



ORIGINAL ARTICLE

Gambling disorder in the context of outpatient counselling and treatment: Background and design of a prospective German cohort study

Larissa Schwarzkopf^{1,2}  | Johanna K. Loy¹  | Barbara Braun-Michl¹  |
Bettina Grüne³  | Pawel Slecza⁴  | Ludwig Kraus^{1,5,6} 

¹IFT Institut fuer Therapieforschung, Munich, Germany

²Helmholtz Zentrum Muenchen, Institute of Health Economics and Health Care Management, Munich, Germany

³Department of Palliative Medicine, Ludwig Maximilians University Hospital, Munich, Germany

⁴German University of Health and Sport, Ismaning, Germany

⁵Department for Public Health Sciences, Centre for Social Research on Alcohol and Drugs, Stockholm University, Stockholm, Sweden

⁶Institute of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary

Correspondence

Larissa Schwarzkopf, Institut für Therapieforschung, Leopoldstraße 175, 80804, Munich, Germany.
Email: schwarzkopf@ift.de

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Abstract

Objective: The prospective naturalistic study ‘Katamnese-Studie’ conducted between 2014 and 2019 gathers evidence on the course of gambling disorder in German routine outpatient addiction care. This study elucidates design and methodological advantages and caveats of the study.

Methods: Participants of the multi-centre cohort received written questionnaires at admission and at 6-, 12-, 24- and 36-month follow-up to assess socio-demographic data, gambling behaviour, gambling-related consequences and care offers sought. Subsequently, self-reports were linked to client-individual routine documentation for the German Addiction Care Statistical Service. Furthermore, employees of participating outpatient addiction care facilities were surveyed regarding experiences with and attitudes towards gambling disorder. Multivariate longitudinal regression models will portray changes in the severity of gambling disorder and gambling behaviour and explore associated client- and care-related factors.

Conclusion: The ‘Katamnese-Studie’ covers the whole spectrum of outpatient gambling care. Keeping the design-related caveats in mind (reliability of self-reports, loss-to-follow-up and issues regarding causal inference), the study is anticipated to draw a comprehensive picture of routine outpatient gambling care and key factors related to sustained remission. In the medium term, this information might support the development and subpopulation-specific adaptation of recommendations on how to structure and content of outpatient gambling care.

KEYWORDS

addiction care, counselling and treatment, gambling behaviour, longitudinal study, observational study

Abbreviations: AUDIT, Alcohol Use Disorder Test; BSI-18, Brief Symptom Inventory-18; CIDI, Composite International Diagnostic Interview; DSM, Diagnostic and Statistical Manual of Mental Disorders; FLZ, Fragebogen zur Lebenszufriedenheit [Life Satisfaction Questionnaire]; GABS, Gambling Beliefs and Attitudes Survey; GRCS, Gambling Related Cognition Scale; IFT, Institut fuer Therapieforschung; IKP, Inventar Klinischer Persönlichkeitsakzenturierungen [Inventory of Accentuation of Personality traits]; OACF, outpatient addiction care facility; RCT, randomised controlled trial; SMAG, German Scale of Money Attitudes

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1 | BACKGROUND

Gambling disorder is characterized as a persistent pattern of gambling resulting in significant impairment or distress. Within the current Diagnostic and Statistical Manual of Mental Disorders (DSM 5), at least four of the following nine criteria have to be fulfilled to qualify for gambling disorder: (a) need to gamble with increasing amounts of money in order to achieve desired excitement; (b) exhibition of restlessness or irritability when trying to decrease gambling activity; (c) experience of loss of control over gambling; (d) preoccupation with gambling; (e) gambling in response to distress; (f) chase for losses; (g) lying to conceal extent of gambling involvement; (h) jeopardizing relationships, educational, or employment opportunities because of gambling and (i) reliance on others for financial bailouts for gambling-related financial crises.

Depending on the number of criteria fulfilled the severity level of gambling disorder is assessed (American Psychiatric Association, 2013). According to recent estimates, around 326,000 German residents are classified as 'problematic' (prevalence 0.56%) and around 180,000 as 'pathologic' gamblers (prevalence: 0.31%)¹ (Banz & Lang, 2017). Germany's addiction care system offers a broad range of counselling and treatment services for people with gambling disorder. The formal help offers range from hotlines and online counselling over the early diagnosis, short- and mid-term interventions in outpatient addiction counselling centres, through long-term psychotherapy and, in most acute cases, to inpatient treatment in psychosomatic or specialised addiction clinics. Despite all these services being covered by the social security system or public funds, only around 10% of more than 500,000 individuals affected seek corresponding help (Bischof et al., 2012; Loy, Grüne, Braun, Samuelsson, & Kraus, 2018). Over the last decade, public awareness of gambling disorder has been on the rise: according to the German Addiction Care Statistical Service, the share of gambling-associated care² episodes has more than doubled in the inpatient (2008: 1.3%, 2016: 3.8%) and even quadrupled in the outpatient sector (2008: 1.3%, 2018: 5.3%; Dauber, Specht, Kuenzel, Pfeiffer-Gerschel, & Braun, 2019; Steppan, Hildebrand, Wegmann, & Pfeiffer-Gerschel, 2010).

