RESEARCH ARTICLE

Motivations for Smoking Among Hungarian Police Students

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Introduction: Police officers' job is one of the most stressful professions. Job stress, unpredictability, and physical strain can increase the prevalence of smoking among police officers. Investigating the motivations behind smoking stands, therefore, as a critical question, especially in high-risk populations, like police officers.

Aims: The aim of the study was to investigate the smoking motivations of Hungarian police students.

Methods: Employing a cross-sectional approach, we conducted a questionnaire-based survey among Hungarian police students between January and April, 2022. The study sample ($N = 270$) consisted of 57.4% male ($n = 155$) and the average age of students was 21.8 years ($SD = 2.13$). The survey examined smoking status, frequency and intensity of smoking. Smoking intensity is generally based on self-reported average cigarettes per day. The Substance Use Coping Inventory (SUI) was used to examine motivational attitudes.

Results: The lifetime prevalence of smoking among police students reached 77.0%. Female police students were more likely to have tried smoking than males, however, the difference was not significant ($p = .114$). Among current smokers, male police students demonstrated higher scores than female police students in both the self-confidence motives ($p = .009$) and boredom relief motives ($p = .010$). When comparing regular and occasional smokers, we found significant differences in all motivational scales, except for social motivators. However, logistic regression results indicate that boredom relief motives are the only significant predictors of regular smoking among police students (OR = 1.45; $p < .001$).

Conclusions: The motivational patterns of smoking vary between males and females, as well as between regular and occasional smoker police students. A pivotal inquiry in the context of preventing regular smoking among police students revolves around identifying alternative solutions to effectively occupy their leisure time and alleviate boredom.

Keywords: smoking, motivations, law enforcement, police students, behavioral epidemiology

Abbreviations: CPD = cigarettes per day; GBD = Global Burden of Disease Study; LUPS FLE = Ludovika University of Public Service, Faculty of Law Enforcement; SUI = Substance Use Coping Inventory; WHO = World Health Organization

Introduction

Smoking remains one of the most significant health risk factors. Tobacco use was responsible for 8.71 million deaths and 229.77 million disability-adjusted life years globally in 2019 (He et al., 2022). Global Burden of Disease Study (GBD) shows that cigarette smoking serves as a major and entirely preventable cause of disease burden among adult Hungarian men. Among women aged 20-54-year-old, smoking was the top risk factor for the greatest burden of disease in Hungary. (Vitrai & Bakacs, 2021).

Despite the obvious risks of smoking, more than a fifth of the world's population (22.8%) smoke (WHO, 2019). One explanation for this is that substances that cause harmful addictions always serve some key function in an individual's life, a function that drives and sustains their addiction. (Németh, 2011; Pikó, 2012). Investigating the motivations behind smoking is therefore a critical question from a health psychology perspective, as it brings us closer to understanding the role of the substance in an individual's life. Exploring motivations becomes particularly important in predicting substance use and problematic consumer behavior. Previous studies indicate that the motivational structure of substance use is a multidimensional phenomenon in which social influences, affect regulation, self-confidence and boredom relief play the most important role (Pikó & Varga, 2014). According to theories of motivation, the consumer motive remains essential for the initiation of consumption, as it is the basis for the individual's decision whether or not to use a substance (Cox & Klinger, 1988). A combination of motivations increases the risk of substance use and the risk of multiple drug use, and even leads to problematic behavior (Pikó &Varga, 2014). Motivation is also as a high predictor of later problematic substance use and its associated consequences (Cox & Klinger, 1988; Cooper, 1994).

Investigating the motivation for smoking is particularly important in high-risk populations. Police officers are considered a high-risk group, with a higher prevalence of alcohol consumption, smoking and other harmful health behaviors compared to the general population (Basaza et al., 2020; Ramakrishnan et al., 2013; Richmond et al., 1998; Smith et al., 2005). Researchers have examined the prevalence of smoking among Hungarian police officers a few times. According to the results of these surveys, 43.6% of the total Hungarian police population (Ritter, 2004) and 33.4% of the police officers in the capital city smoke (Mácsár et al., 2017). Significant causal factors of smoking consists of occupational 'job context' stress, and the fact that police are regularly exposed to "job content" stressors beyond the range of normal human experiences (Shane, 2010). Police stressors are usually multi-faceted and most of these stressors play an important role in smoking, such as shift-work (Brown et al., 2020), an unpredictable work schedule, or high level of stress (Smith et al., 2005).

