



Cohort Study on  
Substance Use  
Risk Factors

# The effect of co-occurring addictions on the association between DSM-5 gambling disorder and mental health problems

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# Background I

- Gambling is a widespread activity in Switzerland (74.2% of the population have gambled in the last 12 months).
- Small percentage of population shows gambling disorder (1.1% problematic gambling, Eichenberger & Rihs-Middel, 2014)
- Gambling disorder is known to co-occur with other addictions (Sussmann et al. 2011)
- Gambling disorder is associated with mental health problems (Lorains et al. 2011)

# Aims

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- Estimate co-occurrence of other addictions and mental health problems in participants with gambling disorder
- Investigate how the link between gambling disorder and mental health problems is attenuated if co-occurring addictions are taking into consideration

# The C-SURF study

only men, 57.9% French-speaking

## Sampling in 3 of 6 army recruitment centers

2010  
-2011

- 6'000 informed consents and **baseline** measures

Age 19- 20

2012  
- 2013

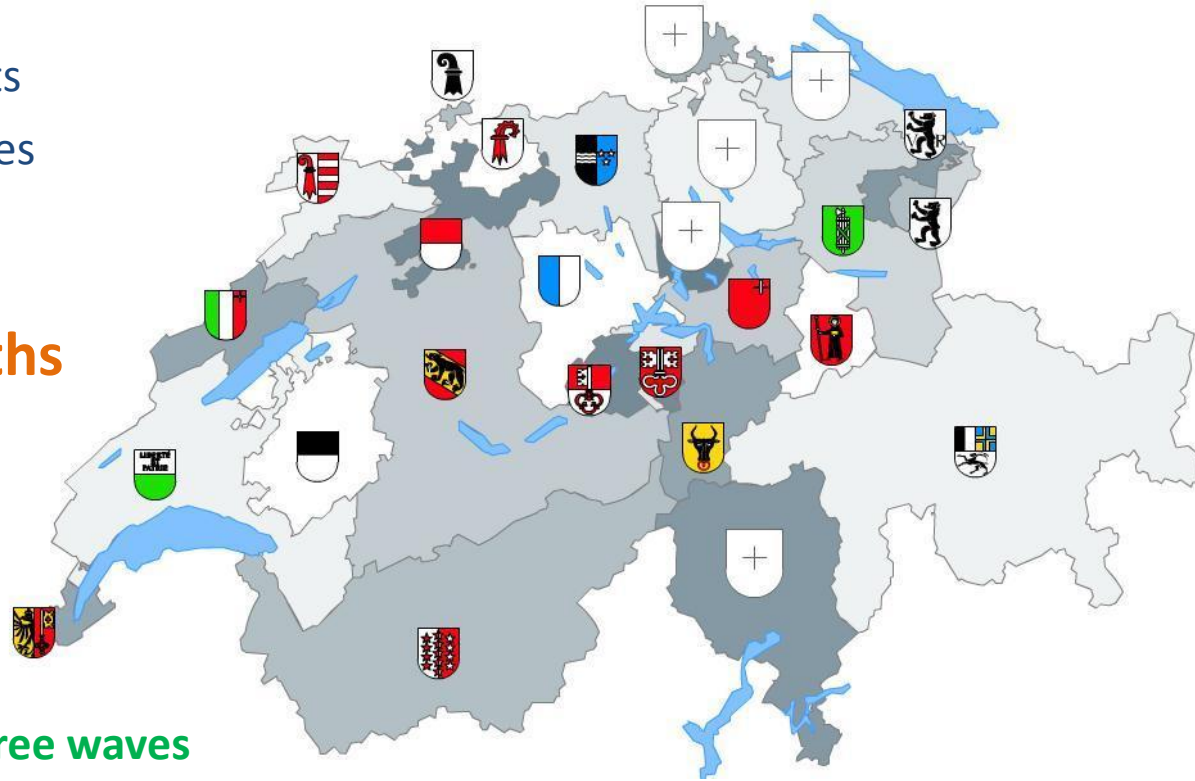
- **91.5% at 15 months follow-up**

Age 21-22

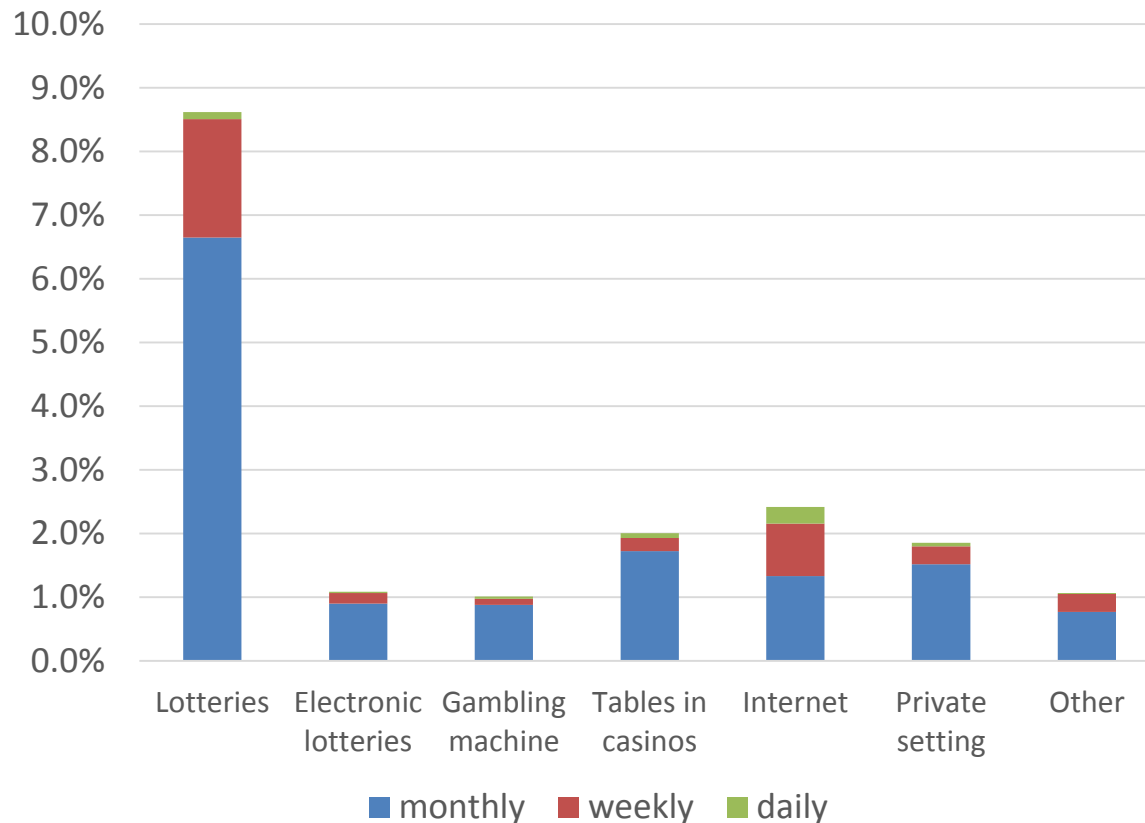
2016  
- 2017

- **5445 at 5 years**  
**4924 (82.2%) all three waves**

Age  
25-26












# Gambling activities



- 48.0% any gambling activity in the last year
- 3.0% at least weekly gambling

# Measures

- Substance use disorders (SUD)
  - Alcohol (DSM-5) 
  - Cannabis (CUDIT) 
  - Tobacco (FTND) 
- Behavioural addictions (BA)
  - Gambling (DSM-5 criteria) 
  - Internet (CIUS) 
  - Gaming (GAS) 
  - Smartphone (SAS) 
  - Internet sex (ISST)
  - Work (Bergen WA) 
  - Exercise (EAI) 
- Mental health problems (MHP)
  - Major depression (WHO-MIDI)
  - Bipolar disorder (MDQ)
  - ADHD (ASRS)
  - Social anxiety disorder (CUSADOS)
  - Borderline personality disorder (McClean)
  - Antisocial personality disorder (Lecrubier)
- Suicidal ideation and attempts (last year)
- Physical health problems (SF-12)