Previous studies characterised people with gambling disorder as a clientele with high psychiatric comorbidity burden and substantial co-consumption of psychotropic substances (Mann et al., 2017; Premper & Schulz, 2008; Vogelgesang, 2010). These co-issues might introduce additional complexity into gambling-related addiction care and presumably affect its effectiveness: less than 50% of patients with gambling disorder stay abstinent during the first year after inpatient rehabilitation (Bundesverband für stationäre Suchtkrankenhilfe e.V (buss), 2015; Muller et al., 2017; Premper et al., 2014). For outpatient rehabilitation, 12-month abstinence rates slightly below 60% have been reported (Steffen, Werle, Steffen, Steffen, & Steffen, 2012; Tecklenburg, 2012). Indeed, outpatient rehabilitation reflects only a minor part of outpatient addiction care, but follow-up data are sparse for service offers other than rehabilitation (Braun, Ludwig, Kraus, Kroher, & Bühringer, 2013).

Thus, to more comprehensively appraise the course and outcomes of outpatient gambling care, a broader perspective on service offers is required. To gather corresponding information, we conceived a prospective naturalistic study named 'Katamnese-Studie' (catamnesis study). This paper (a) delineates the key research questions of this study, (b) elucidates its conceptual approach, and (c) discusses design-related caveats.

2 | METHODS

2.1 | Study objectives

The exploratory 'Katamnese-Studie' has three objectives: to (1) mirror the course of gambling disorder in clients seeking help in German outpatient addiction care facilities (OACF); to (2) identify client- and care-related factors with a beneficial or detrimental association on that course and to (3) delineate recommendations for improved counselling and treatment in routine gambling care.

At a second level, the study aims to characterize the help-seeking clientele with special emphasis on psychic comorbidity burden and attachment style as well as to describe typical elements of the counseling sessions. All study objectives will be investigated in exploratory manner, without prespecified directional hypotheses regarding the outcomes of interest.

The 'Katamnese-Studie' received ethical approval from the ethics committee of the German Association of Psychology as application number 'LK 092014'.

2.2 | Setting

Between 2014 and 2019, the 'Katamnese-Studie' was conducted within the Bavarian Competence Network for Gambling Issues. This network consists of 22 competence centres and 37 additional OACFs that receive professional development from the Bavarian 'Landesstelle Glücksspielsucht' (Bavarian Coordination Centre for Gambling Issues). The competence centres reflect a subsample of those OACFs participating the competence network. They receive partial staff funding for gambling care provided by the Bavarian Coordination Centre for Gambling Issues, which is not the case for the other participating OACFs. All OACFs in the competence network have a strong impetus for gambling care but do not limit their service offers to individuals with gambling disorder. They generally cover a broader spectrum of substance-related and behavioural addictions.

In Germany, the OACF system reflects a mainly community-financed service for individuals seeking help for addiction-related problems (See Figure 1). The OACF services are free of charge and thus provide a relatively low threshold access. Each OACF provides highly need-based individualized treatment for their clients, with service offers differing in dependence of the content-related focus of the facility and staff training. In consequence, there is no common