Smoking among police officers correlates with the higher prevalence of hypertension (Sen et al. 2014), reduced performance on physical tests (Boyce, et al., 2006), a higher risk of developing prostate disease (Zhou et al., 2018); it also imposes extra additional costs on the employer (the state) (Basaza et al., 2020). Smoking raises important questions about the mental or physical suitability of police officers as well. For example, before 2021, in Hungary, the diagnosis of any mental and behavioral disorder caused by smoking (e.g. dependence) led to the unsuitability of police officers (Erdős, 2020).

Hungarian police students are exposed to considerable physical and psychological stress from the beginning of their training (Pesti, 2021). In addition, police students are not only university citizens, but also members of a professional culture where smoking remains typical (Basaza et al., 2020). The aim of the present study was to investigate the smoking motivations of Hungarian police students. We examined differences in motivational structure by sex and by frequency of substance use.

Methods

Participants and Procedure

A cross-sectional, questionnaire-based online survey was conducted among Hungarian police officer students at the Ludovika University of Public Service, Faculty of Law Enforcement (LUPS FLE) in Budapest, Hungary. The sampling frame consisted of a population table of LUPS FLE police students ($N = 417$). A complete query was performed because the population is homogeneous, finite in number and spatially concentrated. The data were collected using the address-list enquiry method, based on the database of the Unified Study System. The data were collected using a licensed questionnaire program that complies with the methodological requirements and ensures the technical conditions necessary for the validity of the research (http://www.online-kerdoiv.com). The research was conducted between January and April, 2022. A total of 270 people took part in the survey (response rate: 64.8). All respondents were included in the final sample.

Participation was voluntary and anonymous. Participants were informed in writing about the survey's aims, the procedure, and privacy policy. They also had the opportunity to ask any questions about the research before involvement. Data collection was conducted on the students' free time. Participation in the research could be refused at any time. This study does not require institutional ethical review board approval in accordance with institutional policies. The research was carried out in compliance with the Ludovika University of Public Services' Ethical Code (Code of Ethics adopted by the Senate of the University of Public Service by Resolution 32/2019 (VII. 10.). The study has been prepared in accordance with the LUPS' Code of Ethics, as well.

Measures

Smoking status/frequency of smoking

Characteristics of smoking were assessed by questions based on international recommendations (EMCD-DA, 2002), and national research (Elekes & Domonkos, 2020; Paksi et al., 2017, 2021). We determined lifetime prevalence by posing the question, "Have you ever smoked in your life?" and assessed the current use by asking, "Do you smoke every day or occasionally?" For the second question, participants were given a choice of three answers, "Yes, regularly [every day]" or "Yes, occasionally" or "Not at all". Within the group of current smokers, we made a distinction between those who smoked regularly (daily) and those who smoked occasionally.

Smoking intensity

We investigated smoking intensity, which is generally based on self-reported average cigarettes per day (CPD). CPD use is a key smoking behavior indicator that reflects smoking intensity. (Hovanec et al., 2022; Jena et al., 2013) That means the number of cigarettes smoked per day defines smoking intensity. Smoking intensity was measured in standard ways using the following question, "How many cigarettes do you usually smoke a day?" No consensus exists on how to best define various types of regular smokers (Schane et al., 2010). Based on previous studies (Husten, 2009), in this study, regular (daily) smokers were subdivided into two groups: light (daily) smokers (who smoked less than 10 cigarettes/day) and moderate-to-heavy (daily) smokers (who smoked at least 10 cigarettes/day).