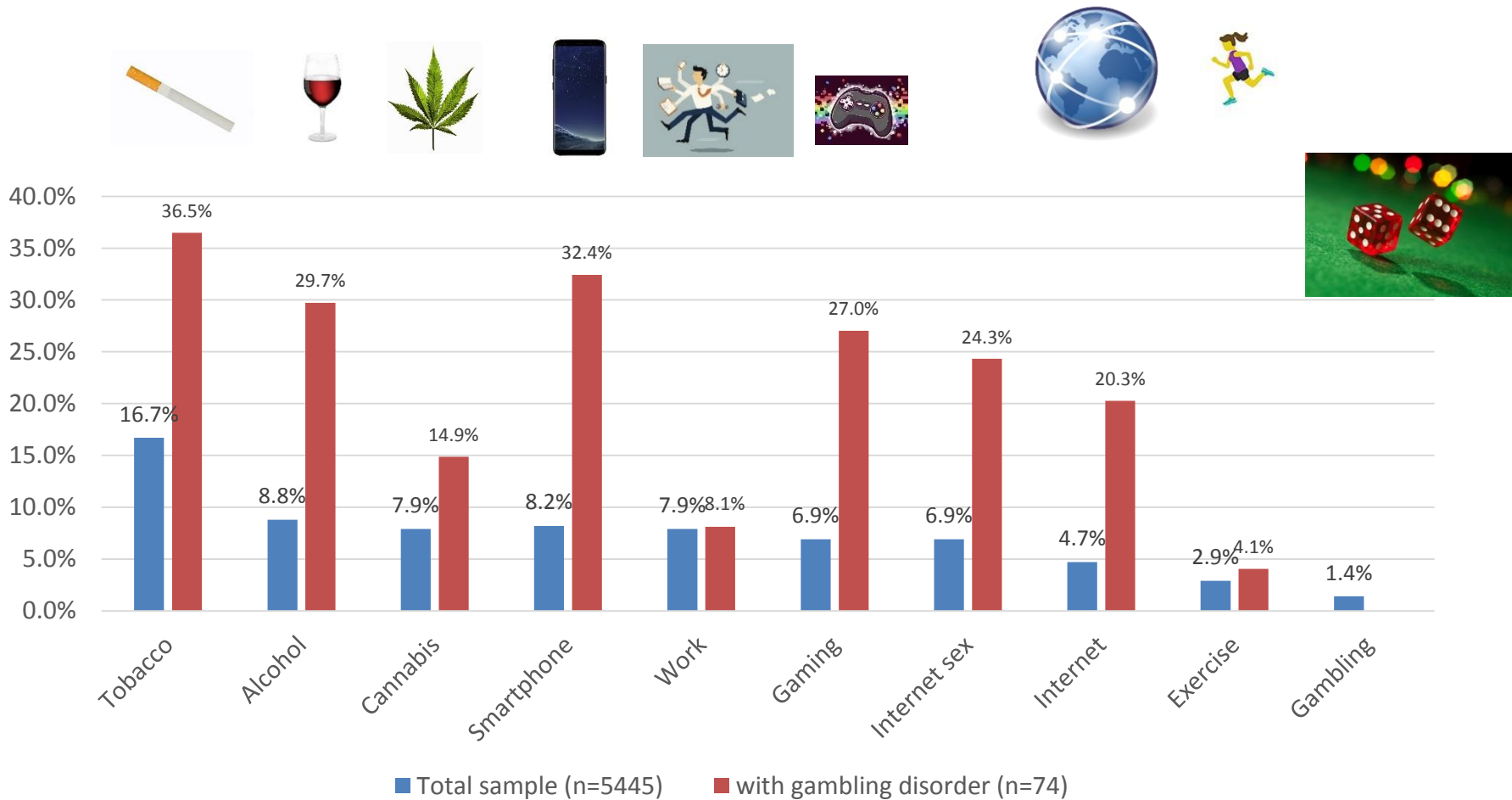
# DSM-5 Gambling disorder criteria

1. Needs to gamble with increasing amounts of money in order to achieve the desired excitement.
2. Is restless or irritable when attempting to cut down or stop gambling.
3. Has made repeated unsuccessful efforts to control, cut back, or stop gambling.
4. Is often preoccupied with gambling (e.g., having persistent thoughts of reliving past gambling experiences, handicapping or planning the next venture, thinking of ways to get money with which to gamble).
5. Often gambles when feeling distressed (e.g., helpless, guilty, anxious, depressed).
6. After losing money gambling, often returns another day to get even (“chasing” one’s losses).
7. Lies to conceal the extent of involvement with gambling.
8. Has jeopardized or lost a significant relationship, job, or educational or career opportunity because of gambling.
9. Relies on others to provide money to relieve desperate financial situations caused by gambling.

4 or more criteria affirmed = mild gambling disorder

1.4% with mild gambling disorder (n=74)

