CENTER ON ALCOHOL, SUBSTANCE USE, & ADDICTIONS

Examining a brief measure and observed cutoff scores to identify reward and relief drinking profiles: Psychometric properties and pharmacotherapy response

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Heterogeneity in Alcohol Use Disorder (AUD)

Despite decades of research, AUD treatments demonstrate only moderate efficacy

Challenges might be attributable to heterogeneity

- 2,048 ways to be diagnosed with AUD
- Recovery from AUD differs across persons

Understanding variability within AUD may help improve outcomes

(Fan et al., 2019; Lane & Sher, 2015; Leggio et al., 2009 Lipari & Park-Lee, 2019; Witkiewitz, Litten, et al., 2019; Witkiewitz, Wilson, et al., 2019)

One Classification for Characterizing Heterogeneity within AUD is Reward and Relief Drinking

Extent to which individuals seek alcohol to enhance positive experiences and emotions

Corresponds to the binge-intoxication stage of addiction

Mediated by dopaminergic and opioidergic dysfunction within the ventral striatum

Extent to which individuals seek alcohol to relieve negative emotional and somatic states

Corresponds to the withdrawal-negative affect stage of addiction

Mediated by upregulation of corticotropin-releasing factor and norepinephrine in the extended amygdala, as well as glutamate and GABA dysfunction

(Koob & Volkow, 2016; Verheul et al., 1999)

Reward and relief drinking phenotypes have promise for precision medicine

Precision Medicine in Alcohol Dependence: A Controlled Trial Testing Pharmacotherapy Response Among Reward and Relief Drinking Phenotypes

Karl Mann*,[1], Corey R Roos[2], Sabine Hoffmann[1], Helmut Nakovics[1], Tagrid Leménager[1], Andreas Heinz[3] and Katie Witkiewitz[2]

Advancing Precision Medicine for Alcohol Use Disorder: Replication and Extension of Reward Drinking as a Predictor of Naltrexone Response

Katie Witkiewitz, Corey R. Roos, Karl Mann, and Henry R. Kranzler

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Reward drinking and naltrexone treatment response among young adult heavy drinkers

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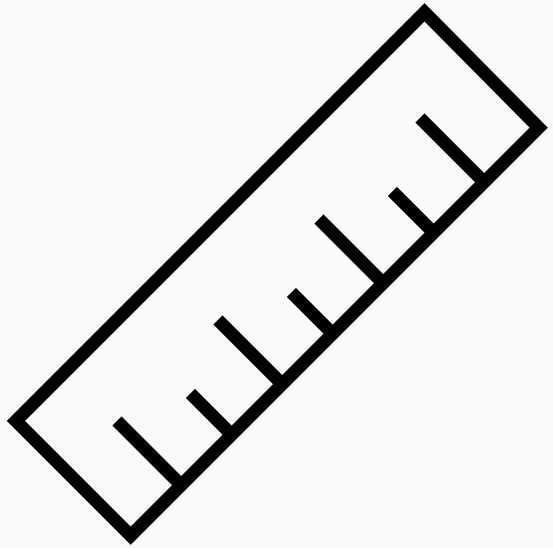
Reward and relief dimensions of temptation to drink: construct validity and role in predicting differential benefit from acamprosate and naltrexone

Corey R. Roos[1], Karl Mann[2] & Katie Witkiewitz[1]

Limitations of reward/relief drinking measures might stymie efforts to translate findings to clinical practice

To address these limitations, we aimed to...

1. Identify a brief measure of reward/relief drinking that is free of bias across sex, age, and alcohol dependence severity
2. Establish observed cutoff scores for the brief measure to identify reward/relief profiles
3. Evaluate the construct (concurrent) validity of the brief measure and cutoff scores
4. Determine the clinical utility of the brief measure and cutoff scores for predicting pharmacotherapy response



Methods

Secondary data analysis of the PREDICT study, a randomized controlled trial to identify responders to naltrexone vs. acamprosate

N = 426

- 76.8% male
- Trial conducted in Germany and information on race and ethnicity was not collected
- 45.3 (SD=8.7) years of age
- 22.1 (SD=4.4) continuous days abstinent prior to randomization

