FULL-LENGTH REPORT

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Proactive coping and gambling disorder among young men

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Objectives: Male sex, young age, and frequent gambling are considered as risk factors for gambling disorder (GD) and stress might be one of the triggers of gambling behavior among problem gamblers. Conversely, well-developed coping with stress might counteract gambling problems. The Proactive Coping Theory provides a promising approach for the further development of preventive and treatment measures. The objective of the study was to investigate different facets of proactive coping (PC) in young male gamblers. *Methods:* Young men from Bavaria were recruited via the Munich citizens' registry ($n = 2{,}588$) and Facebook invitations ($n = 105$). In total, 173 out of 398 individuals were positively screened for frequent gambling and/or signs of related problems and completed the baseline questionnaire of the Munich Leisure-time Study. Factors investigated include gambling problems, PC, impulsiveness, social support, and psychological distress. *Results:* Gambling problems were associated with lower levels of preventive coping as well as of adaptive reaction delay. The associations were also significant when controlled for impulsiveness and general psychological distress. Preventive coping moderated the association between social support and gambling problems. *Discussion and conclusions:* Young men with gambling problems less frequently prevent the occurrence of stressors and more often react hasty when these occur. While the investigated group reported good social support, this factor was negatively associated with GD only among individuals with good preventive coping. Preventive coping poses a useful construct for selective prevention and treatment as it can be modified in professional interventions.

Keywords: gambling disorder, young adults, men, proactive coping, impulsiveness, social support

INTRODUCTION

Male sex, young age, and frequent gambling are risk factors for gambling disorder (GD) (Adlaf, Paglia-Boak, Beitchman, & Wolfe, 2006; Haß & Lang, 2016; Johansson, 2006; Meerkerk & Mheen, 2013; Sassen et al., 2011; Shead, Derevensky, & Gupta, 2010). GD might have severe consequences for the individual and his surroundings. The individual burden of the disorder is manifested in elevated psychological distress (Braun, Ludwig, Kraus, Kroher, & Bühringer, 2013), comorbid mental disorders (Lorains, Cowlishaw, & Thomas, 2011; Sleczka, Kraus, Braun, & Bühringer, 2013), low self-esteem (Bergh & Kühlhorn, 1994), impaired relations with family and friends (Dickson-Swift, James, & Kippen, 2005; Grant Kalischuk, Nowatzki, & Cardwell, 2006), as well as highest debts among all patients in addiction care (Künzel, Brand, & Braun, 2015; Pfeiffer-Gerschel, Kipke, & Steppan, 2011). Consequently, GD (American Psychiatric Association, 2013) is a public health issue of significance and, as such, is the focus of various preventive and therapeutic measures (Williams, West, & Simpson, 2012). The goal of this paper is to investigate associations between GD, perceived social support, and proactive coping (PC), as this might reveal potential preventive factors in addressing gambling problems among young men.

Theories explaining the relation between stress, stress-coping, and addictive behaviors are well grounded in the current understanding of addiction (e.g., stress-coping theory of addictive behaviors; Wills & Hirky, 1996; Wills & Shiffman, 1985). Gambling can be triggered both by internal (e.g., anxiety) and external stressors (e.g., conflicts with important people; McCormick, 1994). While in most cases, gambling is not associated with problems, some individuals develop GD as a consequence of excessive gambling. Despite the negative consequences of their behavior, those individuals keep on gambling often to escape distress (which is one of the symptoms of GD, DSM-5: American Psychiatric Association, 2013). In line with this, well-developed coping skills are recognized to be negatively related to GD. Studies on adolescents and college students found gambling involvement and GD to be associated with emotion-focused coping, lower task-focused coping, higher

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avoidance coping, and more frequent use of ineffective coping strategies (Bergevin, Gupta, Derevensky, & Kaufman, 2006; Dickson, Derevensky, & Gupta, 2003; Lightsey & Hulsey, 2002; Nower, Derevensky, & Gupta, 2004). Furthermore, emotion-oriented coping was reported to mediate the relation between negative life events and gambling involvement (Bergevin et al., 2006). These results, albeit only from few studies, rather consistently describe the positive association between GD and poorer and more avoidant, that is, *reactive* coping.