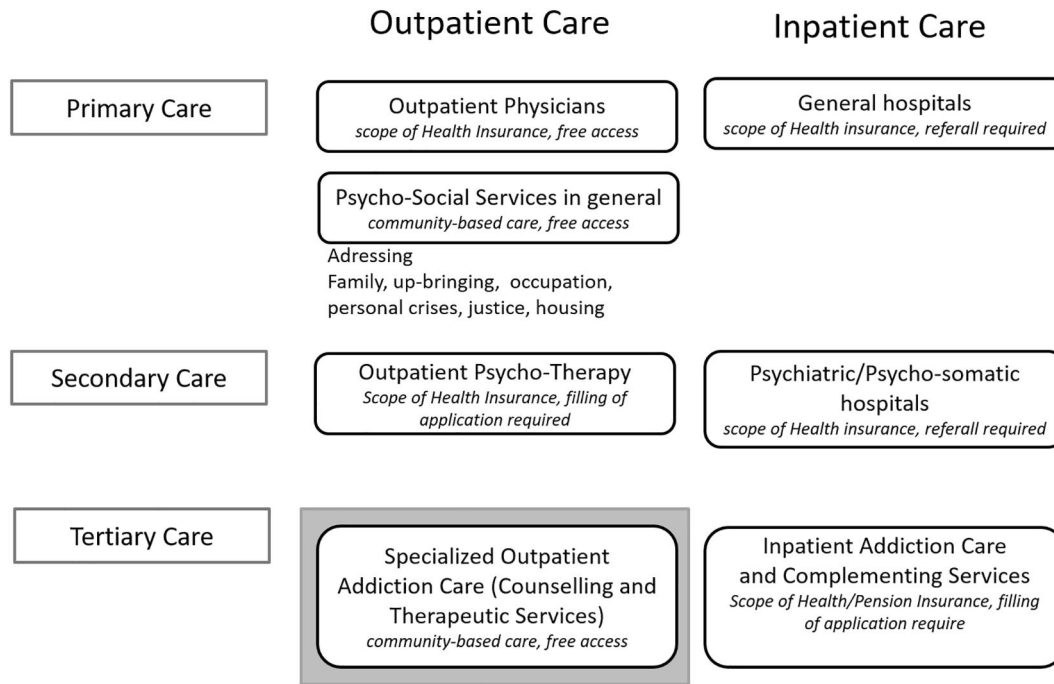


FIGURE 1 Structure of the German addiction care system

therapeutic (manual-based) standard for outpatient gambling care that is adhered to in each single OACF. Instead each facility has own (evidence-based) treatment standards that have to compile with the requirements of the financing institutions.

Regarding treatment concepts, virtually each OACF uses motivational interviewing techniques and most of them employ qualified staff to conduct talk therapy. Some OACF even provide (manual-based) outpatient rehabilitation, which among others includes individual and group-based psychotherapy, debt-counselling, physician based care, socio-therapeutic interventions and relaxation techniques on a mandatory base. Altogether, the main goal of OACF care is to support individuals with gambling disorder to handle their daily life issues. This also means initiating referral to specialist inpatient or outpatient (psycho-therapeutic) interventions whenever required.

Given that gambling care is multifaceted and highly heterogeneous the Bavarian Coordination Centre for Gambling Issues has developed a 'Practice Guide Gambling' to establish a common OACF-wide ground which aspects high-quality outpatient gambling care ought to address. This handbook provides background information and additional material on diagnostics, subgroup specific needs, elements of counselling (e.g., target agreement, debt counselling and budget planning) and exercises for group and individual counselling sessions.

As an initial step, all institutions in the network were invited to participate in the study. Interested OACFs were obliged to document their services in accordance with the German Addiction Care Statistical Service. All 22 competence centres and six additional OACFs confirmed participation.

2.3 | Participant recruitment

Participant recruitment took place between December 2014 and August 2016. Taking a dropout rate of 50% into account, enrollment of at least 150 participants was considered necessary to ensure a sufficiently large sample size at the end of follow-up. All individuals presenting at the participating OACFs because of their own gambling problems fulfilling the following inclusion criteria were eligible for participation: ≥ 18 years of age, sufficient German language skills and a minimum of three contacts with the distinct OACF. The last criterion was chosen to prevent overburdening of clients with ambiguous willingness to undergo comprehensive care at a very early stage in the client-carer relationship and to avoid the inclusion of clients with no immediate need for continuous care.

At their third contact, clients fulfilling the inclusion criteria received verbal and written information on the purpose and content of the study as well as on the conducting institution (Institut fuer Therapieforschung [IFT]). Furthermore, clients were informed about the voluntary nature of their participation and confidentiality of their data. Informed written consent could subsequently be given until 30 days after the fifth contact with the OACF.

As an incentive, a €10 voucher (without the option to exchange it for money or gambling stakes) was provided as an allowance for the baseline assessment. To mitigate issues of dropout, a €15 voucher was offered for participation at the first and €20 vouchers for participation at subsequent follow-ups.