Measures

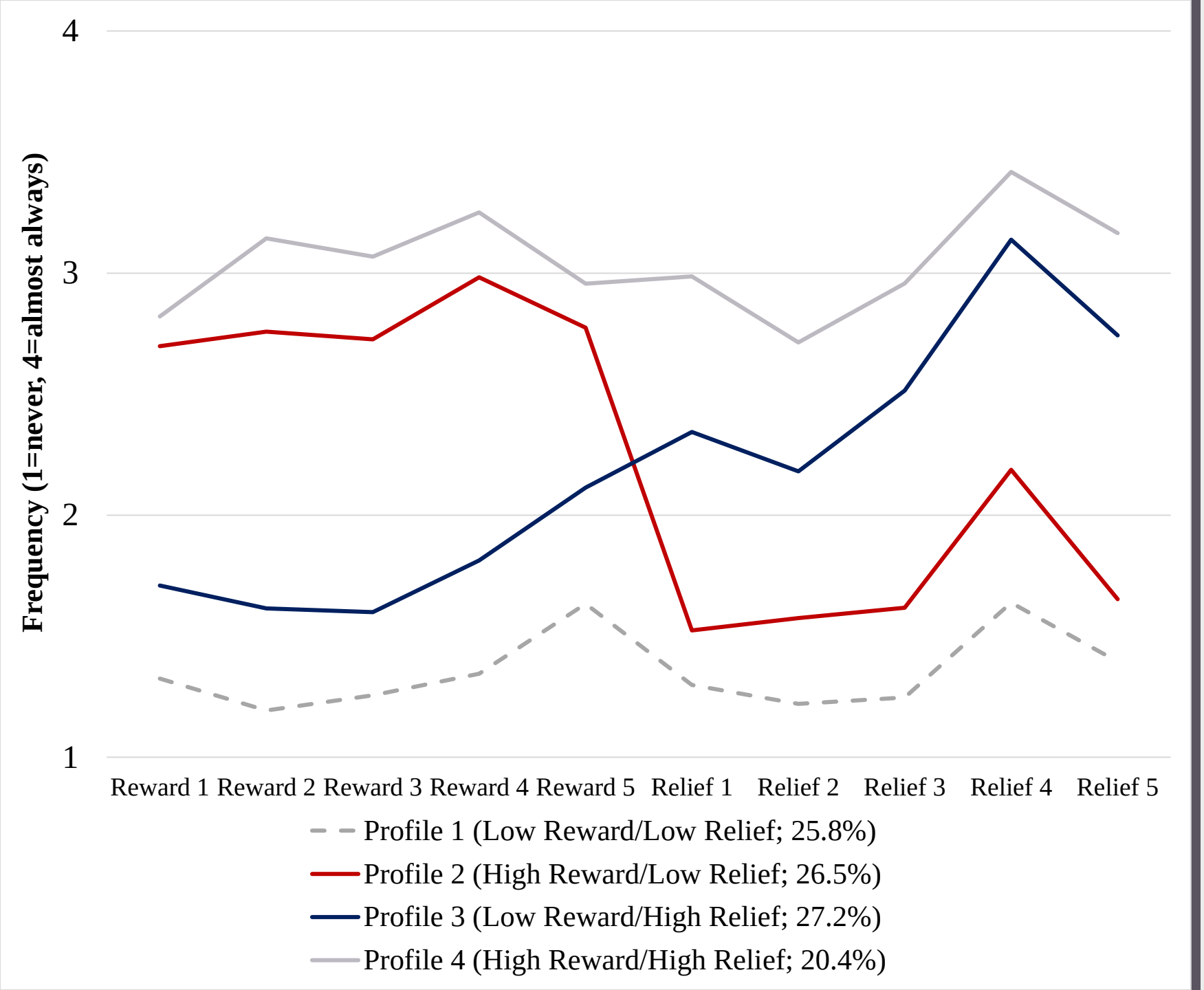
- Inventory of Drinking Situations – 30 reward/relief items (IDS-30)
- Construct validity measures (e.g., Beck Depression Inventory, Alcohol Dependence Scale)
- Timeline follow-back to assess heavy drinking over the 90-day treatment phase

(Mann et al., 2009; Mann et al., 2018)

Item response theory and tests of differential item functioning across sex, age, and alcohol dependence severity were used to create the Reward and Relief IDS (RR-IDS)