Proactive coping

The Proactive Coping Theory (Schwarzer, 1999; Schwarzer & Taubert, 2002) goes beyond the understanding of coping as a reactive compensation in stressful situations. The approach views the individual as an intrinsically motivated and future-oriented actor capable of preventing stress and, when stress occurs, achieving growth due to it (Schwarzer & Taubert, 2002). PC is displayed through active behavior aimed at building resources to support goal achievement (Greenglass, Schwarzer, Jakubiec, Fiksenbaum, & Taubert, 1999; Schwarzer & Taubert, 2002) and involves goal setting and attainment, preventive coping, (adaptive) reaction delay, seeking social and instrumental support, reflective coping, as well as strategic planning. Studies on PC may have valuable practical impact as it can be exercised within professional intervention (Bode, de Ridder, Kuijer, & Bensing, 2007).

PC may be a protective factor in the development of GD. Previous results from clinical studies found associations between PC and several psychological disorders. PC was reported to be negatively associated with symptoms of post-traumatic stress disorder among female college students (Vernon, Dillon, & Steiner, 2009). In individuals with a history of severe mental illnesses, a higher number of PC strategies is associated with better social functioning (Yanos, 2001) and mediates the relation between social support and better role functioning (Davis & Brekke, 2014). Well-developed PC abilities decrease the risk of developing GD through involvement of strong goal attainment, active prevention of stressors, and facilitation of adaptive reactions to stress. Thus, the Proactive Coping Theory presents a possibly vital approach in preventing and treating GD.

Social support

While PC emphasizes the active role of the individual, it is based on available resources. Among these, social support is an external resource associated with gambling related problems and PC. Existing data (Bergevin et al., 2006; Chalmers, 2004; Hardoon, Gupta, & Derevensky, 2004; Hurrelmann, Schmidt, & Kähnert, 2003; Lussier, Derevensky, Gupta, & Vitaro, 2014) suggest that there is a relationship between the quality as well as the extent of social resources and GD. The preventive role of social resources includes providing alternative activities to gambling, moral guidance against it, as well as facilitating recognition of (and reaction to) first signs of GD. At the same time, as a consequence of gambling-related interpersonal conflicts, GD might negatively affect social resources. Furthermore, although existing knowledge allows no specific conclusions, it can be hypothesized that this association could be moderated by preventive coping, which is based on external resources (Greenglass et al., 1999; Schwarzer, 2001). The protective impact of social support on GD would most likely be stronger if the individual could effectively use it to prevent the negative consequences of stress.

Objectives and hypotheses

In general, some dimensions of PC might be negatively associated with GD among young gamblers. In addition, preventive coping may moderate the association between social support and GD. We hypothesized that higher severity of GD will be negatively associated with more effective goal setting (and attainment), preventive coping, (adaptive) reaction delay, and emotional support seeking. Moreover, since impulsiveness and general psychological distress are frequently reported as factors associated with GD (e.g., Lorains et al., 2011; MacLaren, Fugelsang, Harrigan, & Dixon, 2011; Sleczka et al., 2013) we controlled for these factors in the analysis. Our second aim was to investigate if preventive coping moderates the association between social support and GD.

In Germany, among adults aged 18–25 years, who report gambling problems, 86.1% are male (Haß & Lang, 2016). Consequently, research on this group is of special interest for preventive measures. For this reason as well as due to the concerns in regard to the cost-efficiency, young men were the scope of our study. Moreover, we included only those who gambled frequently or/and reported first signs of problems. Due to the elevated risk for GD in this group, we refer to factors negatively associated with GD as potentially protective.

METHODS

Study design and procedure

Data for the study were collected within the first wave of the Munich Leisure-time Study (MLS), a longitudinal online study on gambling-related problems in young adult males. Apart from economic reasons, an online design was chosen in order to apply filter questions, to retain participants who moved out of the city and for participants' convenience.

Participants

The participants of the study were recruited through two strategies: (a) screening of individuals chosen at random from a citizens' registry and (b) screening of Facebook users. As illustrated in Figure 1, participants in both samples completed the survey and those fulfilling the inclusion criteria were invited to complete the MLS baseline questionnaire. The inclusion criteria were: (a) frequent gambling (at least once a week) and (b) at least one fulfilled DSM-5 criterion for GD or at least one positive score in the Lie-Bet questionnaire (Johnson, Hamer, & Nora, 1998).

