



Leisure Turned Pathological: Internet Gaming Disorder and Alcohol Use Disorder in Young Adults

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INTRODUCTION

- Internet gaming and alcohol use are common leisure activities for young adults
- Alcohol use disorder (AUD) is a well-known issue that negatively and multifacetedly impacts young adults
- Internet gaming disorder (IGD) is a behavioral addiction with growing prevalence that was introduced in the DSM-V for further investigation
- Both AUD and IGD are associated with depression and anxiety in young adults worldwide
- A growing body of evidence has characterized IGD internationally; however, data for young adults in the USA is lacking.
- Objective:** The purpose of this study was to investigate the prevalence and demographic features of IGD in the US and test the relationship of IGD with AUD.

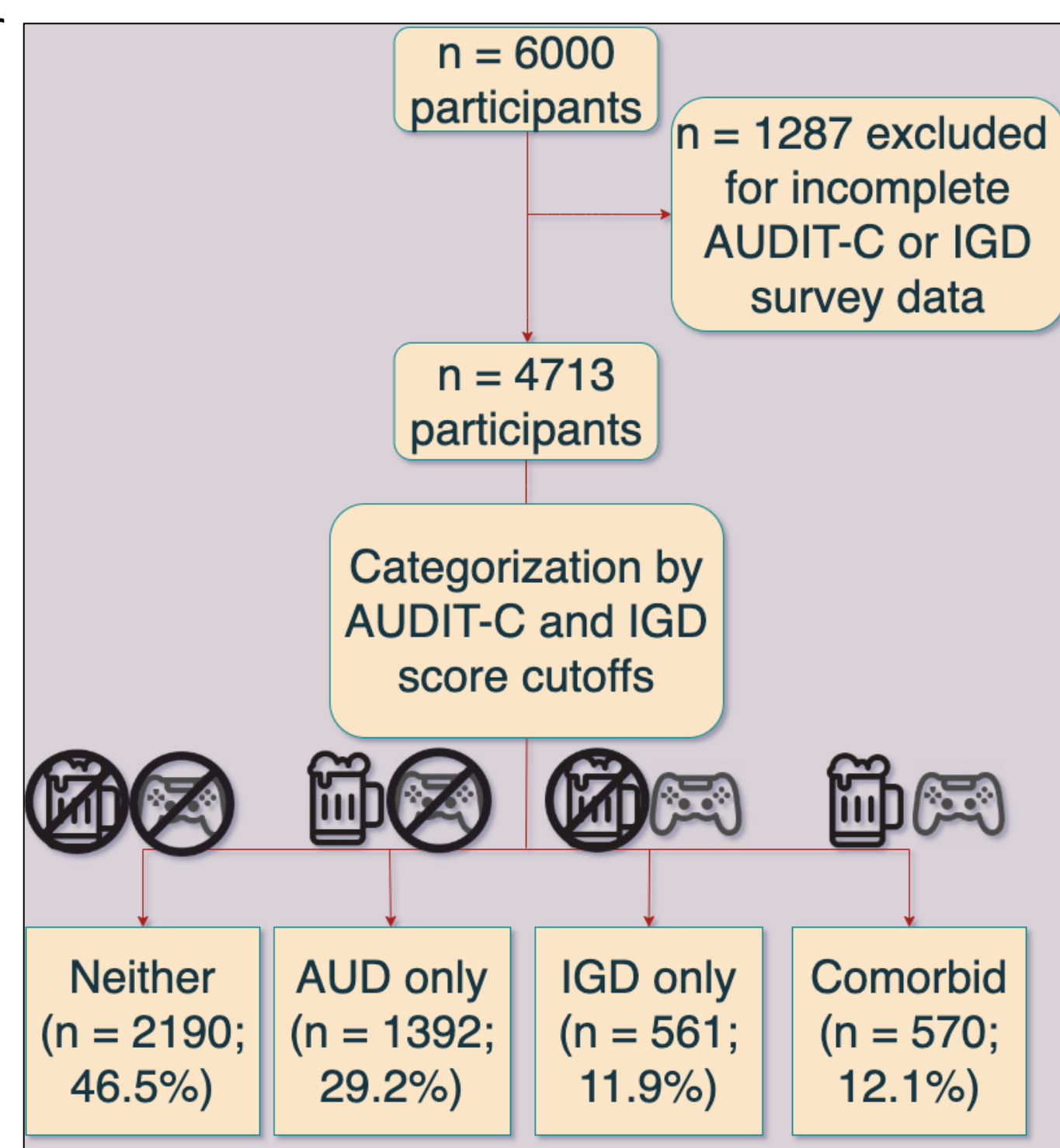
METHODS

Recruitment, participants, and demographics: A nationally-representative group of 6000 US young adults, ages 18 – 25 years, was recruited using Qualtrics panels for an online cross-sectional survey that collected AUDIT-C scores, IGD scores, PHQ-9 depression scores, GAD-7 anxiety scores, and demographic measures