# Prevalence of addictions



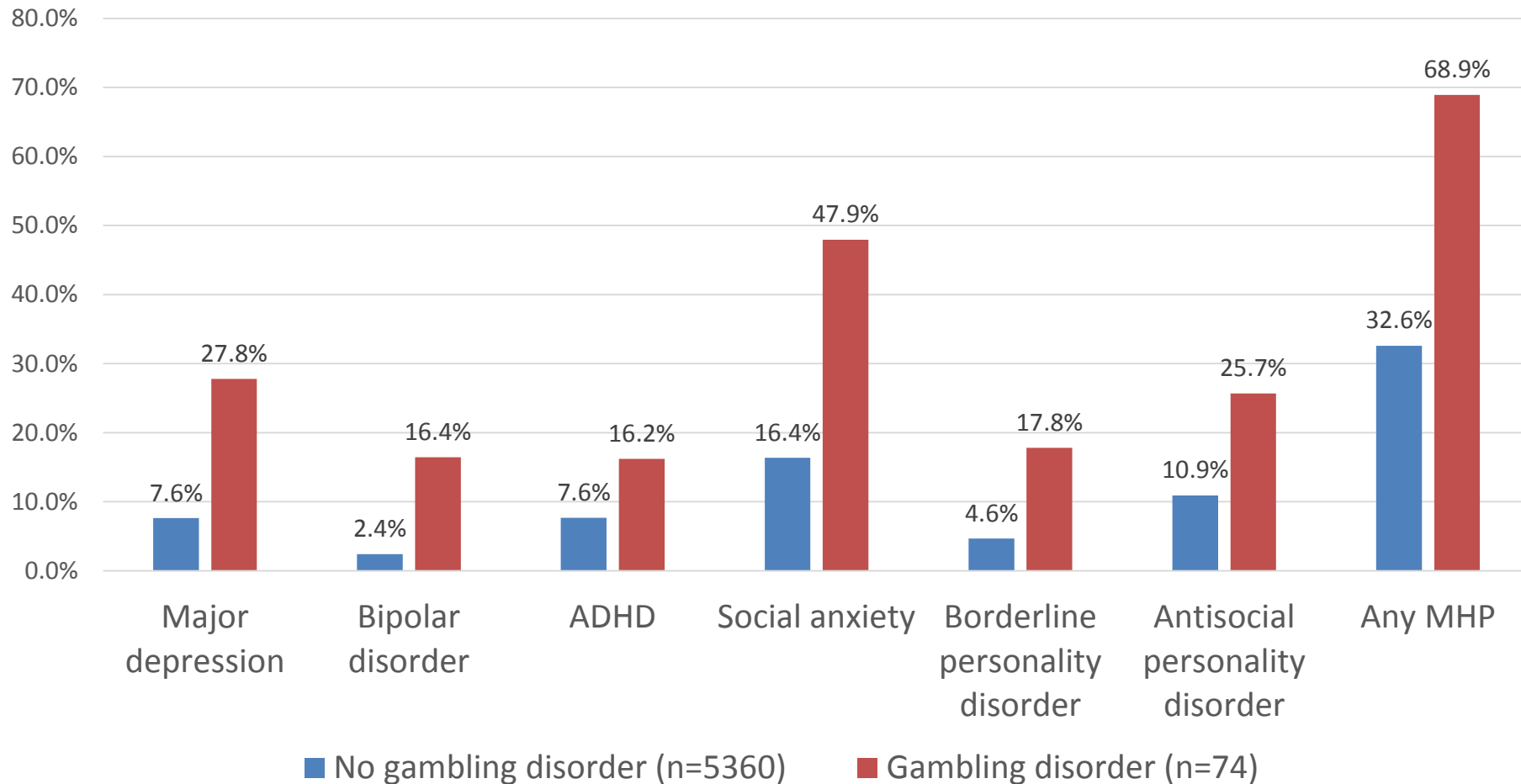


# Number of addictions besides gambling disorder