Citizens' Registry sample (RS). A total of 25,000 males aged 18–25 were randomly selected from the citizens' registry of Munich, Bavaria. The response rate to the survey

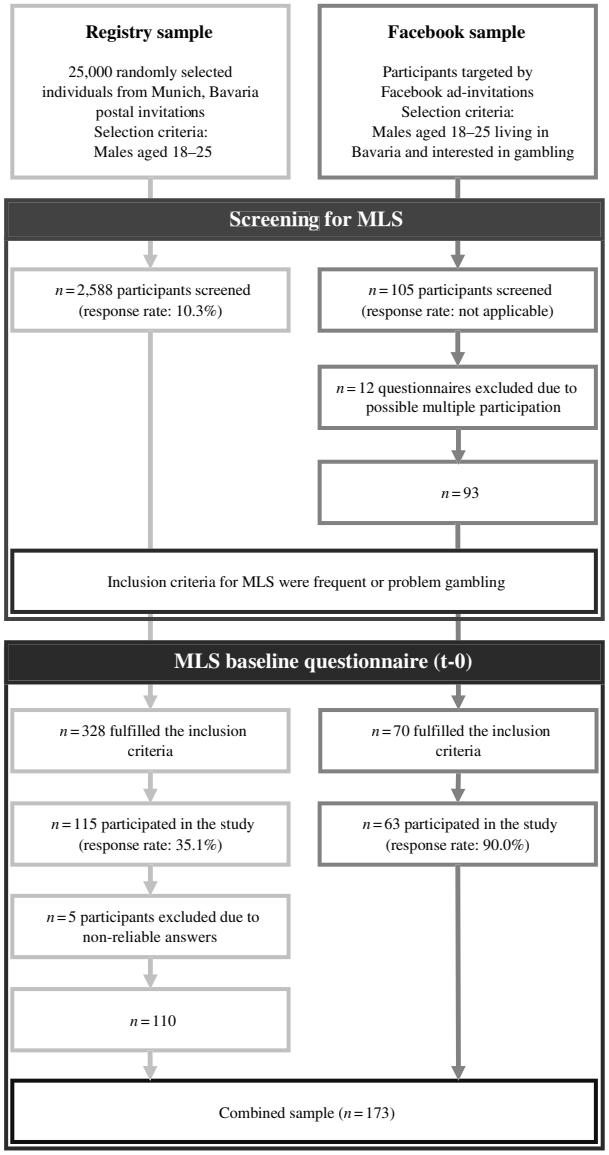

Figure 1. Flowchart of participation in the Munich Leisure-time Study (MLS)

was 10.3% resulting in 2,588 individuals; of those, 328 were screened positive and invited to complete the MLS baseline questionnaire and 115 actually completed the MLS baseline questionnaire. To ensure data reliability, data of five participants, whose answers did not vary ($SD = 0$) in multiple scales with reversed items, were deleted from the data set. In the RS, the incentives were: (a) participation in a lottery for cinema tickets and (b) a €15 shopping coupon for completing the MLS baseline questionnaire. Participants were invited by mail and both the survey and the MLS baseline questionnaire were administered online.

Facebook sample (FS). In a second approach, a convenience sample was recruited via Facebook ad-invitations. We paid Facebook to advertise our study among its male, 18–25-year-old users from Bavaria, who were interested in gambling. Based on the data gathered by Facebook, all users who "liked" gambling forms, frequently responded to gambling ads or gambled either via Facebook or with the use of a Facebook account were automatically shown the ad on the side of the main Facebook page. No response rate can be calculated as the invitations were passively shown at the side of the webpage and it is unknown how many users actually noticed it. Initially, we received 105 responses but 12 questionnaires were excluded due to suspicion of multiple survey response. The FS consisted of 93 participants; of these 70 were eligible for the MLS baseline questionnaire and 63 completed it. In the FS, participants received shopping coupons as incentives (€5 for completing the screening survey and €10 for completing the MLS baseline questionnaire). Both the screening and the MLS baseline questionnaire were administered online.

The combined sample consisted of 173 participants. As expected, more problem gamblers were recruited via the FS (15.1%) as opposed to the RS (1.2%). Sensitivity analyses were conducted to investigate the effects of differences in sample characteristics.

Measurement

The screening survey encompassed questions related to socio-demographic information such as age, relationship status, employment (full-time vs. part-time), education (academic degree vs. no academic degree), and the prevalence of gambling behavior and related problems. Inclusion criteria for the MLS baseline survey were (a) gambling once a week, which was frequently used in previous studies as an indicator of frequent gambling (e.g., Sassen et al., 2011), and (b) at least one positive DSM-5 criterion for GD or a positive score on the Lie-Bet questionnaire (Johnson et al., 1998). The Lie-Bet questionnaire was used in addition to the DSM-5 in order to maximize the sensitivity of the inclusion criteria, but was not used in further analysis. Participants in the MLS baseline survey also answered additional questions on impulsiveness, PC, their social support, and psychological distress.