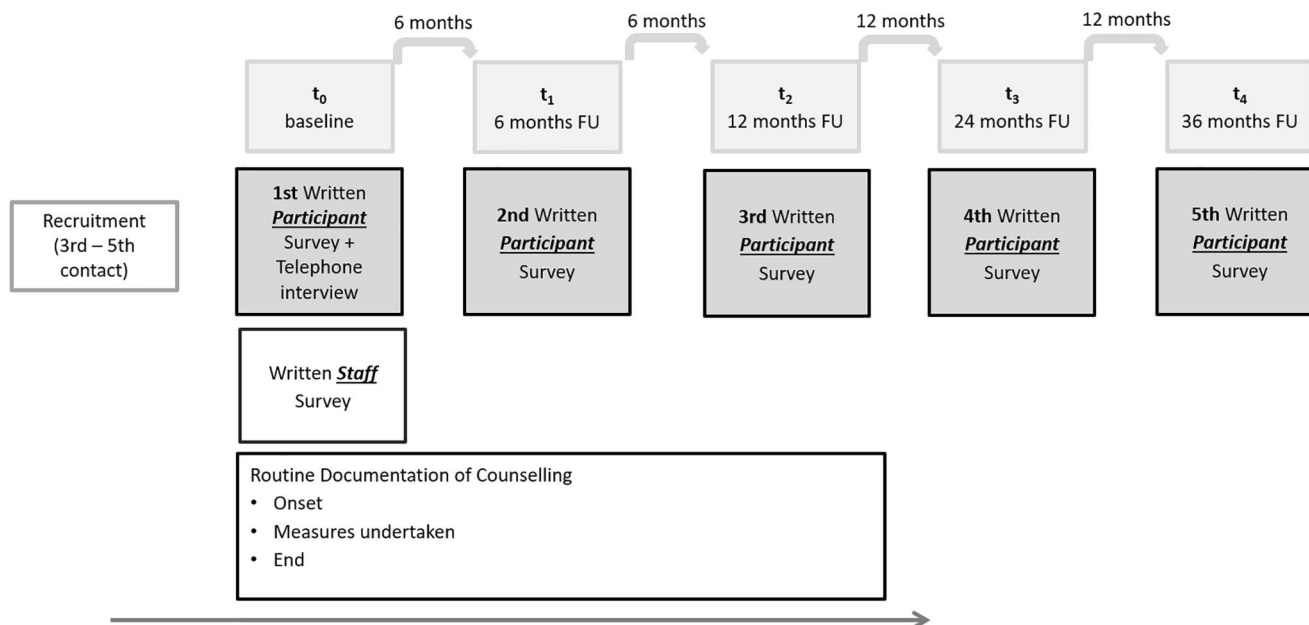


FIGURE 2 Points and types of data assessment

2.4 | Study design

The 'Katamnese-Studie' is a prospective, one-arm, observational, cohort study with 3 years of follow-up. Patient-level data are collected at baseline (t_0), after 6 months (t_1), 12 months (t_2), 24 months (t_3) and 36 months (t_4). As visualized in Figure 2, data stem from three different sources: participants' self-reports (t_0 – t_4), a staff survey with employees from the participating OACFs (t_0), and facilities' routine documentation on the counseling process and client characteristics (t_0 until end of care episode or t_2 , whichever comes first).

2.4.1 | Participant survey

For the written survey, participants could choose between a paper-based and online version. Based on person-individual baseline dates, questionnaires were sent by (e-)mail at each follow-up. Baseline assessment took place between the third (i.e., prespecified minimal number of contacts) and fifth (i.e., deadline for providing informed consent) contact with the OACF. Once at baseline, a trained psychologist conducted a computer-assisted composite international diagnostic interview (CIDI) by telephone (Wittchen & Pfister, 1997). To enhance response rates at the distinct assessment points, clients received several reminders at specific time intervals after the initial dispatch of the questionnaires.

2.4.2 | Staff survey

The baseline staff survey was conducted in a convenience sample. All interested employees of the participating OACFs received a written

questionnaire addressing the internal structures of the institution as well as personal experiences with and attitudes toward gambling care.

2.4.3 | Routine documentation

Within all participating OACFs, case-related, patient-level data are routinely collected according to the Germany-wide standardized core dataset of addiction care (German Centre for Addiction Issues, 2010). Data contain client- (e.g., socio-demographics), disorder- and process-related information (e.g., admission from, conditions of termination and transmission to), as well as structural details on the distinct OACF. This routinely collected information was linked with the clients' self-reports based on unique pseudonyms.

In addition to this core dataset, counselling staff filled a mandatory short questionnaire for study participants that reflected individual motivation and treatment goals. Subsequently, contents, modalities and methods applied were summarized for each pool of four sessions. Reasons for termination of the care episode (counselor's point of view) were documented after the final contact.

2.5 | Parameters assessed

2.5.1 | Primary outcomes

Following evidence from the Banff consensus (Walker et al., 2006) and a Cochrane review (Cowlshaw et al., 2012), effective gambling care ought to mitigate gambling issues. Therefore, longitudinal changes in severity of the gambling disorder and in gambling behaviour reflect our primary outcomes.

To classify the severity level of the gambling disorder, we applied a DSM 5 adapted version of the Stinchfield criteria (Stinchfield, 2003), which other than the initial version disregards those two items referring to illicit actions. For this 19-item questionnaire, fulfilment of 4–5 criteria reflects mild, 6–7 criteria moderate and ≥ 8 criteria severe gambling disorder. In addition to this categorical classification, we considered the sum score calculated from the dummy-coded criteria.

To portray gambling behaviour, we analyse average number of gambling days per week as a measure of gambling frequency and hours per gambling day as a measure of gambling intensity. Both parameters were chosen in accordance with the suggestions of Connors and colleagues, who operationalise treatment outcomes in the context of alcohol use disorder (Connors, Miller, Anton, & Tonigan, 2003), and asked for with open questions.

2.5.2 | Secondary outcomes

As secondary outcomes, we investigate gambling preferences, attitudes towards personal gambling behaviour and gambling-related problems. Furthermore, we portray life satisfaction. Again, special emphasis is paid to longitudinal changes.

To address gambling preferences, 12-months (t0, t2–t4) or rather 6-months (t1) prevalence of different forms of gambling was assessed. We accounted for slot machines, traditional casino games, lottery tickets, lotteries, pools, television lottery, class lottery, bets on horses, sports bets at licensed retailers, online sports bets, online poker/card games, other forms of online gambling, speculation on the stock exchange, illicit forms of gambling and gambling with family and friends (Kroher & Sassen, 2009). For each form, a utilization frequency of at least once per week was defined as regular use.