Smoking motivations

To examine motivational attitudes, the Hungarian version (Pikó, 2004) of the Substance Use Coping Inventory (SUI) (Wills & Cleary 1995) was used. Participants who indicated they had some experience with smoking answered items about their reasons for smoking. Responses were coded on 5-point Likert scales with anchor points '1 = Not at all true for me' and '5 = Very true for me'. The SUI uses four subscales to identify motives for substance use: (1) social motives/social pressure (four items, e.g. "Smoking helps you fit in with other people"), (2) self-confidence motives (four items, e.g. "Smoking makes you feel more self-confident", (3) boredom relief motives (two items, e. g. "Smoking is something to do when you're bored"), (4) affect regulation (coping) motives (four items, e.g. "Smoking cheers you up when you're in a bad mood"). The internal consistency of SUI has been found to be very good (Cronbach's α = .8–.9) in almost all sub-dimensions in previous Hungarian studies (Pikó, 2010; Pikó & Varga, 2014; Varga, 2016). The researchers found relatively low (Cronbach's α < .70) scores only on the boredom relief dimension (Pikó & Varga, 2014; Varga, 2016). However, in the survey of police students, internal consistency was satisfactory on all four scales of the SUI (for social motives Cronbach's α = .79, for self-confidence motives Cronbach's α = .82, for boredom relief motives Cronbach's α = .85, and for affect regulation (coping) motives Cronbach's α = .87).

Socio-demographic variables

Age, sex, academic year, residence type, religiosity, marital status, and subjective socio-economic status of the student's family were also assessed in the questionnaire.

Statistical Analysis

Data were subjected to a Kolmogorov-Smirnov (KS) test for normality. Parametric and non-parametric tests were selected based on the results of the KS test. We used the chi-square (χ^2) test to assess the relationship between smoking status, frequency and intensity of smoking and socio-demographic variables. The association relationship between the test values was measured using the Cramer V (V) and Phi (ϕ) coefficient. For the metric variables Fischer's F-test, two-sample t-test (t) and Cohen's effect size index (d) were used. The difference between the mean age and SUI score among smokers was analyzed using the t-test. Effect sizes of the difference of SUI subscales were estimated using Cohen's d statistic, for which values of 0.2, 0.5, and 0.9 are considered small, medium, and large effects, respectively. Results were analyzed using the Mann-Whitney U test, when the assumptions for using

an independent t-test were not upheld. The Mann-Whitney U-test (due to the non-normality of the data) was used to examine the difference in the number of cigarettes smoked by males and females. The significance level was taken as $p < .050$. Multiple logistic regression analysis was used to examine the relationship between smoking prevalence (dependent variable) and motivation (independent variable).

Results

The final study sample ($n = 270$) consisted of 57.4% male ($n = 155$) and 42.6% female ($n = 115$). The average age of students was 21.8 years ($SD = 2.13$, 95% CI: 21.52–22.03). The majority of participants hailed from small towns (38.9%) and villages (33.0%). More than half (52.5–86.1%) of students from each academic year group participated in the survey. The majority of participants came from middle-class families (69.3%) and 57.4% consider themselves to be religious in some form. Table 1 shows other socio-demographic data.

According to survey results, more than three quarters (77.0%) of police students have ever tried smoking in their lifetime. Women were slightly more likely than men to have experimented with smoking in their lifetime, but the difference was not significant (81.7% vs 73.6%, respectively; $\chi^2(1) = 2.50$, $p = .114$, $\phi = 0.10$). Almost half of the students (47.8%) had smoked in the previous year. However, there was no significant sex difference in the prevalence of smoking within the past year. The prevalence of current smoking was 35.6% ($n = 96$), meaning

Table 1. Socio-demographic characteristics of the study sample ($n = 270$)

	Variables	n	%
Sex	male	155	57.4
	female	115	42.6
Residence type	capital	31	11.5
	county seat	45	16.7
	town*	105	38.9
	village**	89	33.0
Marital status	single	147	54.4
	in relationship	121	44.8
	married/ registered partnership	2	0.7
	divorced	0	0.0
Religiosity	religious, following the teachings of your religion	25	9.3
	religious in its own way	130	48.1
	not religious	110	40.7
	NA	5	1.9
Subjective classification of the family's social situation	lower or lower-middle class	39	14.4
	middle class	187	69.3
	upper or upper-middle class	40	14.8
	No answer	4	1.5
Academic year	1st-year	72	26.7
	2nd-year	69	25.6
	3rd-year	68	25.2
	4th-year	61	22.6

*town: number of inhabitants ≥ 10,000
**village: number of inhabitants < 10,000

Table 2. Main indicators of smoking by sex (%)