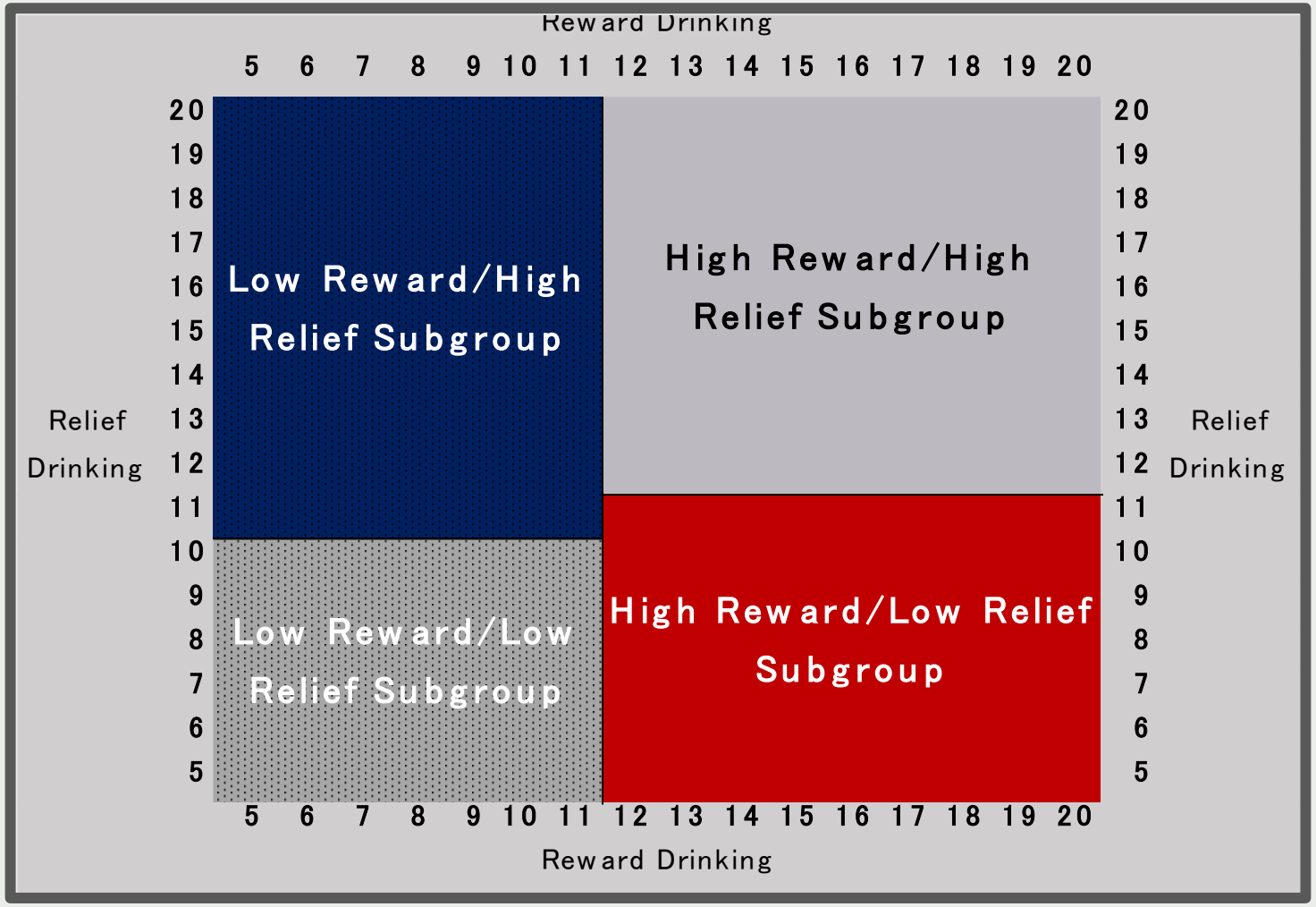
Instructions: Listed below are situations in which some people drink heavily. Read carefully, and answer in terms of the frequency of your own heavy drinking (1=never, 4=almost always) in the past year:	
Reward Drinking Items (Cronbach's alpha = 0.908)	**Relief Drinking Items (Cronbach's alpha = 0.905)**
1. When I met with a friend and they suggested we have a drink	1. When other people treatment me unfairly
2. When I was out with friends "on the town" and wanted to increase my enjoyment	2. When I felt unsure that I could measure up to other people's expectations
3. When I was enjoying myself at a party and wanted to feel even better	3. When nothing I did seems right
4. When I was at a party and others were drinking	4. When everything was going badly for me
5. When something good happened and I felt like celebrating	5. When I felt guilty about something

A two-factor CFA model provided good fit to the data ($\chi 2(34)=61.223$, p=0.003; CFI=0.997; RMSEA (90% CI)=0.043 (0.025, 0.061))



