

Exploring Sexual Compulsivity with Factor Analysis

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Today's Agenda

**Background of
Methodology**

**Data Analysis
and Discussion**

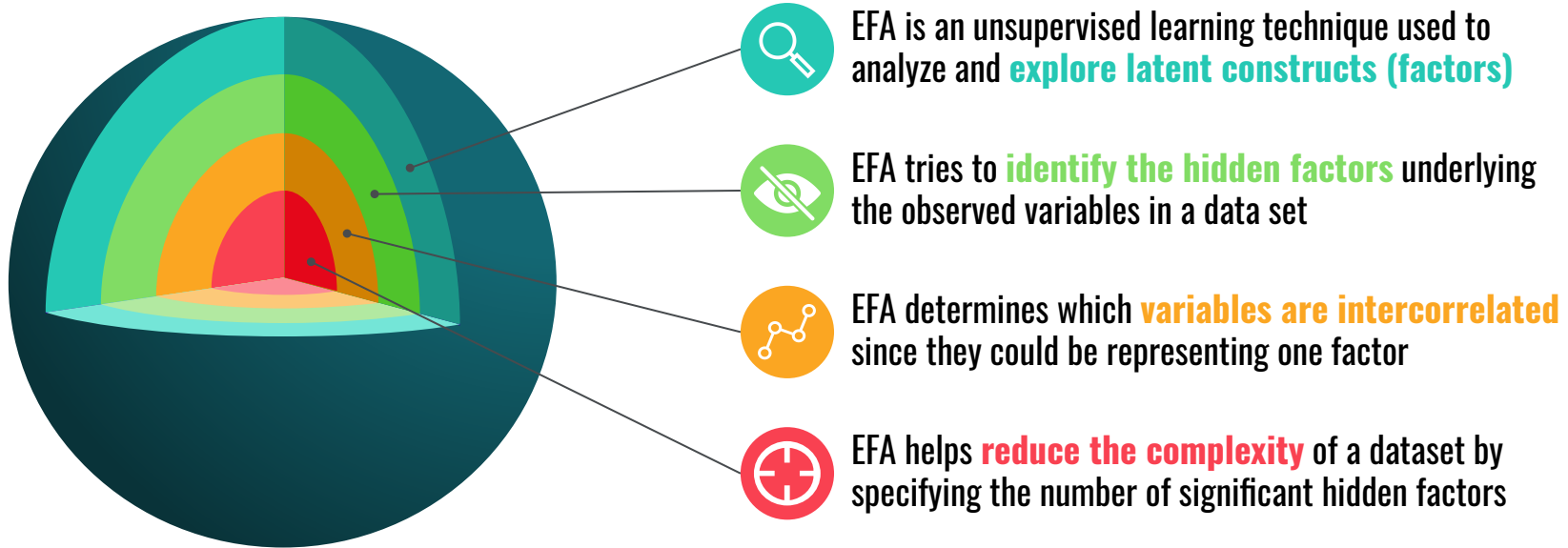
Final Conclusions



**Overview of
Business Problem**

**Recommendations
and Next Steps**

What is Exploratory Factor Analysis?





Application of EFA

When To Use:

Most commonly used to study **survey data**

Best for when there is a **large number** of variables

Most applicable when in **psychometrics**

Why To Use:

Reduce the number of variables being studied

Assess the **dimensionality** of a data set

Prove or disprove a proposed **theory** about the data



Methodology

STEP 1

Data must follow these **assumptions**:

1. Metrical data
2. Large sample size
3. Covariances > 0.3
4. Homogeneity
5. No outliers



STEP 2

Use a correlation matrix to calculate **eigenvalues** which will indicate how many statistically **significant hidden factors** are present



STEP 3

Find the **factor loadings** to see how each variable correlates to the hidden factor(s) and **factor scores** to see how much each individual related to the factor(s)

