



Attachment Theory Analysis Using Linear Mixed Effects Model

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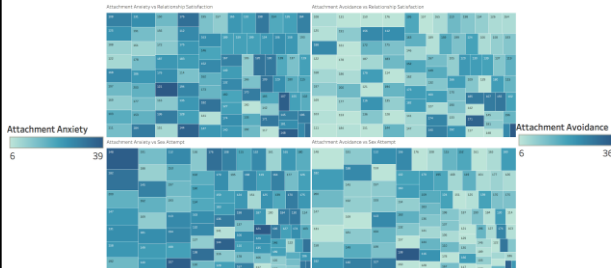
Research Goal: Test attachment theory through analysis of daily diary data using linear mixed models in R and Python.

Attachment Theory Overview

- Attachment is generally conceptualized along two independent continua: attachment anxiety and attachment avoidance.
 - Individuals with high **attachment anxiety** worry about abandonment by relational partners because they view themselves as deficient.
 - Individuals with high **attachment avoidance** fear overreliance on relational partners because they view others as deficient.

Data and Challenges

- Data set consists of daily diary survey data collected from 100 Texan women over a month
- The data set includes information concerning relational and sexual satisfaction and distress



- Issues concerning the data include:
 - Many missing entries/data points
 - Inconsistent entries
 - Overall small sample size

Data Cleaning in Python

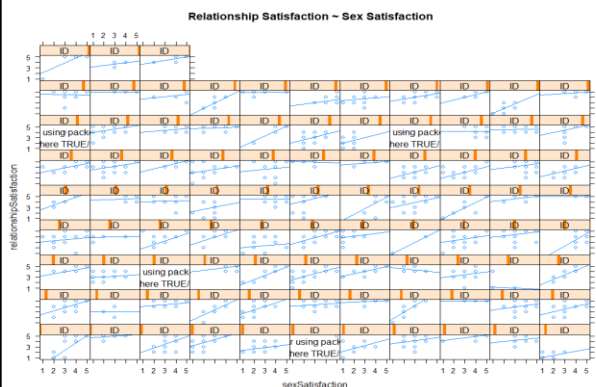
- Example code that include segments of data that are consecutive day-wise:

```
for y in range((prowcount-2),0,-1):  
    if(person.iloc[y,3]!=person.iloc[y-1,3] and person.iloc[y,3]-1==person.iloc[y+1,3]):
```

Linear Mixed Effects Models in R

The following packages in R were used:

- optimx** uses varying convergence methods
- MuMIn**: finds R^2 values of linear mixed models
- lme4** for creating the linear mixed models
- Linear mixed effects models incorporates **random effects** so **coefficients can vary** for (some or all) dependent variables



- Can be used to **analyze hierarchical data structures**, where data may have dependencies based on hierarchy level

Variables and Relationships Examined

We examined the following relationships:

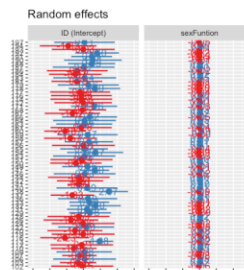
- Relational satisfaction - Sexual satisfaction/Sexual Distress/Relational Sexual Distress/Sexual function
 - Sexual satisfaction - Sexual Distress/Relational Sexual Distress/Sexual Function
 - Sexual Distress - Sexual Function
 - Relational Sexual Distress - Sexual Function
- Level one models were created to see if significant relationships existed between the pairs of values
 - Two level two models were created to test for moderation for each significant level one model:
 - One for attachment anxiety
 - One for attachment avoidance

Model Results

- There was **significance in all same-day** level one models
 - No significance in *same-day* level two models (**no significance in moderation**)
- There was **significance in five** level one models for the *lagged dependent variable* data
- One showed 0.05 significance** in level 2 models; The model set-up and results are shown below:

```
model8.2 <- lmer (sexDistressPost ~  
sexFunction  
+ anxiety  
+ (sexFunction*anxiety)  
+ (1+sexFunction | ID))
```

- p values:
 - sexFunction: 0.00245
 - anxiety: 0.01646
 - moderation: 0.00730
- r-squared: 0.6165136



Summary and Future Research

- Working with lagged dependent variables requires a more complete data set and, potentially, different methods
 - Traditional statistics (p-values, R-squared, CI's, etc.) may not be as reliable for this data set or analysis
- Data-set shrunk a large amount after cleaning
 - Models that show significance may be overfitted
- Other models (including those with mediating variables) can be checked more in depth
- Bayesian general linear models may provide an optimal solution

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