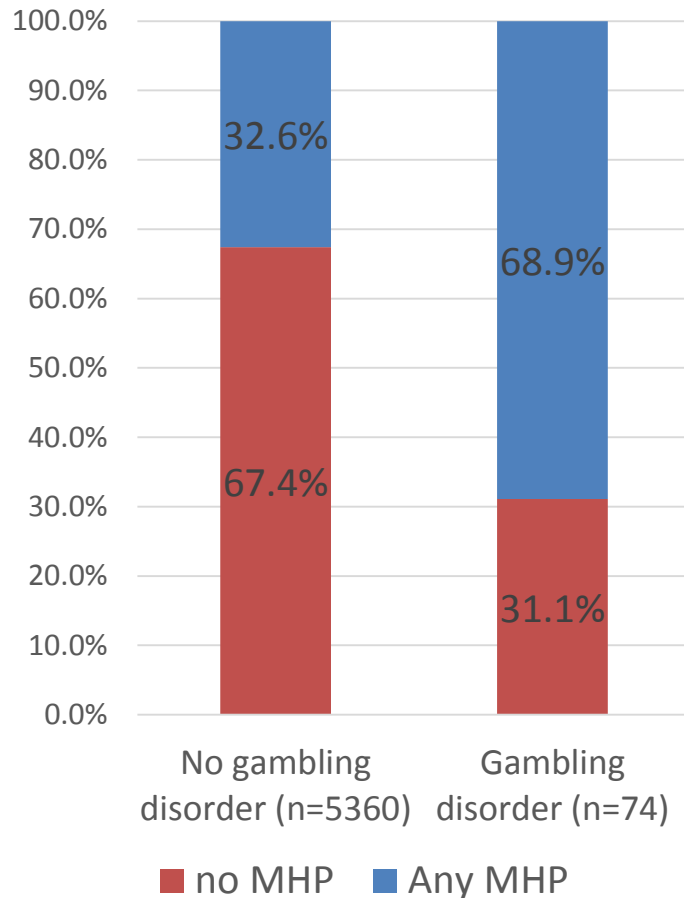


- Gambling disorder comes rarely alone
- Most participants with gambling disorders show at least 2 other addictions