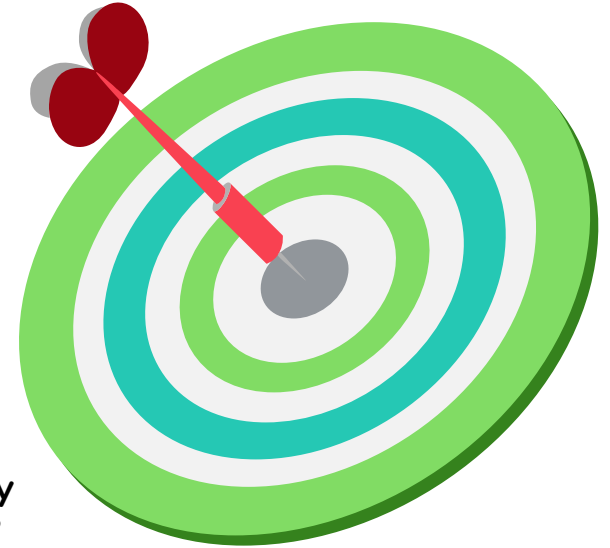


STEP 4

Use absolute fit and relative fit statistics to determine the **validity** of model and if the observed outcomes **fit** the expected outcomes

Business Questions and Objectives

- 1 Help our clients identify employees who may be more likely to engage in sexual harassment
- 2 Find the best measure of sexual compulsivity for our clients to use
- 3 Use a survey/questionnaire that tests the trait of sexual compulsivity in humans
- 4 Does Kalichman and Rompa's Sexual Compulsivity Scale, in fact, solely measure sexual compulsivity?





Data Overview

Dataset consists of the **survey results** of an online version of the Sexual Compulsivity Scale

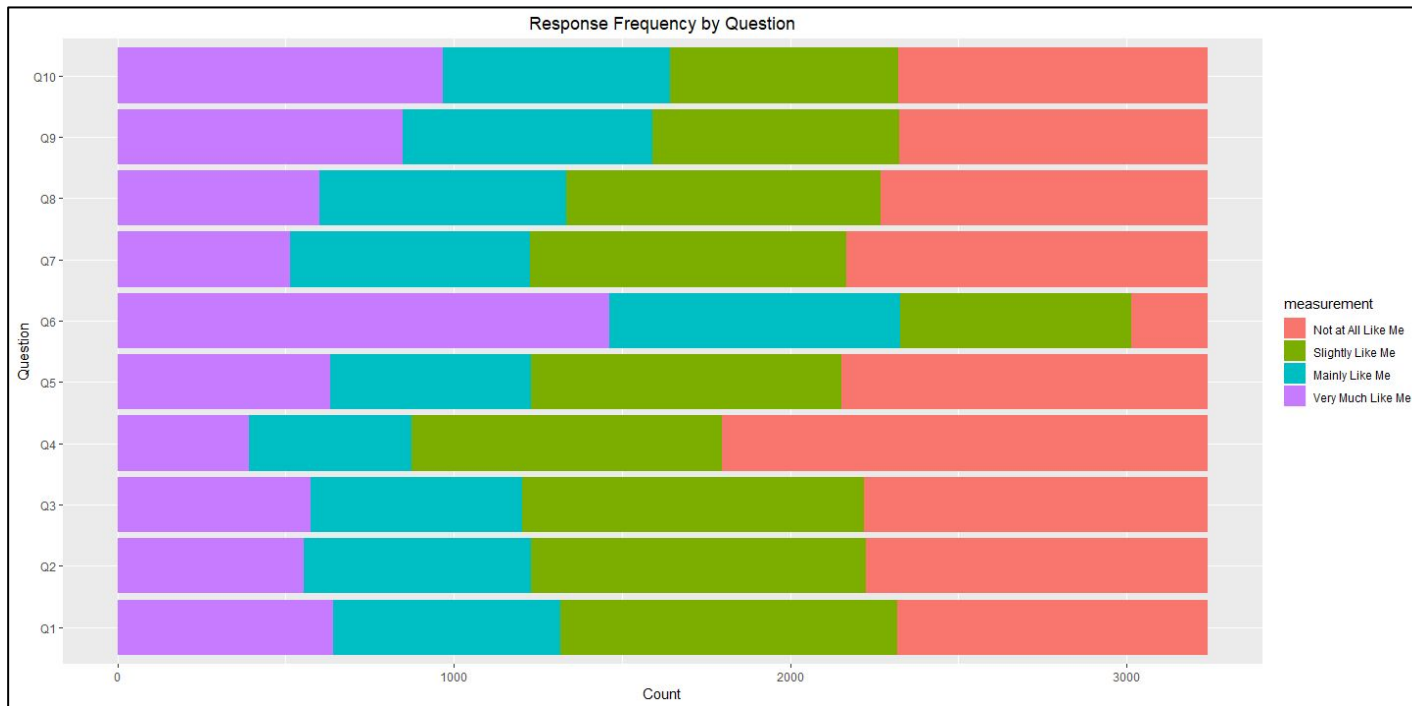
Survey is **10 questions** and focuses on sexual attitudes

