

Do Behavioural Addictions Predict Suicide Ideation and Attempts? Findings From a Prospective Cohort Study Among Young Swiss Men

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Introduction

- About **30% of the mortality among young men** at the age of 20- to 29 year is due to suicide^[1]. Estimates suggest that for every suicide death there are many more suicide attempts. These nonlethal attempts can have detrimental physical, psychological, social and economic effects on the individual but also for his/her close ones and the community^[1].
- When exploring risk factors for suicide ideation and attempts it is important to consider that virtually everyone who attempts a suicide had suicide ideation; however, **most of those with ideation do not escalate into attempts**^[2].
- The ideation-to-action framework by Klonsky & May^[3] states therefore that **risk factors should be estimated separately for a) for ideation and b) for the escalation of ideation into attempts**. A recent review indicates most "classic" risk factors merely predict suicide ideation; solely substance use disorders, anxiety disorders, PTSD, and sexual abuse history differentiated between ideation and the escalation to attempts^[4]. However, little is known about behavioural addictions (BA) such as gambling, gaming, cybersex, internet, smartphone or work addiction.

Aim

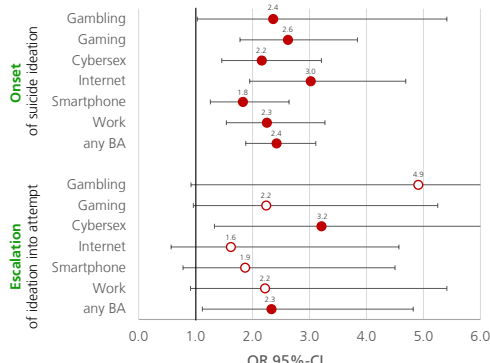
- Aim 1:** Based on a sample of young men with no lifetime history of suicide ideation we explore whether a) BAs at age 25 **predict the onset of ideation** by the age of 28; b) whether BAs at age 25 **predict the escalation from ideation to attempts** among those with an onset of ideation by the age of 28.
- Aim 2:** To see whether BAs are independent predictors of suicidal ideation and suicide attempts, we test to what extent possible associations found in part 1 are **attenuated when known risk factors (substance use disorder, other mental health problems, personality) are included** in the models of aim 1.

Methods

- Sample:** **4,590 Swiss men** (representative of 21 cantons) participating in the third ("baseline": mean age=25.47, SD=1.25) and/or fourth wave ("follow-up": mean age=28.23, SD=1.25) of the Cohort Study on Substance Use Risk Factors (C-SURF)^[5] without life-time history of suicide ideation at baseline.
- Measures:** At baseline participants were asked whether they ever had **suicide ideations** (lifetime). Furthermore, at baseline BAs^[6-11], **other mental health problems**^[12-18], **indicators of mental health**^[19-21] and **personality** factors^[22,23] were measured with established self-report instruments. Recommended cut-offs were used to code whether participants were screened positive for a specific BA or for being screened positive for any BA (1) or not (0). At follow up, **suicide ideation and attempts during the past 12 months** were assessed (0 "no", 1 "yes, at least once").
- Statistical Analysis:** Aim 1 was explored using **logistic regressions**; 1a) **"ideation_{follow up}" was regressed on BA at baseline**; 1b) **"attempt_{follow up}" was regressed on BA at baseline considering only participants with "ideation_{follow up}"**. All models were adjusted for age and linguistic region. For aim 2 the Karlson-Holm-Breen-method^[24] was used to estimate the attenuation (in %) due to known risk factors (mental health / personality) when they are included in the models of aim 1. Missing values were replaced based on an iterative Markov chain Monte Carlo approach and 50 imputed datasets were generated using fully conditional specifications.
- The conclusions of the present study are limited due to the fact that we do not have access to a precise measure of the level of suicidality (for instance passive/active suicidal ideation, suicidal plan, history of suicide attempts, etc.), nor data on participants who have potentially died by suicide.