Gambling involvement and problems with gambling. Frequency of participation in 19 land-based and online types of gambling – including sport bets, lotteries, bingo, card games, gambling with family, etc. – was measured on a 4-point scale: 1 = never, 2 = longer than 12 months ago, 3 = within the last 12 months but less than weekly, and 4 = more than once a week in the last 12 months (i.e., frequent gambling). The 12-month prevalence of GD symptoms was measured using the DSM-5 diagnostic criteria (American Psychiatric Association, 2013). A 17-item questionnaire adapted (through exclusion of 2 items measuring illegal activities) from the instrument developed by Stinchfield (2003) for DSM-IV was administered to all participants who gambled in the last 12 months. Apart from the withdrawal criterion, which was assessed by only one item, each of the nine criteria was assessed through two items with a binary answer option (yes/no). Whenever any of the two items was answered with yes, the criterion was marked as "fulfilled." This instrument has been previously used in population studies in Germany (e.g., Bühringer, Kraus, Sonntag, Pfeiffer-Gerschel, & Steiner, 2007; Sassen et al., 2011). In the current study, the internal reliability coefficient was $\alpha_{MLS} = 0.91$. Item Response Theory studies provide arguments for viewing GD as a continuum of gambling-related problems starting at no problems at all

and ending in severe GD (e.g., Sleczka, Braun, Piontek, Bühringer, & Kraus, 2015; Strong & Kahler, 2007). Thus, the number of endorsed criteria was used to reflect the severity of GD.

Proactive coping. PC was measured using 4 scales from the Proactive Coping Inventory (PCI; Greenglass et al., 1999), which operationalize the cognitive approach as goal/task-oriented behaviors and have high internal consistency (Cronbach α values reported for the Canadian student sample range from 0.71 to 0.85 for all scales). The scales included are as follows:

1. *Goal setting* scale (originally named "proactive coping," but renamed for better readability and to underline the difference to the general theoretical construct encompassing several dimensions/scales), which includes 14 items (e.g., "*I visualise my dreams and try to achieve them*" or "*I am a 'take charge' person*"), describes a problem-oriented goal setting as well as beliefs of one's own self-efficacy and self-regulatory goal attainment. In the present study, internal reliability was good ($\alpha_{MLS} = 0.81$).
2. *Preventive coping* scale ($\alpha_{MLS} = 0.79$), which characterizes a threat-driven avoidance of negative consequences based on anticipated problems, was measured with 10 items (e.g., "*I develop my job skills to protect myself against unemployment*" or "*I think ahead to avoid dangerous situations*").
3. *Emotional support seeking* scale ($\alpha_{MLS} = 0.74$), which measures emotional self-regulation based on social resources, where emotional distress is managed by seeking empathy and companionship within one's own social environment, was measured with five items (e.g., "*When I'm depressed I get out and talk to others*").
4. *Reaction delay* scale (originally named "avoidance coping," but renamed to avoid confusion with previous studies within the reactive coping approach; $\alpha_{MLS} = 0.75$), which describes the adaptive delay of behavioral responses to stressors, was measured with three items (e.g., "*If I find a problem too difficult sometimes, I put it aside until I'm ready to deal with it*").

The PCI has a 4-point Likert-type answer scale. As a whole, all obtained reliability coefficients were comparable to the ones reported and suggest good reliability of the scales. Two PCI subscales referring to cognitive processes (*reflective coping* and *strategic planning*) and the *instrumental support seeking* scale were not included in the analysis as no hypotheses were formulated regarding their associations with GD.

Social support. "*Perceived social support*" was measured using the German version of the ENRICHD Social Support Inventory (ESSI; Kendel et al., 2011), a 5-item scale with very good internal reliability ($\alpha_r = 0.89$ and $\alpha_{MLS} = 0.92$),

Control variables. The German version of the Brief Symptom Inventory (Derogatis & Melisaratos, 1983; Franke, 2002; Spitzer et al., 2011) was used to measure 7-day prevalence of *psychological distress* symptoms as an indicator of mental problems. The scale was calculated based on three secondary scales (psychosomatic, anxiety, and depressiveness) that showed satisfactory to very good internal consistencies ($0.63 < \alpha_r < 0.93$ and $0.89 < \alpha_{MLS} < 0.94$).

