**INTRODUCTION**

*A wide range of risk & protective factors have been implicated in development of eating disorders (EDs)*

*However, much of this research has proceeded in a piecemeal fashion.*

*The Cross Cultural Risk Factor Questionnaire (CCQ), an extensive measure of risk/protective factors, provides a more comprehensive test of the key drivers of ED onset.*

*There are also challenges in modelling as the number of predictors necessitates larger sample sizes to achieve suitable power & also carries risk of multicollinearity.*

*These characteristics (large number of variables, possible instability of results) are suitable grounds for machine learning (ML) approaches to ascertain the key risk factors for ED onset.*

**METHODS**

**Participants**

* 626 ED patients (333 AN, 255 BN, 38 other ED)
* 776 controls.

**Measures**

* CCQ, which assesses a range of risk factors
* All risk factors were asked retrospectively < age 12 yrs

**RESULTS**

Selected indicators non-ED vs ED (excluding diagnosis predictor)

1.) Body dissatisfaction (BD) influenced eating (BD_inf)
2.) Family relation influenced eating (Fam_inf)
3.) School-work at school (Sch_12).

**DISCUSSION**

*We found very high accuracy for the ED versus control models for all 3 statistical approaches (with Decision Tree most accurate and most parsimonious).*

*Our findings provide important insights into aetiological models of EDs using novel statistical approaches with the aim of improving prevention and intervention for EDs.*

*Further confirmatory studies are needed to test these exploratory hypotheses with rigorous prospective designs.*

**OBJECTIVES**

*To compare 3 different statistical approaches to gain greater insight into the key risk/protective predictors for ED onset:*

1.) A standard logistic regression with all factors entered simultaneously and retained in the model;
2.) A Least Absolute Shrinkage and Selection Operator (LASSO) regression approach, which enters all factors simultaneously, but shrinks small risk factor contributions to zero – this ML approach seeks to balance parsimony with overall model performance & is equipped to handle concerns about multicollinearity;
3.) A decision tree approach, which evaluates interactions among predictors in an automated fashion, thus being sensitive to a range of interactions.

**APPLYING NEW MACHINE LEARNING ANALYSES TO PREDICT RISK FACTORS FOR ANOREXIA AND BULIMIA NERVOSA: FINDINGS FROM A MULTI-CENTRE EUROPEAN PROJECT**