with parents. This seems to be a really significant result both from the cognitive point of view and also from the practical point of view, i.e. as far as interventions to correct mood disorders are concerned.

**Keywords :** mood disorders, adolescents, family, artificial intelligence

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