Attitudes towards gambling were assessed with the reduced version of the Gambling Beliefs and Attitudes Survey (GABS; Breen & Zuckerman, 1999) suggested by Strong and collaborators (Strong, Breen, & Lejuez, 2004) in German translation (Banz & Lang, 2017). Assuming that distorted perceptions might promote intensified gambling, the reduced GABS documents consent to 15 gambling-associated statements via 4-point Likert scales. Additionally, participants were presented a list of ten potential motives of gambling out of which they should select those that applied best to themselves.

To capture gambling-related cognitive distortions, a German translation of the Gambling Related Cognition Scale (GRCS) was applied (Raylu & Oei, 2004). Based on 23 items answered on 7-point Likert scales, the GRCS mirrors five different aspects of perceived control over gambling.

Following the recommendation of Dickerson (Dickerson, 1989), gambling-related problems address 'personal health', 'relationship', 'occupation', 'financial issues' and 'legal issues'. These problem areas were assessed in accordance with the 'Versorgungsstudie' (i.e., gambling care study; Braun et al., 2013), a cross-sectional precursor study of the 'Katamnese-Studie' that characterized the help-seeking clientele of OACFs. Out of a preselection of 10 negative

consequences, participants could choose those aspects relevant to themselves and specify the most serious field of concern. Finally, the existence and range of gambling-related debts was documented.

To reflect the participants' life satisfaction, the Fragebogen zur Lebenszufriedenheit (FLZ; i.e., Life Satisfaction Questionnaire) was applied (Fahrenberg J, & Schumacher, 2000). The FLZ assesses satisfaction with 10 different areas of life on 7-point Likert scales, but our study disregarded the subscales referring to sexuality, housing and relationship with children.

2.5.3 | Moderator variables

We considered the following client- and counselling-related moderator variables.

Client-related moderator variables

Client-related moderator variables cover socio-demographic data, individual history of gambling (care), motivation and care-related goals, psychiatric comorbidity burden, psychological burden, attachment style and accentuation of personality traits.

In accordance with the recommendations of the Federal Statistical Office of the Federal Republic of Germany, sociodemographic information includes age, gender, migrant background, occupational status, family status and household income (Statistisches Bundesamt, 2010).

Individual history of gambling (care) reflects lifetime prevalence of distinct forms of gambling (as listed above), preferred form of gambling and initial form of gambling in lifetime. With open questions, we collected information on age at first gambling experience, time between first gambling experience and becoming aware of gambling-related problems and number of attempts to quit gambling.

Previous contacts with the addiction care system and line of admission were obtained from the core dataset of addiction care (Deutsche Hauptstelle für Suchtfragen [DHS], 2010, 2018). Within the written questionnaire, participants were also asked to specify care services (counselling, outpatient rehabilitation, inpatient rehabilitation, self-help group) attended previously.

Psychiatric comorbidity burden was assessed using a fully standardised interview procedure for the classification of psychiatric disorders (DIA-X; Wittchen & Pfister, 1997) with previous year as the reference period. We considered depressive disorders, bipolar disorders, anxiety disorders, obsessive-compulsive disorders and post-traumatic stress disorder. To explore potential comorbid alcohol use disorder, we applied the German version of the Alcohol Use Disorder Test (AUDIT; Babor, de la Fuente, Saunders, & Grant, 2001; Rumpf, Meyer, Hapke, & John, 2010). The AUDIT score ranges from 0 to 24 points with scores ≥ 8 as cut-off for harmful consumption. Use of illicit substances (opioids, cannabis, sedative/hypnotics, stimulants, cocaine and hallucinogens) and tobacco was operationalised as days with consumption during the last month.

Psychological symptom burden was assessed with the Brief Symptom Inventory-18 (BSI-18; Spitzer et al., 2011). The BSI-18

addresses each of the domains 'somatization', 'depressiveness' and 'anxiety' based on six items that are answered via 5-point Likert scales. Accentuated personality was reflected with the Inventar Klinischer Persönlichkeitsakzentuierungen (IKP; Andresen, 2006). The IKP contains 11 different diagnoses, each of which is assessed by a 10-item scale. To describe attachment styles, the Bielefeld Clients' Expectations Questionnaire (Höger, 1999) was used. This tool defines five different attachment styles by combining aspects of 'acceptance problems', 'openness' and 'need for attention'. Meaning of money was assessed using the German Scale of Money Attitudes (SMAG; Slecza, Braun-Michl, & Kraus, 2020). The SMAG reflects the perception of money as 'symbol of success', 'budgeting' and seeing money as 'an evil', and is based on 12 items to be answered on 11-point Likert scales. The identified factor structure closely resembles that of the Money Ethic Scale (Tang, 1992).