# Prevalence of mental health problems (MHP)



# Calculating Odds Ratios (OR) for any mental health problem (MHP)



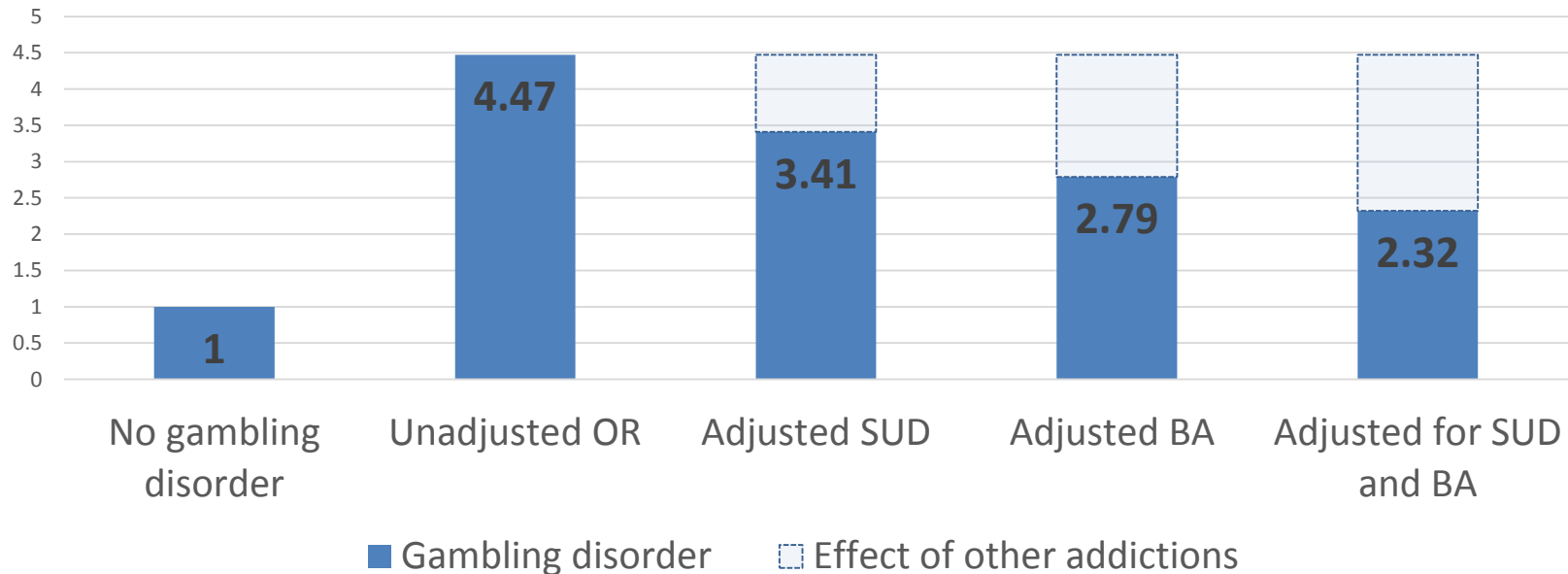
$$\frac{68.9\% / 31.1\%}{32.6\% / 67.4\%} = 4.59$$

Adjusted for language and age : OR= 4.47

= 4.47 higher odds of having any MHP in participants with gambling disorder compared to participants without

# Adjusting for other addictions

## Outcome: any mental health problem



- If adjusted for SUD or BA, or both, the OR is about half
- A good part of the association between gambling disorder and any MHP is accounted for, or at least confounded, by the presence of other addictions
- If adjusted for other addictions, associations between gambling disorder and MHP are still significant
- Analysis not adjusted for other addictions may overestimate the true effect of gambling

# Adjusting for other addictions

## Individual mental health problems

	Major depression	Bipolar disorder	ADHD	Social anxiety	Borderline personality disorder	Antisocial personality disorder
Gambling disorder	4.70	7.74	2.51	4.66	4.54	2.72
Adjusted for SUD	3.20	4.66	1.75	3.96	2.75	1.77
Adjusted for BA	2.67	4.77	1.33	2.63	2.25	1.81
Adjusted for SUD and BA	2.00	3.46	1.03	2.44	1.58	1.32