Smoking indicator	Males (n = 155) %	Feales (n = 115) %	χ^2(df)	p-value	ϕ
Lifetime smoking	73.6	81.7	2.50(1)	.114	0.10
Past 12 month smoking	45.8	50.4	0.56(1)	.452	0.05
Current smoking	32.9	39.1	1.11(1)	.291	0.06
Regular smoking	16.1	26.1	0.49(1)	.480	0.04
Occasional smoking	16.8	13.0	3.48(1)	.062	0.11
Moderate-to-heavy (daily) smokers	52.0	60.0	0.24(1)	.062	0.08

Table 3. Differences in motivational structure among current smokers by sex (n = 96)

Motives	Males (n = 51) M(SD)	Females (n = 45) M(SD)	t	df	Cohen's d
Social	9.54 (3.84)	8.11 (3.92)	1.80	94	.4
Self-confidence	7.41 (3.71)	5.62 (2.85)	2.66**	92	.5
Boredom relief	6.49 (2.65)	5.11 (2.50)	2.60*	94	.5
Affect regulation (coping)	11.03 (4.65)	9.68 (4.39)	1.45	94	.3

* $p < .050$; **$p < .010$ related to a two-sample t-test

Table 4. Differences in motivational structure among current smokers by smoking frequency (n = 96)

	Regular smokers (n = 40) M (SD)	Occasional smokers (n = 56) M (SD)	t	df	Cohen's d
Social	9.75 (4.24)	8.25 (3.59)	1.86	94	.3
Self-confidence	7.72 (3.46)	5.75 (3.20)	2.87*	94	.6
Boredom relief	7.27 (2.29)	4.82 (2.44)	4.97**	94	.0
Affect regulation (coping)	11.9 (4.04)	9.33 (4.64)	2.80*	94	.6

*$p < .010$; **$p < .001$ related to a two-sample t-test

that more than one-third of police students smoked daily or occasionally. Current smoking prevalence was non-significantly higher among women compared to men (39.1% vs 32.9%, respectively; $\chi^2(1) = 1.11$, $p = .291$, ϕ = 0.06). The proportion of regular (daily) smokers in the study sample was 14.8% (n = 40). Although a higher proportion of daily smokers existed among men compared to women, the difference was not significant (16.1% vs 13.0%, respectively; $\chi^2(1) = 0.49$, $p = .480$, ϕ = 0.04). Table 2 shows the main prevalence values. There were no significant differences by type of residence, marital status, religiosity, subjective classification of the family's social situation and academic years for either current smoking or regular (daily) smoking.

On average, regular smoker police students smoke about half a pack (9.4 cigarettes; $SD = 5.1$) of cigarettes per day. No significant difference appeared in the number of cigarettes smoked by males and females (males: 8.9 CPD; $SD = 5.20$ vs females: 10.0 CPD; $SD = 5.07$; U = 164, $p = .522$). Regular smokers were subdivided into light (daily) smokers (n = 18, 45.0%) versus moderate-to-heavy (daily) smokers (n = 22, 55.0%). The results suggest that a similar proportion of male and female regular smokers were classified as moderate-to-heavy (daily) smokers (males: 52.0% vs females: 60.0%; $\chi^2(1) = 0.242$, $p = .622$, ϕ = 0.08).

The structure of smoking motives was analyzed by determining the mean and standard deviation values of the motivation scales among current smokers by sex (Table 3), by smoking frequency (Table 4), and by smoking intensity (Table 5). Comparing the mean scores on the motivation scales by sex, male students (n = 51) scored higher than females (n = 45) on both the self-confidence motives and boredom relief motives for current smoking. For males and females, significant, medium effect size differences existed between the mean scores of self-confidence motives (7.41 vs 5.62; $t(92) = 2.66$, $p = .009$, Cohen's d = .5) and boredom relief motives (6.49 vs. 5.11;

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Table 5. Differences in motivational structure among current smokers by smoking intensity (n = 40)

	Light smokers (n = 18) M (SD)	Moderate-to-heavy smokers (n = 22) M (SD)	t	df	Cohen's d
Social	8.27 (3.73)	10.95 (4.33)	–2.06*	38	.6
Self-confidence	7.33 (2.95)	8.04 (3.87)	–0.64	38	.2
Boredom relief	7.55 (2.20)	7.04 (2.39)	0.69	38	.2
Affect regulation (coping)	11.2 (3.87)	12.4 (4.19)	–0.95	38	.3