Impulsiveness was measured using the German Short Version of the Barratt Impulsiveness Scale (BIS-15; Meule, Vögele, & Kübler, 2011; Patton, Stanford, & Barratt, 1995). *Impulsiveness* is conceptualized as a personality trait that is externalized by unplanned, rapid actions regardless of possible negative outcomes. The BIS-15 includes 15 items. The scale was calculated according to three secondary scales (non-planning, motoric, and attentional impulsiveness). The previous reports (α_r) and our analysis (α_{MLS}) both suggest sufficient to good internal reliability of the primary scale ($\alpha_r = 0.81$ and $\alpha_{MLS} = 0.81$) as well as the secondary scales ($0.68 < \alpha_r < 0.82$ and $0.72 < \alpha_{MLS} < 0.82$).

Statistical analyses

All analyses were conducted with the STATA 12 SE software package (StataCorp LP, 2011).

We conducted a linear regression analysis. In the first step, we included the control variables, the ESSI score, and the four PCI scores. In the second step, we extended the model by including the interaction between preventive coping and social support. In accordance with Hayes (2013) (see also Hayes, Glynn, & Huge, 2012), the main effects were analyzed based on the results of Step 1 (without interaction) and the results of Step 2 were used to analyze solely the interaction effect. The outcome variable in the model was the sum of the endorsed DSM-5 criteria; the logarithm of the summed scores was taken to meet the assumption of normally distributed standard errors. The assumptions of the linear regression model were tested prior to the analysis.

In order to graphically display the hypothesized interaction effect between social support and preventive coping, we included standardized values as well as the interaction in a separate regression analysis with the logarithm of the summed GD criteria as outcome. We then plotted the gambling problems and the regression B-coefficients of the participants' social support in two sub-groups with high ($M + 1\ SD$) and low ($M - 1\ SD$) PC.

A sensitivity analysis was conducted by including frequency of gambling (at least once a week vs. less frequently) into the regression model. A similar analysis was also run controlling for recruitment strategy (FS vs. RS).

Ethics

The study was approved by the Ethical Board of the German Psychological Society (LK-102013). All participants were informed about the study and provided informed consent.

RESULTS

The sample description is presented in Table 1. Beside the mentioned differences in the prevalence of GD, in comparison to RS, participants recruited via the FB sample were also more often frequent gamblers and employed in full-time. Moreover, they were less often university students and fewer of them had a university degree.

In the combined sample ($n = 173$), participants were on average 22.2 years old. The majority were employed ($n = 121$; $n = 74$ in full-time) and 75 were university students. The majority of participants were single ($n = 103$) and

Table 1. Sample description

	Registry sample ($n = 2,583$)		Facebook sample ($n = 93$)		Comparison between Registry and Facebook samples	Combined sample ($n = 173$)	
	M	*SD*	*M*	*SD*	*t*-test (*df*); *p*	*M*	*SD*
Age	22.3	2.27	22.1	2.76	0.67 (2,674); $p = .255$	22.3	2.46
	n	%	*n*	%	χ^2 test (*df*); *p*	*n*	%
Studying: university or high-school	1,508	58.4	29	31.2	**26.28 (1); $p < .001$**	75	43.4
Employed: any activity	1,675	64.6	64	68.8	0.62 (1); $p = .430$	121	69.9
Employed: full time employed	850	32.9	48	51.6	**14.09 (1); $p < .001$**	74	42.8
Education: university degree	578	22.4	10	10.8	**7.07 (1); $p = .008$**	24	13.9
Living status:					5.03 (3); $p = .081$		
Married	74	2.9	4	4.3		6	3.5
Non-formal relationship[a]	1,132	43.9	30	32.3		64	37.0
Single	1,385	53.6	59	63.4		103	59.5
Frequent gambler (yes)	189	7.2	57	61.3	**313.26 (1); $p < .001$**	127	73.4
DSM-5 diagnosis:					**185.92 (2); $p < .001$**		
One to three positive criteria	99	3.8	21	22.6		57	33.0
Four or more positive criteria	30	1.2	14	15.1		25	14.5

Note. Bold values are significant at $p < .05$.
[a]Excluding marriages/legal partnerships.