Results

Aim 1: Behavioural addictions as predictor of suicide ideation and attempts



Remark: Significant estimates at p < .05 are shown in filled bullets.

- Among the 4,590 participants without lifetime history of suicide ideation at baseline, 6.9% (n=316) reported onset of suicide ideation and 1.0% (n=44) of suicide attempt during the past year at follow up; i.e. among 13.9% of those with an onset of suicide ideation, ideation escalated into attempt.
- In total, 1,058 (23.0%) were **screened positive having at least one behavioural addiction**: 1.2% for gambling, 6.1% for gaming, 5.7% for cybersex, 3.7% for internet, 7.6% for smartphone, and 7.0% for work addiction.
- Aim 1:** Among participants without lifetime history of suicide ideation, **being screened positive for each of the considered BAs at baseline (age 25) significantly predicted the onset of suicide ideation at follow up (age 28)**.
- Estimates for the escalation from suicide ideation to suicide attempt pointed in the same direction; however, due to the small sample size estimates were only significant for cybersex and "any BA".
- Significant estimates (ORs) ranged between 1.8 and 3.2, which corresponds to **small to medium effect sizes** (Cohen's d).

Aim 2: Attenuation (in %) due to other known risk-factors

	Substance Use Disorders				Other Mental Health Problems				Indicators of Mental Health				Personality				total		
	AUD	ND	CUD	total	MD	ADHD	BPD	SAD	total	MCS	SWL	Str	Aggh	Soc	NAnx	SenS		total	
Onset of suicide ideation	23	8	2	24	68	4	65	33	93	25	58	45	66	5	1	43	1	43	100
Gambling	3	6	7	11	39	9	28	23	52	25	37	35	51	2	7	23	0	27	67
Gaming	9	2	5	9	35	10	33	20	49	32	17	30	38	2	12	27	2	36	58
Cybersex	8	1	7	11	47	15	27	32	58	33	28	44	51	1	6	30	2	33	65
Internet	17	4	5	19	53	17	44	43	76	36	37	51	62	3	2	43	3	47	86
Smartphone	2	3	4	6	52	11	27	19	61	47	16	42	48	2	1	21	1	22	68
Work any BA	6	3	4	9	40	9	26	18	52	31	25	34	45	1	4	20	1	23	60
Escalation of id. into attempt	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gambling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gaming	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cybersex	0	1	1	1	5	8	9	13	13	8	3	12	12	4	15	3	5	11	26
Internet	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Smartphone	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Work any BA	0	2	1	1	6	43	7	24	24	19	11	24	25	5	2	2	2	9	50

Attenuation (in %) of estimated coefficients due to inclusion of other risk factors. Remarks: Significant attenuation at p < .05 are bold and green. AUD: alcohol use disorder, ND: nicotine dependence, CUD: cannabis use disorder, total: block-wise, MD: major depression, ADHD: Attention-deficit/hyperactivity disorder, BPD: borderline personality disorder, SAD: social anxiety disorder, MCS: mental component summary, SWL: life-satisfaction, Str: stress, Aggh: aggression-hostility, Soc: sociability, NAnx: neuroticism-anxiety, SenS: sensation-seeking.

- Gambling, gaming, cybersex, internet, smartphone and work addiction longitudinally **predicted the onset of suicide ideation at follow-up**. Being screened positive for any BA (one or more) **furthermore predicted a escalation of suicide ideation into attempts among**. The effect sizes of the increased risk due to behavioural addictions were comparable to those reported for alcohol and other substance use disorders^[4].
- While there was a considerable overlap with other risk factors, **BA had an independent predictive value** if a single or few risk factors were considered.
- Suicidal behaviour needs be carefully, automatically and frequently investigated** among individuals with BA, in a exhaustively way (for instance: finding an existence of a suicidal plan) by using established instruments such as the **Urgency-Dangerousness-Risk approach** (UDR)^[25].

Conclusions



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References