Care-related moderator variables

Care-related moderator variables address arrangements made during the care episode, patient motivation and care-related goals—both from the counselor's point of view—which were obtained from the patient-individual documentation sheets. Furthermore, number and type of therapeutic measures provided was accounted for. Finally, counsellor experience with and attitude towards gambling as well as structural framework conditions within the OACF as stated in the staff survey were considered.

Measures applied at the different assessment points are depicted in Table 1.

2.6 | Data analysis

Exploratory analyses will be performed with 'STATA, Version 15.1' and 'R, version 3.4.2'. First, baseline characteristics of the study population including socio-demographics, gambling profiles and care-seeking pattern will be analysed descriptively. Here, stratification by relevant subgroups (e.g., gender, severity level of gambling disorder) will be applied whenever possible.

To answer our study objective 1 (course of gambling disorder), we will investigate changes in primary (severity of gambling disorder) and secondary (gambling intensity and gambling frequency) outcomes using models such as GEEs or mixed models that account for intrasubject correlation in the context of repeated measures (Alencar, Singer, & Rocha, 2012). To investigate development of the distinct outcome parameters, we will assess 'change' in continuous manner. To do so, we will assess the distinct values at each assessment point and subsequently analyse the corresponding changes (Alencar et al., 2012). To address regression to the mean, we will include baseline values of the distinct outcome parameters. Furthermore, client- and counselling-related moderator variables will be included in these models to explore factors associated with beneficial respectively detrimental change of gambling behaviour (objective 2). Besides investigating socio-demographic factors associated with changing gambling behaviour, we intend to put special

emphasis on the role of intensity (number of contacts) and type of care services provided.

Here, we plan to operationalise these parameters in time-dependent form, whenever applicable. To generate further hypotheses on specific target groups in gambling care we plan to compare the course of gambling disorder in distinct subgroups that differ regarding their psychic comorbidity burden (DIA-X), their psychological symptom burden (BSI-18) and presence of accentuated personality (IKP). Associations of client expectations (BKFE) and counsellor-reported client motivation with directional change of gambling behaviour (i.e., improved, stable, worsened) shall both be analysed separately using proportional odds models (Brant, 1990). Finally, we plan an exploratory analyses how different counselor attitudes are associated with improved gambling behaviour.

Analyses will focus on study completers who will be contrasted with dropouts to assess structural differences between the groups. To further address loss-to-follow-up effects, inverse probability weighting is intended (Mansournia & Altman, 2016). To reflect the full sample within sensitivity analyses, we plan to test several imputation techniques (Noorae, Molenberghs, Ormel, & Van den Heuvel, 2018; Saunders et al., 2006). Regarding all longitudinal analyses, our primary interest is to explore medium-term associations between course of gambling care and gambling-related outcomes between t0 and t4. As a secondary objective, short-term associations between t0 and t2 will be investigated.

3 | DISCUSSION

So far, only a few prospective cohort studies have been conducted in the field of gambling disorder (Abbott, Williams, & Volberg, 2004; Challet-Bouju et al., 2014; Muller et al., 2017; Ramos-Grille, Goma-i-Freixanet, Aragay, Valero, & Valles, 2013). This previous research targeted specific subpopulations (e.g., slot machine gamblers [Ramos-Grille et al., 2013]), followed up inpatient cohorts (Muller et al., 2017) or did not account for the mediating role of gambling care (Abbott et al., 2004; Challet-Bouju et al., 2014). A study focusing on outpatient gambling care per se, which therefore reflects the entire spectrum of gambling disorder present and care services provided in the outpatient setting, is lacking so far at national but also international level. The German 'Katamnese-Studie' addresses this largely unexplored field by portraying the complex longitudinal interplay between client- and care-related characteristics with course of a gambling disorder over an extended observation period.

The prospective naturalistic design of the 'Katamnese-Studie' offers some advantages: first, study-related extra tasks for staff at the participating OACFs were reduced to a minimum. Facility staff only provided initial information and invited the clients to participate. Detailed information on interested clients, final eligibility checks and follow-up management were handled by the independent research team. Furthermore, data collection relied by and large on information from the routine documentation system and the participants' self-