The 10 questions are considered **metrical** variables

- Q1. My sexual appetite has gotten in the way of my relationships.
- Q2. My sexual thoughts and behaviors are causing problems in my life.
- Q3. My desires to have sex have disrupted my daily life.
- Q4. I sometimes fail to meet my commitments and responsibilities because of my sexual behaviors.
- Q5. I sometimes get so horny I could lose control.
- Q6. I find myself thinking about sex while at work.
- Q7. I feel that sexual thoughts and feelings are stronger than I am.
- Q8. I have to struggle to control my sexual thoughts and behavior.
- Q9. I think about sex more than I would like to.
- Q10. It has been difficult for me to find sex partners who desire having sex as much as I want to.

Responses to questions vary from 1-4 from
“Not at all like me” to “Very much like me”

Exploratory Data Analysis



Background

Business Objective

Factor Analysis

Recommendations

Conclusions

Assumption Check

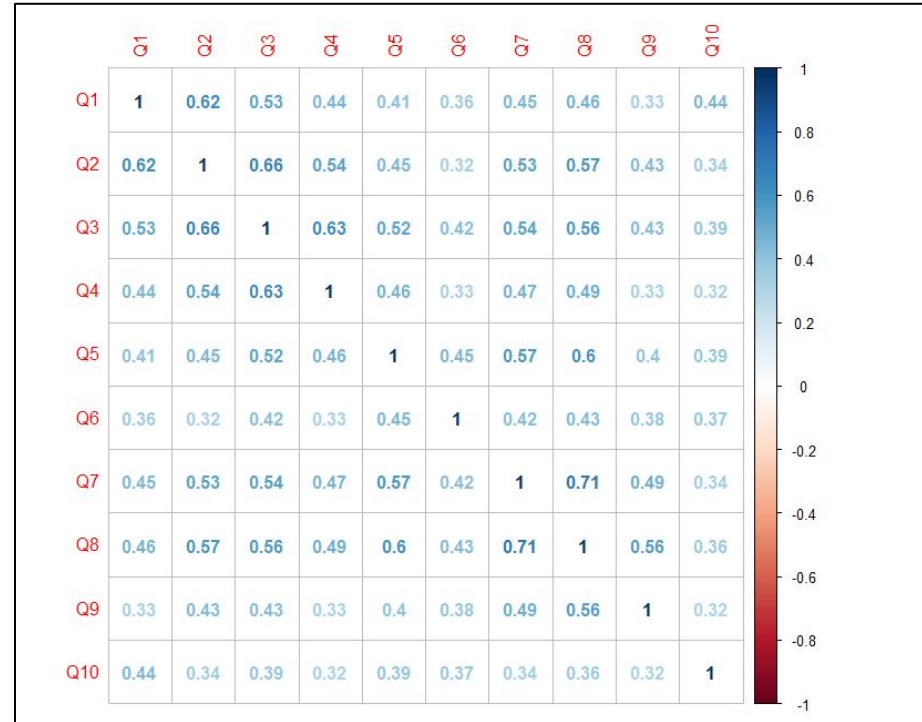
Variables are **metrical** as data is based on a numeric scale

Sample is **sufficiently large** (n = 3241)

All correlations are **greater than 0.3**
 (see correlation matrix)

Data is **homogenous** according to reliability analysis ($\alpha > 0.8$)