AUDIT-C: A 3-item scale to assess alcohol use disorder based on consumption habits. The cutoff used to indicate hazardous drinking behavior was 4 points for males and 3 points for females and gender binary non-conforming individuals.

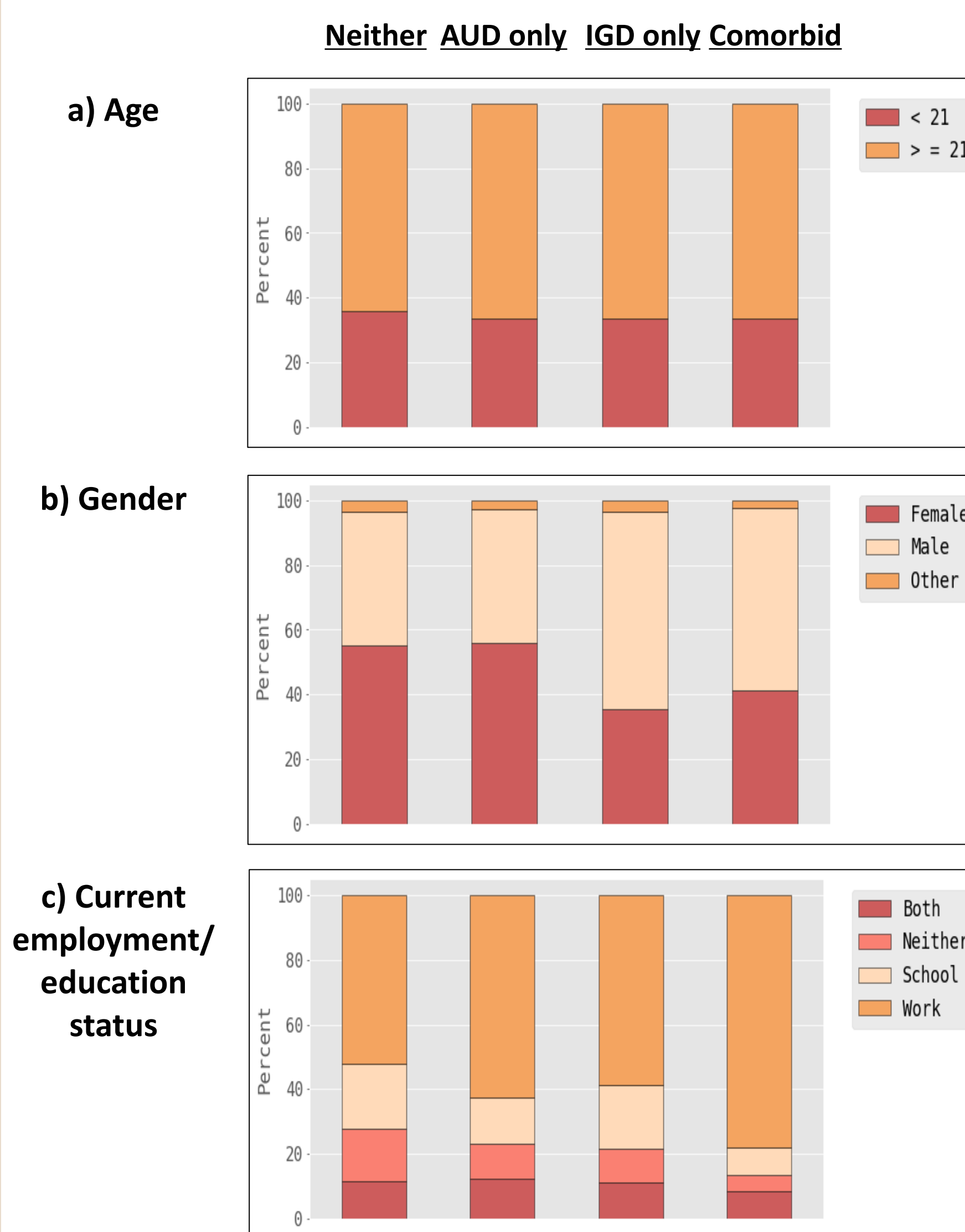
IGD Scale: A 9-item Internet Gaming Disorder Scale to assess disordered gaming behavior. The cutoff for a positive score is 5 or more 'yes' answers.