69 were in an informal relationship (not married or in legal partnership). Among all participants, 91 reported frequent gambling with no symptoms of GD (according to DSM-5); 22 reported at least one symptom of GD but not frequent gambling and 60 reported both, at least one symptom of GD and frequent gambling. In the last group, 25 individuals reported four or more criteria for GD.

Regression analysis

The results of the regression analysis with the severity of GD as outcome are presented in Table 2.

The main effects of the investigated factors were analyzed based on Step 1. All directly associated factors explained 23% of the variance of the severity of GD. Impulsiveness and psychological distress were positively associated with the severity of GD; conversely, preventive coping as well as reaction delay were negatively associated. Additionally, goal setting was also positively associated with severity of GD and there was also no significant association between emotional support seeking and GD (Step 1). There was no direct effect of social support on GD (Step 1).

Based on Step 2, we analyzed the effect of the interaction between preventive coping and social support on GD

Table 2. Results of the regression analysis with the severity of GD as outcome

	B	SE *B*	Min. *B*	Max. *B*	ß	*p*	R^2
Step 1							
General psychological distress	**0.373**	**0.124**	**0.129**	**0.618**	**0.241**	**.003**	.231
Impulsiveness	**0.268**	**0.132**	**0.008**	**0.529**	**0.181**	**.044**	
Social support	−0.007	0.070	−0.146	0.132	−0.008	.920	
Goal setting	**0.385**	**0.192**	**0.007**	**0.765**	**0.190**	**.046**	
Reaction delay	**−0.216**	**0.093**	**−0.400**	**−0.031**	**−0.185**	**.022**	
Preventive coping	**−0.416**	**0.166**	**−0.743**	**−0.089**	**−0.251**	**.013**	
Emotional support seeking	0.149	0.103	−0.053	0.352	0.113	.148	
Constant	−0.455	0.857	−20.147	10.237		.596	
Step 2							
General psychological distress	**0.374**	**0.122**	**0.133**	**0.614**	**0.241**	**.003**	.262
Impulsiveness	0.221	0.131	−0.038	0.480	0.149	.094	
Social support	**0.862**	**0.350**	**0.170**	**10.554**	**10.012**	**.015**	
Goal setting	0.286	0.193	−0.095	0.667	0.141	.141	
Reaction delay	**−0.253**	**0.093**	**−0.437**	**−0.070**	**−0.217**	**.007**	
Preventive coping	0.893	0.542	−0.178	10.964	0.539	.102	
Emotional support seeking	0.159	0.101	−0.041	0.358	0.120	.118	
Interaction: Social support × Preventive coping	**−0.316**	**0.125**	**−0.563**	**−0.069**	**−10.449**	**.012**	
Constant	−30.541	10.482	−60.468	−0.614		.018	

Note. The adjusted R^2 values in Steps 1 and 2 were .197 and .224, respectively.
Bold values are significant at $p < .05$.

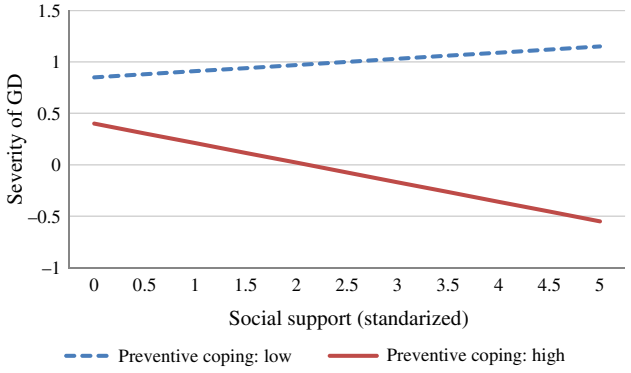

Figure 2. The moderating effect of preventive coping on the relation between social support and severity of GD

severity. The interaction effect is demonstrated in Figure 2, where social support is negatively associated with GD severity in the subgroup with higher preventive coping scores, whereas no significant effect can be observed in the group with lower preventive coping. As discussed previously (see Statistical Analyses section), the coefficients for social support and preventive coping in Step 2 represent conditional effects and cannot be interpreted as main effects.

Sensitivity analyses results

As presented in Table 1, some differences were found between the RS and FS. Sensitivity analysis of the recruitment strategies' impact revealed that while the FS reported symptoms of GD more often, the inclusion of the recruitment strategy in the analysis did not alter other associations. An analogous analysis conducted for the frequency of gambling revealed that when analyzed with other factors, the frequency of gambling did not significantly alter the model and was not significantly associated with severity of GD.

