Predicting College Students Who May Experience Sexual Assault Using Machine Learning Algorithms

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INTRODUCTION

- College students are at an increased risk of sexual assault.
- Among the risk factors for sexual assault are childhood trauma, suicidal thoughts, sexual risk-taking, and unhealthy alcohol use practices.
- Sexual risk-taking includes unplanned/unprotected sex, sex with strangers, and/or sex while consuming alcohol.
- Unhealthy alcohol use practices include drinking too much or too often, blacking out, and drinking alcohol with problematic expectations (e.g., drinking with the expectation of becoming impaired).
- However, it is unclear which factors are most predictive of sexual assault risk in college students.

METHOD

- Participants were 574 college students recruited from across the country via Amazon's Mechanical Turk (see Table 1).
- We examined predictors of sexual assault risk in college students using GLMnet, a machine learning algorithm that identifies which variables in a model are most important in predicting an outcome.

RESULTS

- Twelve predictors in the model accounted for 58% of the variance in sexual assault (RSQ = .58; RMSE = 25.20).
- Drinking too much and too often and childhood trauma were the most important positive predictors of sexual assault relative to other predictors (see Table 2; Figure 1).
- Sexual risk-taking, blackouts, suicidal thoughts, and select expectations of drinking (e.g., drinking to improve sexuality or to feel more sexual) also positively predicted sexual assault.
- In contrast, some expectations of drinking (e.g., expecting to be more sociable or feel "tipsy") negatively predicted sexual assault.

DISCUSSION

- Some findings are consistent with previous work where the consequences of drinking too often and too much and a history of childhood trauma may be risks for experiencing sexual assault in college.
- Although childhood trauma is an immutable risk factor (at least among college students), students' drinking may be modifiable.
- Many colleges attempt to do this by taking a strong anti-alcohol stance (e.g., by banning alcohol possession).
- Results of this study suggest that taking a more nuanced approach (it's okay to drink to be more sociable and feel a little tipsy, but dangerous to drink to feel less inhibited) may be a better approach.
- This approach may not reduce drinking, per se, but may help to reduce sexual assault.

Unhealthy alcohol use and **childhood trauma** are strongest predictors of **sexual assault**.

Table 1

Sample Demographics

	N (%)
Gender	
Man	254 (44%)
Woman	311 (54%)
Gender Fluid	4 (1%)
Other	5 (1%)
Race	
White	388 (67%)
Black	60 (11%)
Asian	62 (11%)
Multiracial or Other	64 (11%)

Table 2

Results of Machine Learning Algorithm

	Variable Importance	Estimate
Drinking too much/too often	16.70	16.70
Childhood trauma	14.00	13.90
Expectation: more sociable when drinking	11.30	-11.20
Suicidal thoughts	8.36	8.35
Expectation: negative self-view when drinking	7.57	7.50
Sexual Risk Taking	4.76	4.69
Expectation: feel more sexual when drinking	4.74	4.56
Expectation: more aggressive when drinking	2.81	2.49
Expectation: become impaired when drinking	2.76	-2.55
Expectation: feel less inhibited when drinking	1.97	-1.58
Blackout	1.41	1.36
Expectation: reduced tension when drinking	.11	.00

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