TABLE 1 Data assessment in the 'Katamnese-Studie'—process and tools applied

	Point of assessment				
	t ₀	t ₁ 6m	t ₂ 12m	t ₃ 24m	t ₄ 36m
Primary outcome variables					
Severity level of gambling disorder (DSM 5) (Stinchfield, 2003)	X	X	X	X	X
Gambling frequency (days per week)	X	X	X	X	X
Gambling intensity (hours per gambling day)	X	X	X	X	X
Secondary outcome variables					
Gambling behaviour					
Gambling forms (Kroher & Sassen, 2009)	X	X	X	X	X
Preferred form of gambling	X	X	X	X	X
Attitudes towards gambling					
Attitudes and beliefs towards gambling (GABS; Strong et al., 2004)	X	X	X	X	X
Gambling-related cognitive distortions (GRCS) (Raylu & Oei, 2004)	X	X	X	X	X
Motives for gambling	X	X	X	X	X
Gambling-related consequences (Braun et al., 2013)	X	X	X	X	X
Life satisfaction (FLZ; Fahrenberg J, & Schumacher, 2000)	X	X	X	X	X
Client-related moderator variables					
Sociodemographic data					
Sociodemographic data	X	X	X	X	X
Individual history of gambling (open questions)					
Age of first gambling experience	X	-	-	-	-
Attempts to quit gambling	X	-	-	-	-
Awareness of gambling-related problems	X	-	-	-	-
Previous contacts with health/social care system (open questions)					
Gambling problems	X	-	-	-	-
Problems with substance use (alcohol, illicit substances)	X	-	-	-	-
Psychological problems	X	-	-	-	-
Comorbidity burden					
Psychiatric comorbidity burden (CIDI; Wittchen & Pfister, 1997)	X	-	-	-	-
Alcohol consumption (AUDIT; Rumpf et al., 2010)	X	X	X	X	X
Co-consumption of illicit substances	X	X	X	X	X
Psychological symptom burden (BSI-18; Spitzer et al., 2011)	X	-	-	-	-
Character traits					
Accentuated personality (IKP; Andresen, 2006)	X	-	-	-	-
Attachment style (BFKE; Höger, 1999)	X	-	-	-	-
Attitude towards money (SMAG; Slecza et al., 2020)	X	-	-	-	-
Care-related moderator variables					
Client motivation (counsellor-based view)					
Client motivation (counsellor-based view)	X	-	-	-	-
Treatment goals (counsellor-based view)	X	-	-	-	-
Care process					
Duration of care episode	-	X	(X)	-	-
Number of contacts (Deutsche Hauptstelle für Suchtfragen [DHS], 2010, 2018)	-	X	(X)	-	-

(Continues)

TABLE 1 (Continued)

	Point of assessment				
	t_0	t_{16m}	t_{12m}	t_{324m}	t_{436m}
Number and type of therapeutic measures	-	X	(X)	-	-
Contents of care session	-	X	(X)	-	-

Note: Brackets '()' reflect parameters that were not documented for participants whose care process ended before t_1 .

Abbreviations: AUDIT, Alcohol Use Disorder Test; BFKE, Bielefelder Fragebogen zu Klientenerwartungen; BSI-18, Brief Symptom Inventory 18; CIDI, Composite International Diagnostic Interview; DSM, Diagnostic and Statistical Manual of Mental Disorders; FLZ, Fragebogen zur Lebenszufriedenheit; GABS, Gambling Attitudes and Beliefs Survey; GRCS, Gambling-Related Cognitions Scale; IIP, Inventar interpersonaler Probleme; SMAG, German Scale of Money Attitudes.

reports. Therefore, we think that study-related documentation only marginally affects the normal routine of outpatient gambling care. In consequence, the 'Katamnese-Studie' draws an unbiased picture of usual outpatient gambling care in Germany.

Second, the study covers the entire spectrum of outpatient gambling care services. This broad perspective cannot be adopted by (cluster-)randomized controlled trials (RCTs). RCTs are designed to provide efficacy information on a few predefined care concepts but are of limited use to inform about the routine effectiveness of numerous care strategies that are not specified a priori. Our longitudinal observational study design is well suited to explore (but not to prove), whether the uptake of any outpatient gambling care service is generally associated with longitudinal changes in gambling behaviour. This can in turn provide evidence for the question whether outpatient gambling care works in its clientele and might help to generate hypotheses which aspects of gambling care might be particularly helpful. Furthermore, the unveiled longitudinal gambling profiles might be of interest when it comes to model the catamnestic course of gambling disorder after the end of a care episode. We are convinced that findings on associations between course of care and gambling-related outcomes stemming from this observational setting have high external validity.

Third, as an innovative feature, the 'Katamnese-Studie' links a client survey with data from the routine documentation system and a staff survey. This enables the incorporation of the counselor's/therapist's perspective into the analyses. So far, the relevance of client-level predisposing factors on the course of gambling disorder is broadly accepted (e.g. Challet-Bouju et al., 2014; Ramos-Grille et al., 2013). In parallel, the association between staff attitude towards gambling disorder, composition of care services and course of the disorder is sparsely investigated. Including these time-dependent moderators into our analyses is expected to support more robust conclusions on key framework conditions of successful gambling care.

Fourth, with a follow-up of up to 36 months post admission (i.e., around 30 months post termination of the initial care episode), the study reflects a longer follow-up period than most previous research (Steffen et al., 2012; Tecklenburg, 2012) and is hence suited to elucidate medium-term associations related to outpatient gambling care. Corresponding data are required to underpin the sustainability of care-related changes in gambling behaviour.