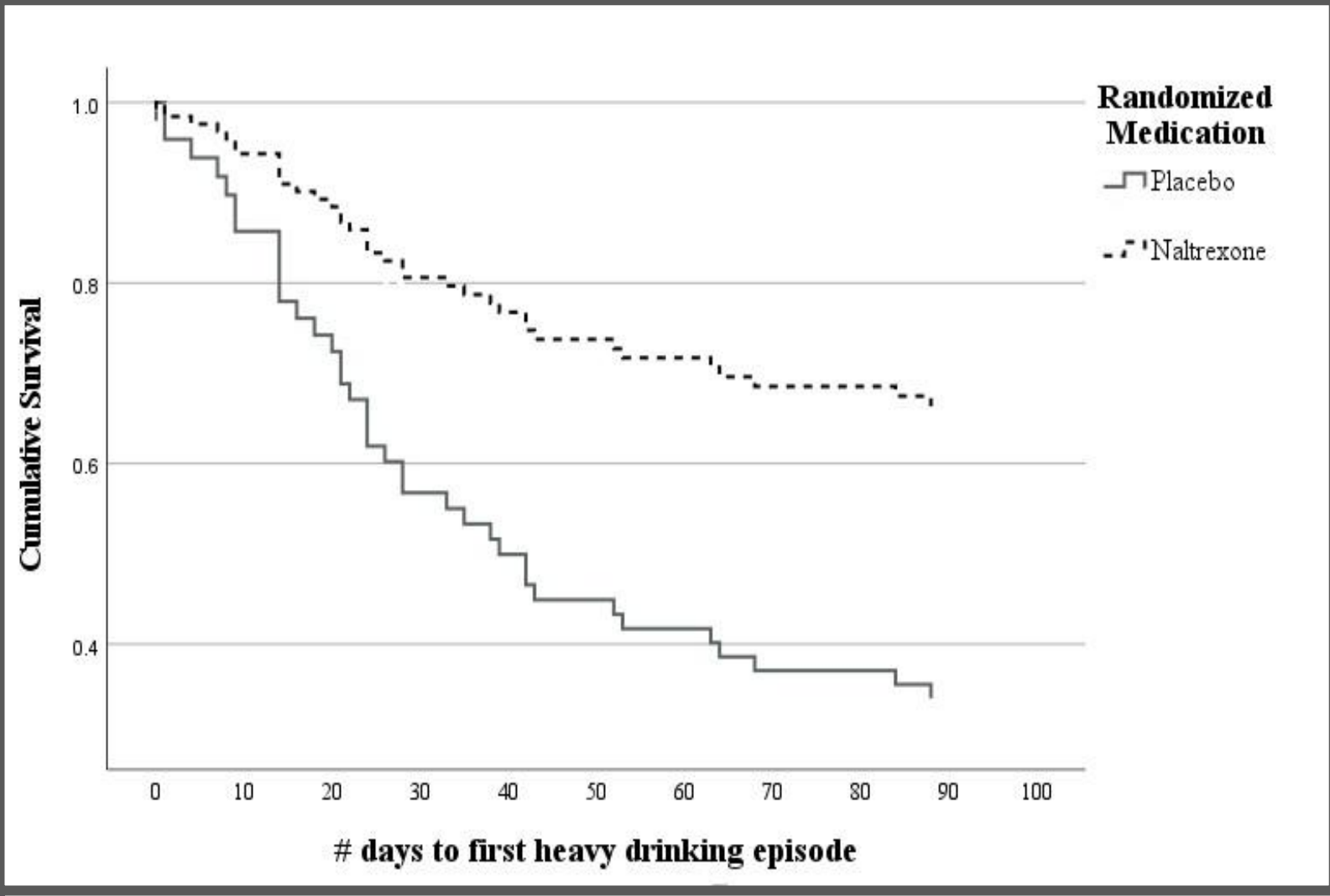
Using latent profile analysis of the RR-IDS items, we identified reward and relief profiles

Using a matrix of RR-IDS scores by latent profile membership, we identified cutoff scores with good sensitivity (0.798-1.000) and specificity (0.926-1.000)



ANOVAs supported the concurrent validity of the reward/relief subgroups identified with the RR-IDS

Using the RR-IDS observed cutoff scores, those in the high reward/low relief group (n=86) **had an 81% lower likelihood of heavy drinking** and a longer time to first heavy drinking episode if they received naltrexone vs. placebo



Conclusions

The RR-IDS has the potential to match high reward/low relief drinkers to naltrexone treatment

Limitations

- We could not examine cross-cultural bias in items
- Sample had high alcohol use severity and low psychiatric distress

Next steps

- Validate the RR-IDS using ecological momentary assessment
- Compare measures of reward/relief drinking
- Test the reward drinker-naltrexone response hypothesis prospectively

Thanks!

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