We applied Partial Least Squares (PLS) regression to predict depression scores (CESD) using the alexithymia dataset. PLS regression is a method commonly used when there are collinearities among predictors and when the number of predictors is larger than the number of observations.

The PLS regression model was trained on the alexithymia dataset, the features were used as predictors and depression scores (CESD) was the target variable. The dataset was split into training and testing sets with training as 80% and testing as 20% to evaluate the performance of the model.

After fitting the PLS regression model and evaluating its performance on the test set, the Mean Squared Error (MSE) was obtained as 92.1221. This poor MSE suggests that PLS is not that effective to predict the depression score (CESD)and suggests that there is a lot of room for improvement in the model's predictive accuracy.

Further analysis could involve tuning the hyperparameters of the PLS model, such as the number of components or regularization parameters, to potentially improve its performance. Also, feature selection techniques could be employed to identify the most relevant predictors for predicting depression scores, which could potentially enhance the model's predictive capabilities.

Overall, while the PLS regression model provides a starting point for predicting depression scores based on alexithymia features, there is still scope for refinement and optimization to achieve better predictive accuracy. Also, the number of components for PLS are less then the PCA.