On the other hand, future findings of the 'Katamnese-Studie' should be interpreted keeping the design-related caveats in mind. First, we only selected clients with a minimum of three contacts with the OACF. Hence, we might have excluded individuals with less severe forms of gambling disorder who presumably require less frequent contacts with the addiction care system to manage their problems successfully. Furthermore, we might also have lost some patients with very acute need for help who had to be transferred to crisis intervention before the third contact. Therefore, our study population might not be fully representative of individuals with gambling disorder in Germany's outpatient addiction care system. To handle this issue, the analyses will account for severity level by adjustment or stratification. Furthermore, the main emphasis of the study is placed on investigating (multivariate) associations between outcome and exposure variables, not on estimating prevalence rates. Given that sample effects affect generalisations on relationships less seriously than generalisations on prevalence (Rothman, Gallacher, & Hatch, 2013), we do not consider sampling issues as a crucial source of bias.

Second, questionnaires were distributed online and in paper-based form. Based on previous experience, we expect that some participants comment on their answers on the paper-based questionnaires or even change the wording of the items. These modifications—which are not feasible in online questionnaires—might affect the number and type of evaluable data depending on the mode of assessment. To best possibly address corresponding selection bias, standard operating procedures for dealing with ambiguous data will be developed. Additionally, analytic strategies to reflect mode effects will be explored (Vannieuwenhuyze & Loosveldt, 2013).

Third, given the observational, one-armed nature of the 'Katamnese-Studie', causal inference on key components of successful outpatient gambling care is a sensitive issue. We presume that each care episode consists of various numbers of distinct client-individual service offers. This highly individualized care process matches with the self-conception of outpatient addiction care to adapt standard care strategies to subjective needs (Deutsche Hauptstelle für Suchtfragen [DHS], 2005). In consequence, we can only provide evidence if (and for whom) the multimodal complex concept 'outpatient gambling care' works, but the study cannot quantify—or even prove—the exact contribution of a distinct component to the observed outcomes.

Fourth, as a typical issue of cohort studies, we anticipate substantial (and most likely informative) dropout over time. To mitigate this issue, we do comprehensive follow-up management with incentives and reminders. Furthermore, we will put imputation techniques and sensitivity analyses in place to check the robustness of our results. Nevertheless, in small sample sizes, effect estimations are to some extent imprecise owing to random error.

Following 'out-patient rather than in-patient' as the guiding principle of the German health and social care system, 87.5% of gambling-related care episodes take place in the outpatient and not in the inpatient sector (Dauber et al., 2019). Hence, to offer client-targeted gambling care, a sound understanding of the status quo of outpatient gambling care and predisposing factors for sustained improvement of gambling disorder is paramount. The 'Katamnese-Studie' provides medium-term insights into characteristic care pathways of help-seeking clients and related changes in gambling behaviour. In addition to client-level characteristics, the study particularly elucidates the relevance of structural- and process-related variables at the facility level. This evidence might foster delineating subgroups with intensified care needs and could thus contribute to a subpopulation-oriented refinement of recommendations for outpatient counselling and treatment of people with gambling disorder. Here, an early integration of such guidance into the care process might in the long run enhance the effectiveness of outpatient gambling care.

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CONFLICT OF INTERESTS

All authors state that they do not have any competing or conflicting interests related to the work presented in the paper.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The 'Katamnese-Studie' received ethical approval from the ethics committee of the German Association of Psychology as application number 'LK 092014'. At their third contact, clients fulfilling the inclusion criteria received verbal and written information on the

purpose and content of the study as well as on the conducting institution (IFT - Institut fuer Therapieforchung). Furthermore, clients were informed about the voluntary nature of their participation and confidentiality of their data. Informed written consent could subsequently be given until 30 days after the fifth contact with the OACF.

AUTHOR CONTRIBUTIONS

Larissa Schwarzkopf conceptualized and wrote the manuscript and acted as the corresponding author. Together with Ludwig Kraus, Larissa Schwarzkopf decided the statistical analyses to be conducted. Ludwig Kraus, Bettina Grüne and Barbara Braun-Michl conceived the study including data to be assessed and measures to be applied. Bettina Grüne together with Johanna K. Loy, Pawel Slecza, Barbara Braun-Michl and Ludwig Kraus conducted the study. All authors critically contributed to earlier drafts of the manuscript and approved the final version of the paper.

DATA AVAILABILITY STATEMENT

The datasets generated and analysed during the "Katamnese Studie" are not publicly available as they contain information that could compromise study participants' privacy. Researchers interested in gaining access to the data are kindly requested to contact the corresponding author with reasons their research interest. Subsequently, the research team and LSG partners will decide on data provision case by case.

ORCID

Larissa Schwarzkopf  <https://orcid.org/0000-0002-9402-7700>

Johanna K. Loy  <https://orcid.org/0000-0003-1740-7002>

Barbara Braun-Michl  <https://orcid.org/0000-0001-6276-0206>

Bettina Grüne  <https://orcid.org/0000-0003-0942-0215>

Pawel Slecza  <https://orcid.org/0000-0002-2393-7539>

Ludwig Kraus  <https://orcid.org/0000-0001-7282-0217>

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