No **outliers** were found



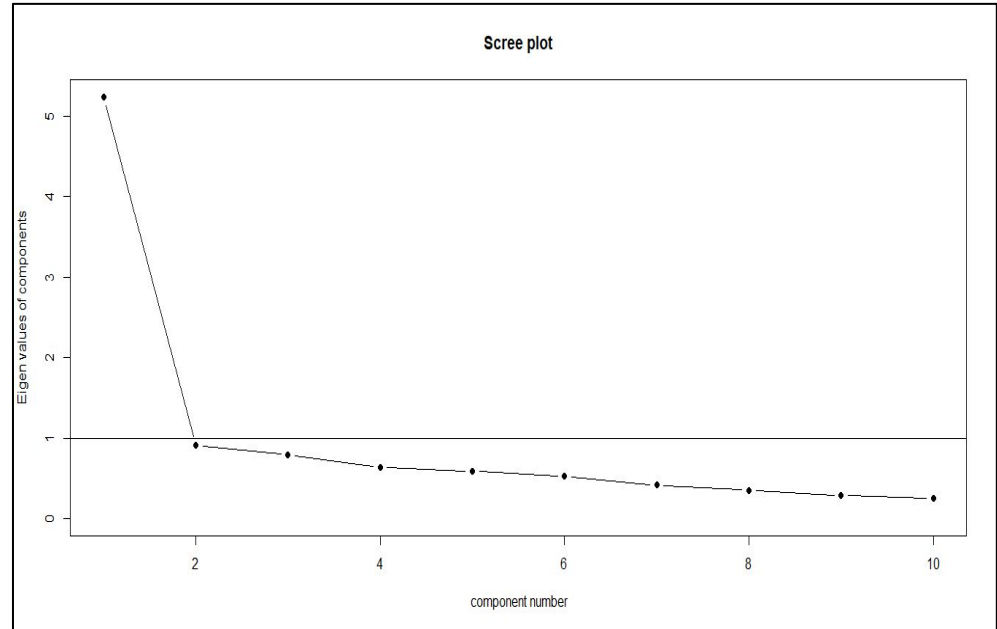


Eigenvalues & Scree Plot

We calculated the eigenvalues and only found **1 hidden factor** (5.23) to be statistically significant

This is consistent with our hypothesis that **sexual compulsivity** is the only factor

Initially suggests that the survey could be **useful** for our clients





Factor Loadings/Factor Scores

Factor loadings gauge **how each question correlates** with the hidden factor

All factor loadings were **positive** and range from **fairly strong to very strong** which indicate that each item is strongly and directly correlates to the factor

This means each question **actually relates** to our hidden factor (sexual compulsivity)

Factor scores range from -1.55 to 2.03. High factor scores indicates that an observation strongly relates to the factor while a low value indicates the opposite.

Our clients will prefer employees with **lower** scores.

```
> EFA_model$loadings
```

Loadings:

MR1

Q1	0.650
Q2	0.746
Q3	0.793
Q4	0.673
Q5	0.707
Q6	0.554
Q7	0.757
Q8	0.805
Q9	0.612
Q10	0.529

Fit Statistics

Absolute Fit

Chi-square test has a **significant** result

Tucker-Lewis Index = **0.844**

RMSEA = **0.125**



Relative Fit

Bayesian Information Criterion (BIC) decreased as the number of factors increased

This is an artificial deflation & not supported by the initial EFA

*This suggests that our model may not be valid
in terms of fit and may not be effective*

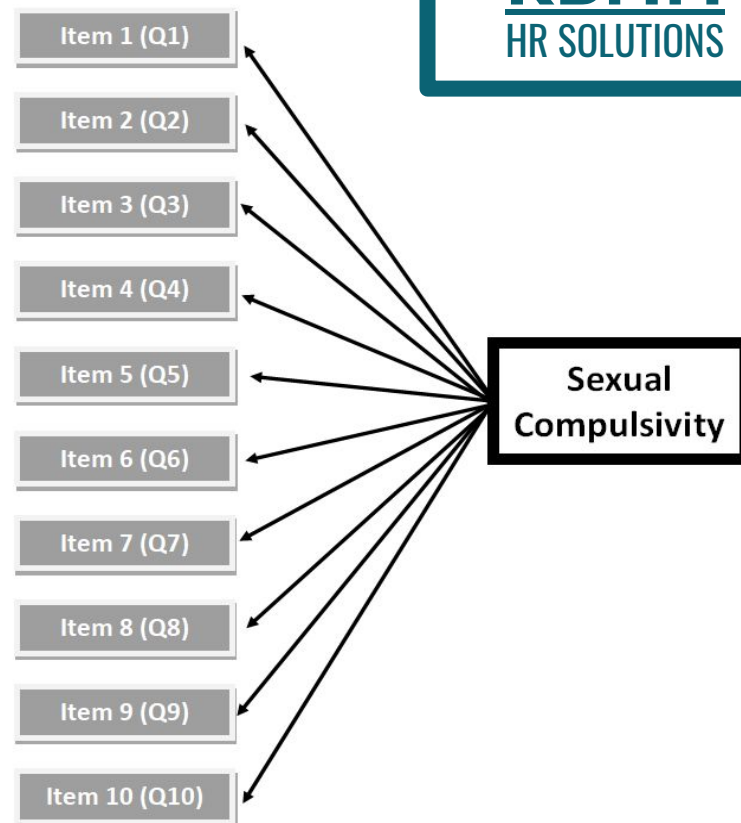
Interpretation

Based on our results...