DISCUSSION

The current study aimed to investigate factors related to GD in young male gamblers. Based on the assumption that stress can trigger excessive gambling (leading to GD in some individuals), we applied the perspective of the Proactive Coping Theory (Schwarzer & Taubert, 2002) in investigating factors possibly associated with GD. Our results suggest that GD is associated with lower levels of preventive coping and adaptive reaction delay. Aside from the direct associations mentioned, we also noted an interaction effect of preventive coping and social support on severity of GD.

The relationship between coping and gambling is complex as gambling itself might be seen as a form of (reactive) coping with negative emotions among individuals with gambling problems (e.g., O'Brien, 2011; Sleczka et al., 2013). Nonetheless, in the PC approach there is a strict distinction between reactive coping and preventive coping based on avoiding negative emotions. In our study, severity of GD was associated with lower levels of preventive coping. Preventive coping was also associated with severity of GD when controlling for impulsiveness and psychosocial distress. According to the Proactive Coping Theory (Schwarzer & Taubert, 2002), it can be understood that individuals with gambling problems are less likely to prevent the occurrence of stressful events or, when this is not possible, minimize the negative impact these events may cause. Although we investigated only associations and no causal links, it can be hypothesized that preventive coping plays a protective role in the development of gambling problems. On the one hand, preventive coping might prevent gambling by eliminating its trigger, that is, stressful situations. On the other hand, gambling – as behavior potentially leading to stressful situations – might become the subject of preventive coping. In both cases, preventive coping counteracts the (excessive) involvement in gambling, nonetheless, the two mechanisms are different. In the first case, preventing negative consequences of other factors/behaviors will prevent stress that might lead to gambling. In the second case, when an individual feels the urge to gamble, preventive coping might facilitate the realization of negative consequences of gambling and lead to cutting down bets or reducing gambling duration. Moreover, it can be argued that lack of anticipating and preventing negative effects of gambling might lead to GD as it impairs early (re)actions upon the onset of initial symptoms.

Our analysis revealed that longer reaction delay is negatively associated with GD. Studies on reactive coping investigated and understood avoidance coping as a self-distraction mechanism (e.g., Bergevin et al., 2006; Nower et al., 2004), and reported a positive association. These results do not contradict our findings as reaction delay in the PCI (Schwarzer & Taubert, 2002) refers to a substantially different construct: postponing the response to problems. Our results suggest that if aware of problems, individuals with gambling problems will react faster. This can result in hasty reactions (possibly self-distraction), which may potentially be maladaptive in the long-term. While the association between reaction delay and GD is not confounded by impulsiveness, it might be associated with low resistance to enduring stressors. This is a separate topic needing further investigation. Overall, it can be beneficial to include hasty reaction to stressors (along with the quality of the reaction) in interventions and selective prevention measures.

Prior to our study, we had expected an association between GD and lower goal setting and emotional support seeking – a hypothesis that was ultimately not supported by the results. Previous reports described goal attainment and, more generally, PC strategies as factors associated with positive outcomes in mental disorders (Davis & Brekke, 2014; Vernon et al., 2009; Yanos, 2001). Our analysis did not reveal any associations between GD and goal setting or emotional support seeking. The different results might be a consequence of methodological differences (e.g., study population, outcome variables or control for impulsiveness, and psychological distress) or possibly a too small sample in our study. As neither social support nor emotional support seeking were directly associated with GD, we excluded the possibility of any mediating effect between these factors. The positive association between goal setting and GD in the regression model was most probably caused by controlling for other PCI scales as well as general psychological distress. In general, as the investigated sample consisted

solely of gamblers, it cannot be excluded that goal setting and emotional support seeking are equally distributed among gamblers with and without problems, but lower among non-gamblers.

In our analysis, both impulsiveness and general psychological distress (as indicators of mental problems) were associated with GD. High comorbidity between GD and other mental disorders has been the subject of various studies (e.g., Lorains et al., 2011; Sleczka et al., 2013). General psychological distress was included in the analysis in order to control for mental problems that are non-specific to gambling. Overall, it can be concluded that although preventive coping and reaction delay might be related to good mental health in general, these factors also have a significant and specific impact on GD.