Analysis: The cohort was divided into four groups based upon AUDIT-C and IGD score cutoffs and intergroup analysis was performed (figure above). Paired Pearson's chi-squared test with Benjamini-Hochberg procedure for multiple testing was performed to assess demographic differences. Welch's ANOVA with Games-Howell post-hoc testing was performed to assess the differences in depression and anxiety scores. Corrected p-values of 0.05 were used as the cutoff for significance.



RESULTS

IGD is associated with male gender and employment, but not with age



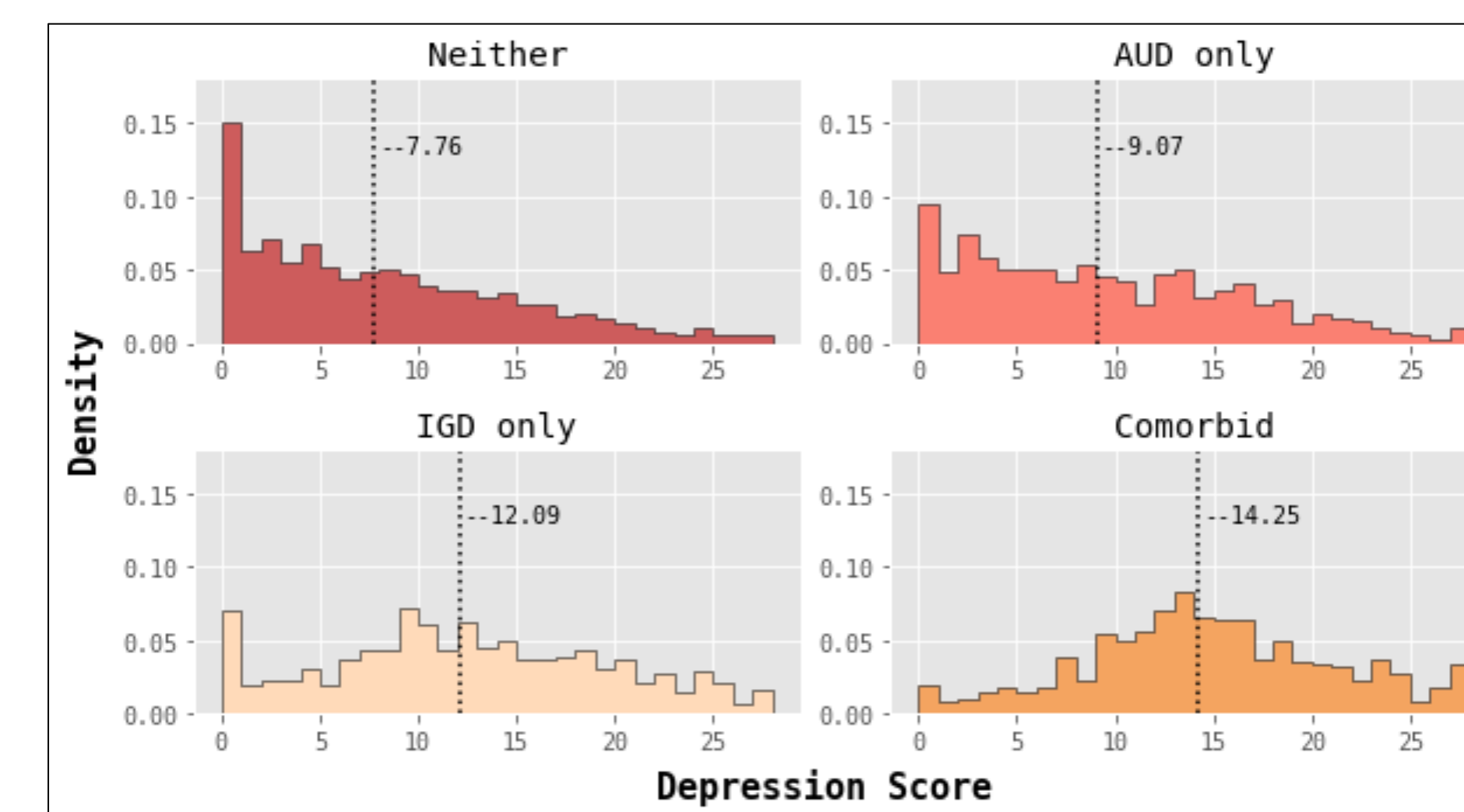
a-c) Percentage distribution of subgroups in the categories of age, gender, and employment/education status respectively