- Similar effect if considering the individual mental health problems
- OR for gambling disorder is no longer significant for ADHD, Borderline personality Antisocial personality disorder if adjusted for addictions
- OR for poor physical health remains significant, meaning that gambling disorder is associated with bad physical health even if controlling for other addictions

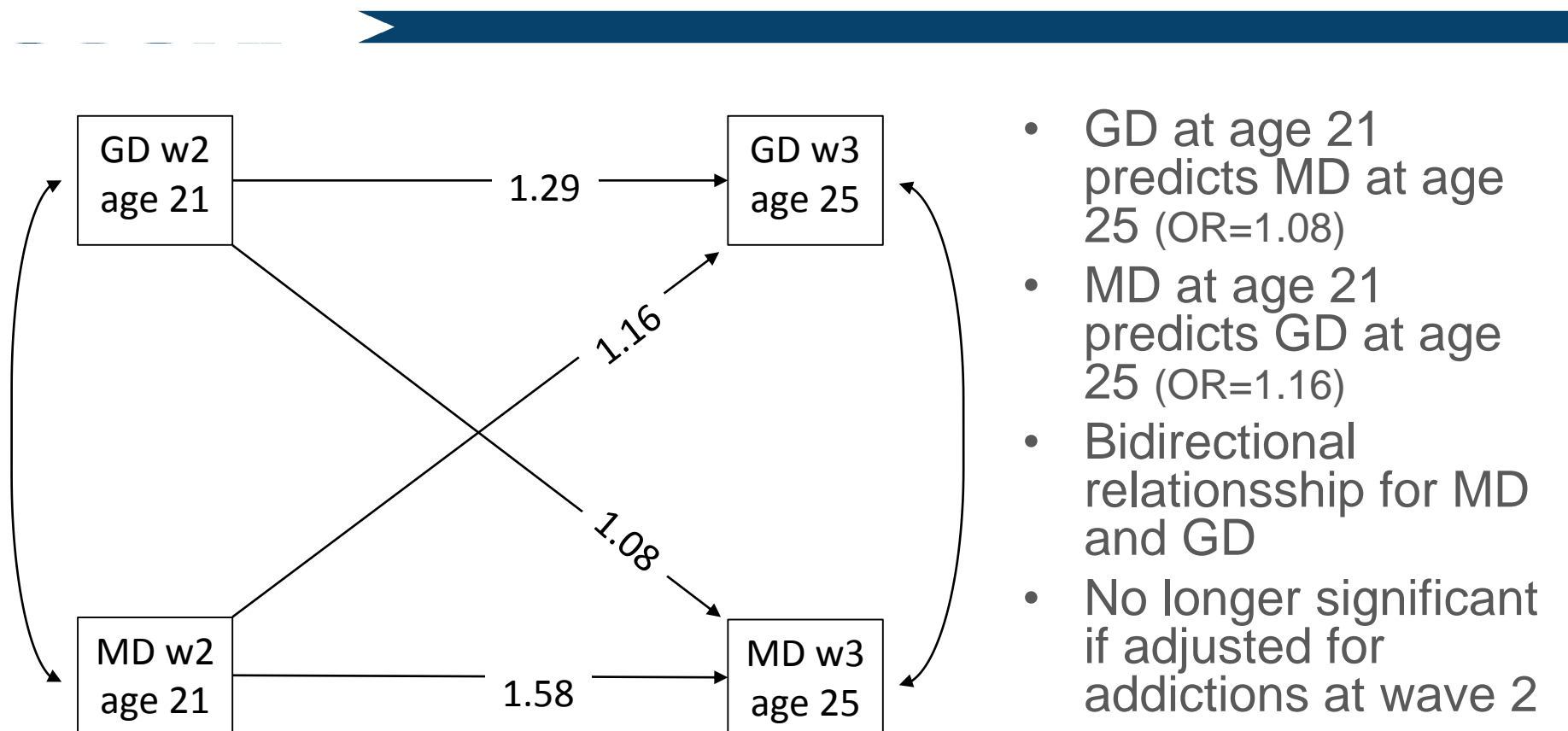
# Adjusting for other addictions suicide and physical health