An association between impulsiveness and gambling problems was reported in various studies (e.g., Blanco et al., 2009; Johansson, 2006; Johansson, Grant, Kim, Odlaug, & Götestam, 2009; Liu, Lee, Goldweber, & Petras, 2013), as well as in a recent meta-analysis (MacLaren et al., 2011). In general, it is assumed that impulsiveness increases the urge to gamble or impedes the control over it. While it seems plausible that the reaction delay or preventive coping could mediate the effect impulsiveness has on GD, no such effect could be found in the presented analysis (where both factors are significantly associated with GD within the same model) or in other, subsequently conducted analyses (structural equation analyses; data not shown). In respect of this, it can be suggested that while impulsiveness is an important factor associated with GD, it seems not to confound the effect of preventive coping and reaction delay on GD.

With respect to social support and GD, our study revealed no direct association. Nonetheless, we found that preventive coping was a moderator in the association between social support and GD. Our analysis suggests that social support is negatively associated with GD among individuals with higher preventive coping. Although previous reports (Bergevin et al., 2006; Chalmers, 2004; Hardoon et al., 2004; Hurrelmann et al., 2003; Lussier et al., 2014) suggest an association between deficits in social resources and GD, our results indicate that this association may not always be true for young men. Social support can provide instrumental support when problems arise, facilitate recognition of first signs of GD as well as stimulate reactions to rectify or alleviate them. There is a difference between the objectively available/received support and its perception (Haber, Cohen, Lucas, & Baltes, 2007). Objectively available support might not be activated due to, for example, concealment of gambling problems. In line with this, although the perceived social support is influenced by individual appraisal and personality factors, it is generally a better predictor of health outcomes (Haber et al., 2007). Young gamblers in our study generally perceived rather high levels of social support. Nonetheless, those with low preventive coping seem not to benefit from the protective effects of social support against GD. Planning (and acting) ahead might be an important aspect in activating and using available social resources in coping with gambling problems.

Despite its strengths of a homogenous sample of frequent and problem gamblers as well as a comprehensive analysis, our study has some limitations. First, the cross-sectional design does not allow drawing any causal conclusions and the presented explanations reflect hypotheses rather than causal statements. Second, although individuals were randomly selected in the RS, both samples are presumably highly selective due to the low response rate. Nevertheless, as PC affects psychological health in distinctive groups, it can be assumed that the same associations could be identified in other samples. Third, we noted some discrepancies between Lie-Bet questionnaire and DSM-5 scores. The specificity of Lie-Bet, which was in our study lower than in the initial report (0.67 vs. 0.82; Johnson et al., 1998), might have resulted from, for example, careless answers of participants. As there are no generally accepted guidelines for combining Lie-Bet and Stinchfield's questionnaire (2003), we solely analyzed the second one. Fourth, seeking emotional or instrumental support could potentially moderate the effect of the available social support (ESSI) on the severity of GD. Although interesting, this research question was not the scope of our study, which aimed at exploring the interaction between preventive coping and social support. Moreover, although the constructs of searched and received social support differ substantially, the used scales operationalized them with similar questions thus limiting possible analyses. Finally, although we do not expect differences between men and women in regard to PC, considering the previously reported gender differences in the perception of social support among gamblers (Wickwire, Whelan, Meyers, & Murray, 2007), our conclusions may not be generalized to women.

CONCLUSIONS

Our study is, to our knowledge, the first to analyze PC in relation to GD. In short, our results show that individuals with gambling problems might react more hastily in stressful situations (which is not explained by impulsiveness). They are also less likely to prevent the occurrence of stressors. Moreover, low preventive coping might deprive the individual from protective effects of social support against GD.

PC presents a promising approach to selective prevention and treatment of GD among young men (e.g., Bode et al., 2007). Training particularly young men in preventive coping and providing them with cognitive tools to reduce hasty reactions in stressful situations might – on top of its standalone direct benefits – activate the protective effect of social support.

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Authors' contribution: PS coordinated the preparation and conduction of the study, developed the research questions,

conducted the statistical analyses, and wrote the first draft of the manuscript. PS, BG, and BB interpreted the results within the conceptual framework. PS, BB, GB, and LK designed the study. All authors had full access to all data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. All authors contributed to and approved the final manuscript.

Conflict of interest: The State of Bavaria provides gambling services (lotteries, sports betting, and casino games) within the State gambling monopoly via the State Lottery Administration and provides funding of the Bavarian Coordination Centre for Gambling Issues (LSG Bayern) as an unrestricted grant. Research by GB has also been funded as unrestricted grants by regulation authorities and public and commercial gambling providers.

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