	Total sample (n=4713)	Neither (n=2190; 46.5%)	AUD only (n=1392; 29.5%)	IGD only (n=561; 11.9%)	Comorbid (n=570; 12.1%)	P-value (Chi-square test of subgroups)
Gender						< 0.001
Female	2421 (51.4%)	1205 (55.0%)	781 (56.1%)	199 (35.5%)	236 (41.4%)	
Male	2141 (45.4%)	909 (41.5%)	579 (41.0%)	342 (61.0%)	320 (56.1%)	
Other	151 (3.2%)	76 (3.5%)	41 (2.9%)	20 (3.5%)	14 (2.5%)	
Age						0.48
< 21	1626 (34.5%)	781 (35.7%)	465 (33.4%)	188 (33.5%)	192 (33.7%)	
≥ 21	3087 (65.5%)	1409 (64.3%)	927 (66.6%)	373 (66.5%)	378 (66.3%)	
Employment/education status						< 0.001
School	800 (17.0%)	442 (20.2%)	198 (14.2%)	110 (19.6%)	50 (8.8%)	
Work	2788 (59.2%)	1141 (52.1%)	874 (62.8%)	329 (58.7%)	444 (77.9%)	
Both	533 (11.3%)	254 (11.6%)	170 (12.2%)	62 (11.0%)	47 (8.2%)	
Neither	592 (12.5%)	353 (16.2%)	150 (10.8%)	60 (10.7%)	29 (5.1%)	

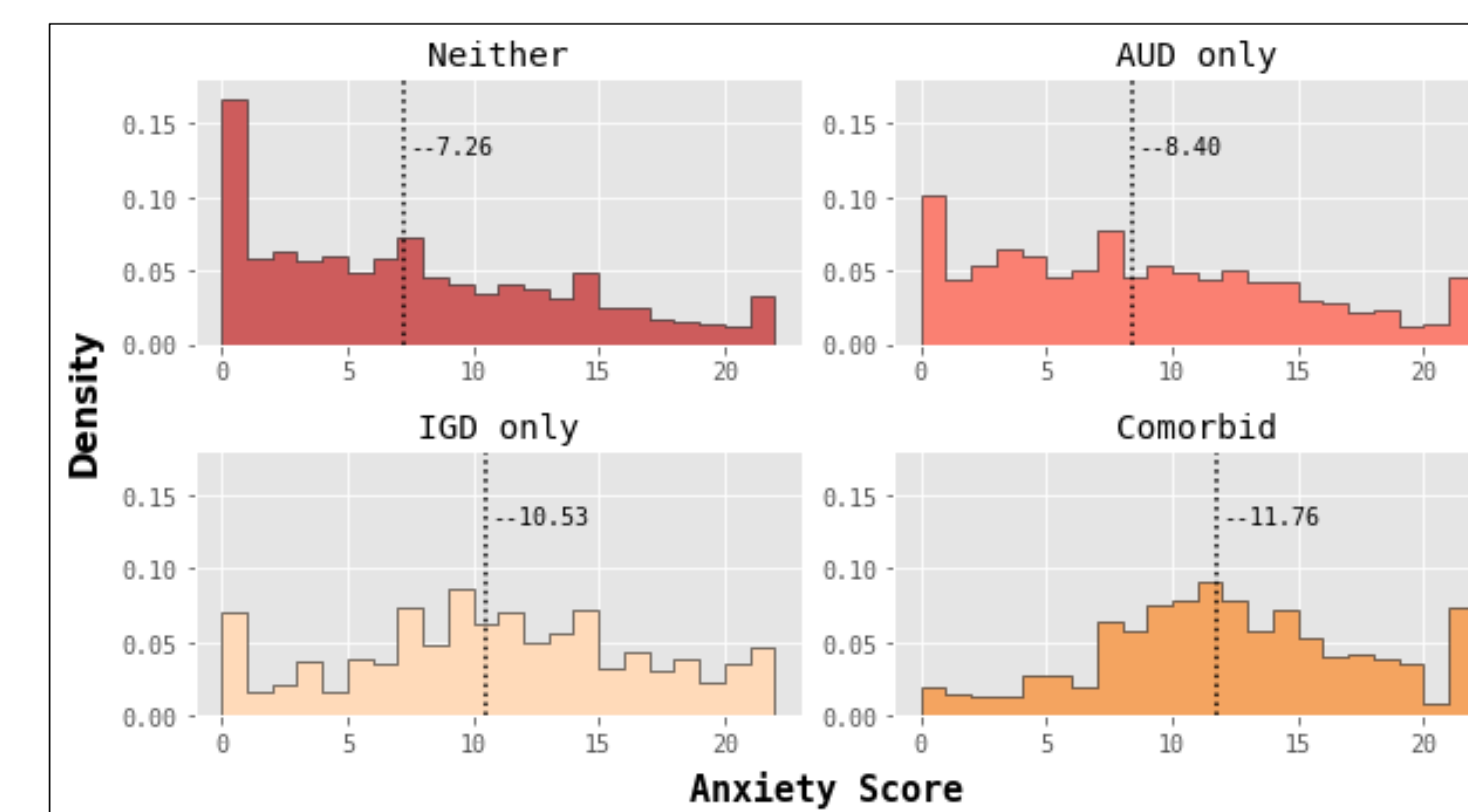
Superscript letters denote significant difference in pairwise comparison. Key = a-control vs. AUD only, b-control vs. IGD only, c-control vs. Comorbid, d-AUD only vs. IGD only, e-AUD only vs. Comorbid, f - IGD only vs. Comorbid