*p < .050 related to a two-sample t-test

$t(94) = 2.60$, $p = .010$, Cohen's $d = .5$). Comparing smoking frequency, the results indicated significant differences in mean scores, with medium and large effect sizes on all motivational scales, except for social motives. Regular smokers (n = 40) exhibited significantly higher mean scores for self-confidence motives (7.72 vs. 5.75; $t(94) = 2.87$, $p = .004$, Cohen's $d = .6$), boredom relief motives (7.27 vs. 82; $t(94) = 4.97$, $p < .0001$, Cohen's $d = 1.$), and affect regulation motives (11.9 vs. 9.33; $t(94) = 2.80$, $p = .006$, Cohen's $d = .6$) compared to occasional smokers (n = 56). However, the results indicate that social motives have a similar influence on regular and occasional smokers' smoking habits. As for smoking intensity, social motives served as the only dimension indicating a significant difference among current smokers. That is, moderate-to-heavy smokers (n = 22) were more likely to smoke for social reasons than light smokers (n = 18) (10.95 vs 8.27; $t(38) = -2.06$, $p = .044$, Cohen's $d = .6$).

The relationships between regular smoking and motivational items are presented in the logistic regression results (Table 6). The results indicate that boredom relief motives offered the only significant predictor of regular smoking among police students (OR = 1.45; $p < .001$). Boredom relief motives increased the odds of regular smoking by 1.45 times among current smokers.

Table 6. Results of multiple logistic regression regarding regular smoking among current smokers (n = 96)

Motives	Regular smoking, OR (CI: 95%)
Social	0.96 (0.82 – 1.12)
Self-confidence	1.10 (0.92 – 1.30)
Boredom relief	1.45 (1.16 – 1.80)*
Affect regulation (coping)	1.01 (0.89 – 1.14)
χ^2	23.11
p	< .001

* p < .001

Discussion

Differences in smoking behavior between women and men have decreased over time (Peters et al., 2014). In general, however, smoking prevalence stays higher among males than females (Dai et al., 2022; Wang et al., 2019). Globally, the smoking prevalence among males stands four times higher than that among females (West, 2017). In this study, we found that current smoking prevalence was non-significantly higher among females compared to males. Although there was a higher proportion of daily smokers among males compared to females, the difference was also not significant. These results may be explained by studies suggesting that sex difference is smaller in younger individuals, especially in Western populations (Giovino et al., 2012). A significant causal factor of current smoking could be the professional culture, too. According to previous studies, female police are generally more likely to smoke than males (Gu et al., 2012; Hartley et al. 2014; Violanti et al., 2016).

Our results regarding motivations for smoking indicated that social influences play a dominant role in police students' smoking, regardless of sex and frequency of smoking. This may be explained by the fact that smoking among young adults, especially university students, is mostly motivated by social influences (Moran et al., 2004; Schane et al., 2010). Previous results show that friends' smoking habits is an independent risk factor for smoking among young males and females (Mandil et al., 2010). Although no significant difference was found in the present study, the effect size calculation for the difference in mean scores exhibited a greater than trivial difference (Cohen's $d = 0.4$), suggesting sex differences. This suggests that male police students may be more likely to be social smokers. These findings are consistent with previous research showing that men are more likely to smoke for social reasons (Berg et al., 2011; Schane et al., 2010).

The findings of this study indicate that smoking among male police students is more likely motivated by boredom relief and self-confidence compared to female students, which may suggest that males are more likely than females to smoke during boring situations. A previous research among Hungarian soldiers also showed that, among the motives for smoking, there are sex differences for the boredom relief motive. Male soldiers were more likely to smoke because they experienced boredom than female soldiers (Urbán, 2005). Regarding self-confidence, a similar difference was observed for this motive, suggesting that men endorse greater importance to the confidence-boosting effect of smoking. In the case of addictions, the self-confidence motivation is based on the perception that as a result of substance use the consumer becomes more confident (Wills & Cleary, 1995). In an earlier study of adolescents, Pikó (2004) found that young people with low self-esteem and self-confidence are more likely to smoke. Current smoker male police students who may therefore be more motivated to smoke due to their lower self-esteem and self-confidence when compared to their female counterparts.