The Sexual Compulsivity Scale data is best represented by a **one-factor model**

As depicted by the factor structure, **all of the items** seem to be statistically rooted in one latent factor

We theorize that this factor is **sexual compulsivity**



Client Recommendations



Use the **Sexual Compulsivity Scale** to determine who is more likely to be a sexual harasser



Focus on **Questions 2, 3, 5, 7, and 8** as these items are the best indicators of sexual compulsivity



Do not rely solely on the survey as it is possibly unfit and **consider many factors** in a decision



Next Steps

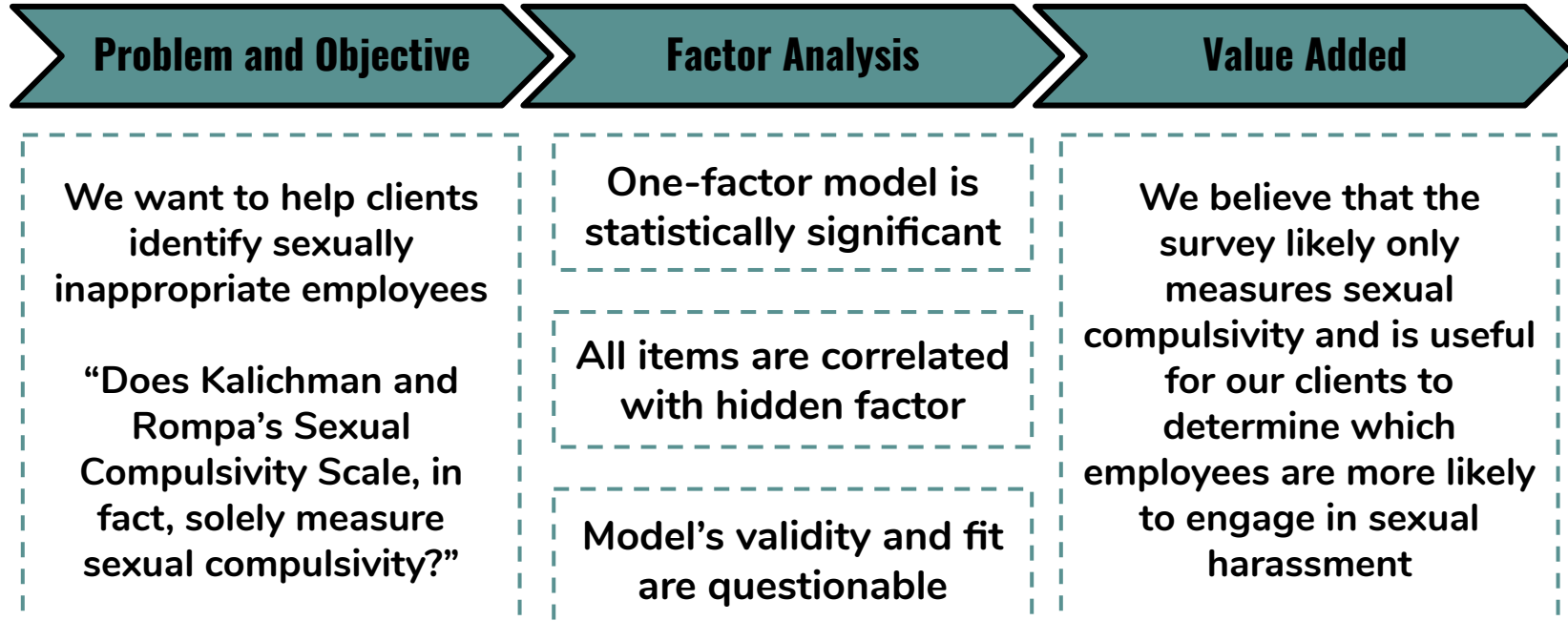
CFA

Hypothesis test for the existence of a **relationship** between observed variables and their hidden constructs.

PCA

Further modify our variables to a reduced set that **correlates significantly** to the construct in question.

Conclusions





Questions?