RESULTS

IGD is associated with more severe depression and anxiety



a) Normalized histograms of PHQ-9 Depression scores for each subgroup, dotted lines demarcate mean



b) Normalized histograms of GAD-7 Anxiety scores for each subgroup, dotted lines demarcate mean

	Total sample (n=4713)	Neither (n=2190; 46.5%)	AUD only (n=1392; 29.5%)	IGD only (n=561; 11.9%)	Comorbid (n=570; 12.1%)	P-value (Games-Howell)
AUDIT-C						
Mean (SD)	2.76 (2.63)	0.92 (0.95)	5.08 (1.90)	1.04 (1.07)	5.85 (2.26)	
Median	2	1	5	1	5	
Range	0 - 12	0 - 3	3 - 12	0 - 3	3 - 12	
IGD Score						
Mean (SD)	2.66 (2.58)	1.44 (1.44)	1.51 (1.51)	6.46 (1.49)	6.42 (1.48)	
Median	2	1	1	6	6	
Range	0 - 9	0 - 4	0 - 4	5 - 9	5 - 9	
GAD7 score^{mean}						
Mean (SD)	8.53 (6.11)	7.26 (6.04)	8.40 (6.03)	10.53 (5.80)	11.76 (5.13)	< 0.001
Median	9	6	8	10	11.5	
Range	0 - 21	0 - 21	0 - 21	0 - 21	0 - 21	
PHQ9 score^{mean}						
Mean (SD)	9.45 (7.10)	7.76 (6.7)	9.07 (6.85)	12.09 (7.07)	14.25 (6.31)	< 0.001
Median	9	6	8	12	14	
Range	0 - 27	0 - 27	0 - 27	0 - 27	0 - 27	

Superscript letters denote significant difference in pairwise comparison. Key = a-control vs. AUD only, b-control vs. IGD only, c-control vs. Comorbid, d-AUD only vs. IGD only, e-AUD only vs. Comorbid, f - IGD only vs. Comorbid

CONCLUSIONS

- Almost one-quarter of the analyzed participants suffered from IGD
- Previous similar studies performed in Switzerland and South Korea demonstrated an ~15% prevalence
- More than half of individuals with IGD were comorbid for AUD whereas less than one-third of individuals with AUD were comorbid for IGD, findings similar to previous South Korean study
- Those with IGD may be more susceptible than those with AUD to other behavioral addictions
- Males were more likely to suffer from IGD and comorbidity of IGD and AUD, supporting common international findings
- Employment status and male gender were associated in this subset
- Comorbidity of IGD with AUD is associated with more severe depression and anxiety than IGD alone
- Routine screening for IGD and AUD may provide further insight on a patient's mental health status and coping behaviors

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