	Suicidal ideation last year	Suicide attempts last year		SF12 physical health
Gambling disorder	<b>2.79</b>	3.53		<b>3.98</b>
Adjusted for SUD	<b>2.02</b>	1.69		<b>3.30</b>
Adjusted for BA	1.78	1.47		<b>2.79</b>
Adjusted for SUD and BA	1.43	0.93		<b>2.50</b>

- Similar effects for suicidal ideation: associated with gambling disorder, but not if adjusted for other BA
- Same tendency for suicide attempts, but no association is significant (small n!)
- OR for poor physical health remains significant, meaning that gambling disorder is associated with bad physical health even if controlling for other addictions

# Longitudinal associations

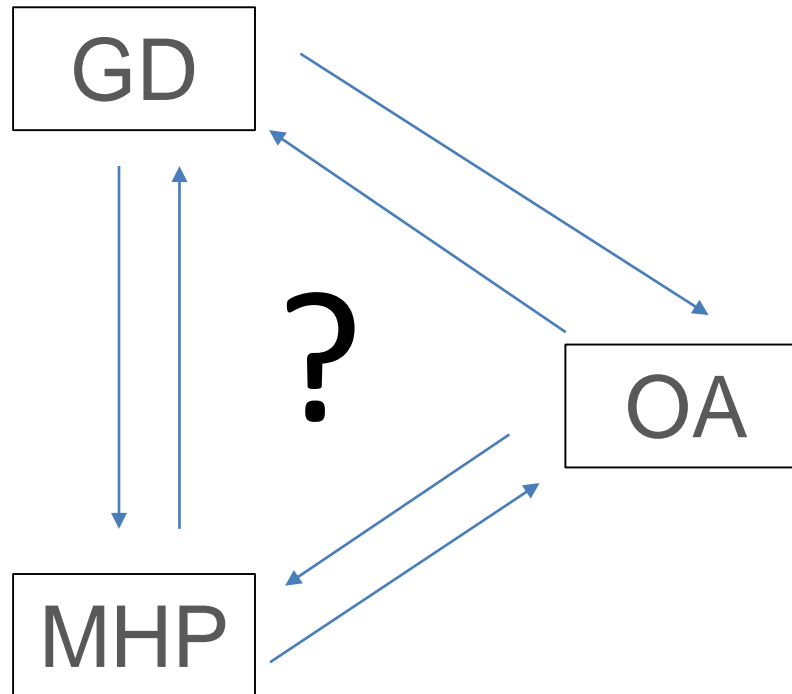
Gambling disorder (GD) -> Major depression (MD)



- GD at age 21 predicts MD at age 25 (OR=1.08)
- MD at age 21 predicts GD at age 25 (OR=1.16)
- Bidirectional relationship for MD and GD
- No longer significant if adjusted for addictions at wave 2

# Possible mechanisms

Gambling disorder (GD) -> other addictions (OA) -> mental health problems (MHP)





# Limitations

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- Only young men
- Despite large sample size (5445), only few participants with gambling disorder (n=74)
- Self-report measures

# Conclusion I

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- Gambling disorder often co-occurs with other behavioural addictions and substance use disorders
- Overall, gambling disorder comes rarely alone
- Gambling disorder is also associated with mental health problems
- Bidirectional associations

# Conclusion II

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- Co-occurring addictions explain a part of the link between gambling disorder and mental health problems
- For research on gambling and mental health problems, other addictions should be considered and controlled for
- Also, for treatment of gambling disorder, other addictions and mental health problems should be assessed
- Holistic treatment strategies may be beneficial

# References

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# The End



- Thank you for your attention
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