Consistent with expectations derived from theoretical models, significant differences in the motivational structure of occasional and regular smokers were also confirmed. Regular smokers exhibited significantly higher mean scores for affect regulation, self-confidence as well as boredom relief motivation. The link between affect coping and regular substance use is well documented (Kiluk et al., 2011; Sinha, 2009; Wills & Hirky, 1996). Emotion-focused coping also plays an important role in the case of regular smoking, which is also confirmed by the current results. According to Ismail and colleagues (2021), low self-esteem and a negative self-image are also common among young people who regularly use substances. Consistent with this, our results indicate that low self-confidence motivated smoking is more prevalent among police students who smoke daily than among occasional smokers.

Previous research has also found that boredom is a common motive for regular substance use (Pikó, 2004; Pikó & Varga, 2014; Szécsi, 2017). Smoking offers an ideal substitute for a ritual to cover up the feeling of emptiness caused by boredom (Pikó & Piczil, 2004). The current results suggest that the most significant role of regular smoking among police students lies in relieving boredom. We found that boredom increased the odds of regular smoking by 1.4 times among current smokers.

Strengths and Limitations

One of the important strengths of the present study is that the motivations of smoking were examined for the very first time among police students in Hungary. The topic of this study bears great importance for law enforcement agencies, police academies, and higher education, as well. Motivation of consumption serves as an important predictor of any substance use; therefore, our findings also support the development of prevention strategies. Furthermore, the SUI, used in this study to measure motivations for smoking, has not been used before in this specific (police professional) population.

Despite the strengths of the present study, this research has some limitations that should be acknowledged. First, our findings were based on a cross-sectional study, self-reported smoking characteristics, and online data collection. Future prospective studies could provide more reliable results. Second, substance use and addictive behavior remain sensitive issues, especially in the police population. This can lead to a deliberate bias in responses. Third, the results of the research apply only to students in higher education in law enforcement. We did not include students at secondary police schools in the survey. Finally, this study did not measure specifically the use of alternative tobacco products such as e-cigarettes or heated tobacco products.

Conclusion, Implications, and Future Directions

Young people in their early twenties face a number of risk factors related to health behaviors (e.g. stress, unhealthy lifestyle, lack of time, and many temptations) that can lead to health risk behaviors such as irregular and unhealthy eating, high intake of sweets or smoking (Kontor et al., 2016). Health risk behaviors, however, are not only prevalent among young people, but also in certain professions. Police work, by nature, involves highly unpredictable and stressful situations. Research has shown that stress, particularly occupational stress, leads to an increase in tobacco consumption (Burke, 1994; Conway et al., 1981).

Compared to the general population, police officers are expected to have higher physical standards. However, previous research has revealed that smokers exhibit a significantly poorer physical performance (Giraldo-Buitrago et al., 2001) and consistently perform worse on various tests of respiratory capacity in comparison to non-smokers

(Bernaards et al., 2003; Higgins et al., 1991). Police students must attend a regular physical test. A significant proportion of them smoke occasionally or regularly. The results also lead to an interesting finding about motivational structure. In contrast to adolescence, when social influences play an important role to predict smoking (Pikó & Varga, 2014), boredom was identified as a significant predictor for smoking among police students. Therefore, the key question in the prevention and treatment of regular smoking among police students focuses on how students could structure and spend their time when they feel empty or they are bored. This is particularly true for students' compulsory periods of service (law enforcement duties, professional training, 24-hour guard duties), which are generally characterized by a high degree of monotony. In the future, it would be necessary to examine differences in the motivational structure on the basis of other substance use indicators – i.e. quantity, degree of dependence, intensity, using an indicator other than CPD, eg. Heaviness of Smoking Index.

Declaration of interest statement
The author declares no conflict of interest.

Ethical statement
The research was carried out in compliance with the University of Public Services' (UPS) Ethical Code (Code of Ethics adopted by the Senate of the University of Public Service by Resolution 32/2019 (VII. 10.) and amended by Resolution 23/2020 (I. 29.)). The study has been prepared in accordance with the UPS' Code of Ethics (7. §). All participants engaged in the research voluntarily and anonymously.
The participants provided their written informed consent to participate in this study.
Their data are stored in coded materials and databases without personal data.

Data Availability Statement
The data supporting this study's findings are available to the public.
We have policies in place to manage and keep data secure.

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