

Utilizing Big Data and SNS to Track Alcohol Use in College Students

Mark B. Reed

School of Social Work

Center for Alcohol & Drug Studies

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History College Student Drinking

- College students drink alcohol.....a lot of alcohol
- Not a new problem
 - St. Scholastica Day Riot in 1355
 - Argument over wine quality



Fast-Forward 650+ years...

- 2014 Deltopia @ UCSB
- Unsanctioned party in Isla Vista
- Over 15k attendees
- Ended in riot
- 130 arrested



College Student Drinking Epidemiology

- Excessive use and abuse of alcohol
 - 2/3 report past month drinking
 - 40% state they were drunk past month
 - 600k alcohol-related injuries
 - Nearly 700 alcohol-related assaults/97k sexual assaults
 - 1,825 deaths (75% DUI)
 - Poor academic performance
- Physical, intellectual, and social welfare of college students

Measurement Issues

Subjective Measures: Large national or institution-specific surveys (i.e., Monitoring the Future)

- Problems: Low response rates, underreporting, low survey frequency, not able to capture emerging trends quickly

Objective Measures: Measurement of BAC through breath alcohol (BrAC), Transdermal alcohol sensing

- Problems: Usually cross-sectional, expensive, time intensive, new technology, reactivity, uncomfortable



The Rise of Big Data & Infoveillance (Esenbach, 2009)

- Increasing use of Big Data and Social Networking Sites to leverage health information
 - Flu outbreaks (Aslam et al., 2014), drug (Hanson et al., 2013), and alcohol use (Moreno et al., 2012, 2013, 2014)
- A new accompanying method to look at college student drinking?
 - Unobtrusive—low reactivity
 - Real time (or close to) measurement
 - Increased sensitivity to dynamic changes in the environment (i.e., football win, policy change, etc.)
 - Potential access to text, photos, videos

Social Networking & College Alcohol use

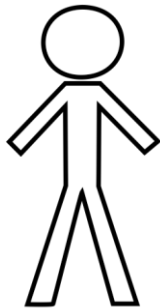
- Use of SNS extremely popular among college students
 - Nearly 40% use Twitter and 90% use Facebook
 - 1-2.5 hours a day spent on SNS
- Significant alcohol content (i.e. posts/photos about alcohol, links to advertisements, etc.) in SNS (Moreno et al., 2014)
- Links between SNS content to drinking behavior and alcohol-related problems (Moreno et al., 2012, 2013)
 - Problems
 - Cross-sectional
 - No objective measure of alcohol use
 - Lack of validation studies

Potential Applications

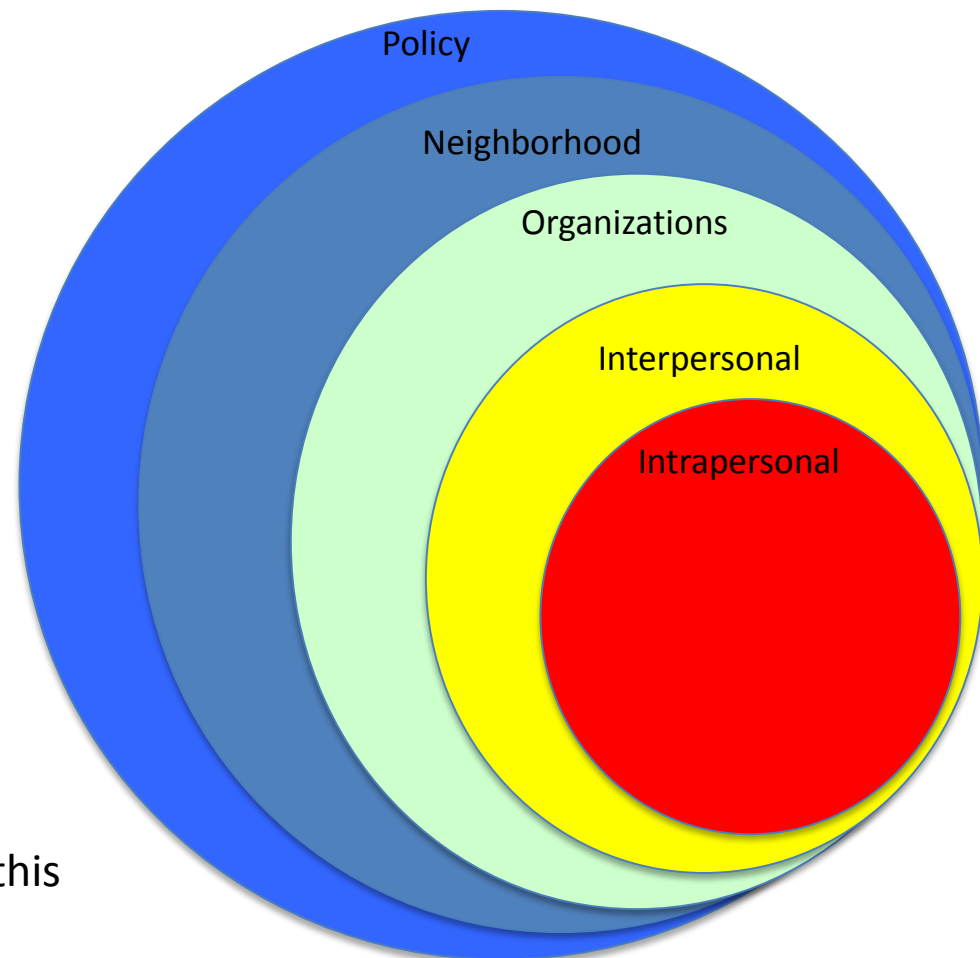
- Leverage data from HDMA center's SMART (Social Media Research Testbed) GUIDE system to gain knowledge about College student drinking
 - NIAAA proposal*
 - Validation studies using big data and a recruited sample of undergraduate SNS (Twitter, Instagram) users
 - Objective measure (BrAC)
 - 12-months of follow-up
 - Sensitivity/Specificity testing
 - Cross-lagged modeling (reciprocal effects)
 - Translation
 - Translate system for use by college health promotion professionals
 - Proactive vs. reactive planning

Complex Dynamic Systems

From this....

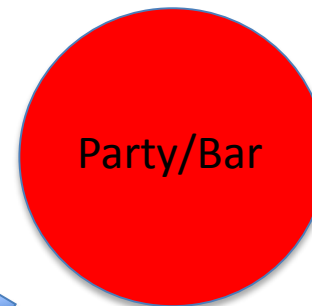
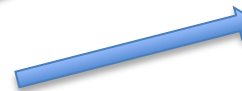


...to this



Complex Dynamic Systems

...To THIS!



Social Networks
SNS
Drinking Hx
Genetics
Motivations

Mobile phone-enabled GPS data
Test social-ecological models of behavior

- Environment, social, individual

Use of transdermal measurement for BAC over time

Potential Pitfalls

- Inveillance probably won't be the panacea to AOD measurement issues (another tool in our toolbox)
- How will this information be used?
 - Translational applications
 - If this information is to be truly useful, how do we ethically translate the science into practice?
 - What if college or local police use data to target students unfairly?
 - BIG ISSUE
- Privacy issues (thanks Eric Buhi)