

12 STEPS AND ABSTINENCE: HOW DO I STAY SOBER?

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ABSTRACT. The present study was conducted among 12-steps communities of recovery (Alcoholics Anonymous, Narcotics Anonymous) in Hungary. As these communities become more and more frequented, it is of interest to explore how recovering addicts implement their specific program of recovery and what psychological characteristics are affected by this process.

The study presumed that longer time in abstinence predicted lower levels of chronic stress and higher levels of subjective well-being, given that participants were working actively on their sobriety/recovery. Thus, it was assumed that more intense work on sobriety would lead to lower levels of stress and higher levels of well-being.

After filtration, N = 148 recovering addicts were included in the study. The participants completed a test-battery including queries on sobriety efforts (SEQ); Perceived Stress Survey (PSS-13) and the shortened version of WHO's well-being questionnaire (WB15).

The results show that abstinence doesn't influence levels of stress neither in itself nor through active work on recovery. Nevertheless, a more intense work on sobriety (adhering to the 5 suggestions of 12 step program) predicted higher levels of subjective well-being. Recovering addicts commit themselves most actively to the recommendations of the 12-step communities during their first to five years of their abstinence.

Our study makes a stand for anonymous recovery programs and argues that active efforts of maintaining sobriety are essential for sustainable recovery and long-term sobriety, and adherence to the five recommendations of these 12-step communities predict subjective well-being.

Keywords: *12 step program, recovery, abstinence, efforts of sobriety, perceived stress, subjective well-being*

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Introduction

AA and NA

As stated by Humphreys (1999) and White (2012), even though there is an extensive network of professional institutions dealing with various forms of addiction in the United States, self-help groups are the most common way of seeking help in the field of drug addiction. Today, anonymous communities are available in almost any country in the world, including Hungary, offering a solution for those who want to recover from their addiction. Alcoholics Anonymous (AA), existing since 1935, is present in about 180 countries, with a number of 125,000 groups per week and approximately 2.1 million members, according to a 2018 survey by the organization. Narcotics Anonymous (NA) has 58,000 groups worldwide (Galanter, 2013).

Regarding the 12-step communities in Hungary, AA has approximately 160 meetings per week, while NA is present with 47 meetings per week nationwide. As per the experience of the 12-step groups, it is possible to recover from substance abuse and live a full life with abstinence.

12 Steps and Abstinence: How Do I Stay Sober?

A comprehensive meta-analysis by Emrick and Beresford (2016) points out that the abstinence rate of those actively participating in AA, NA, and other 12-step groups is impressively high (42% of alcohol-dependent people who are regularly involved in the 12-step programs were still stably abstinent over the next four years. In their study's results, Majer et al. (2013) describe that those who consistently and actively participated in (the activities of) 12-step groups were significantly more likely to maintain stable abstinence the next two years, compared with those who were less involved. Kelly et al. (2009) synthesized scientific research on AA and other related 12-step programs and found that they are at least as useful as other intervention approaches. However, the exact way 12-step programs achieve these results is less clear to us. How to keep someone abstinent? How to get involved with the community and run the program? Issues of this nature, which are also addressed in our article, point in the direction that a more detailed understanding of the mechanisms of AA and other 12-step programs could contribute to a better planning of the methodology and timing of addiction-related interventions, and the concept of recovery in general.

Conceptual definition of recovery

The 12-step anonymous communities talk about abstinence-based recovery. According to their concept of addiction, chronic substance use is a

progressive and fatal disease (Narcotics Anonymous World Service, 2012) that cannot be cured but can be rendered asymptomatic with abstinence so that the individual becomes able to live a full life. Professional attempts to conceptually define recovery are still ongoing, and the lack of an accurate definition makes it difficult to study. At their first meeting in 2006, the Betty Ford Institute (BFI) experts aimed to formulate an introductory definition of recovery that could serve as a starting point for subsequent professional discourse, research, and understanding. According to them, the consensual phrasing is the following: Recovery is a voluntary lifestyle that includes sobriety, personal health, and citizenship (exercising civil rights and responsibilities) (McLellan, 2009). Thus, the concept of recovery does not equal mere abstinence, it must be understood as a broader concept. In the definition of SAMSHA (Substance Abuse and Mental Health Services, 2020), “recovery from alcohol and drug problems is a process of change in which an individual gains abstinence and improved health, well-being, and quality of life”. Nagy (2018) aptly highlights that 12-step programs define sobriety as a change in thinking, speaking, and acting. Furthermore, for anonymous communities the successful maintenance and operation of sobriety, is only conceivable in the context of a basic change of lifestyle and attitudes.

How does the program work?

According to Robert Lefever (2000), anyone who wants to stay in recovery from their addiction should actively work on the 12-step program, because this is the only therapeutic approach that can improve quality of life and enhance mood sufficiently enough to fill the internal void left by chronic substance use on a daily basis.

According to the author, it is due to this active work of self-transformation that the individual does not return to the use of destructive substances, processes, or relationships later any time in the future (Lefever, 2000). In their study of the mechanisms of program effectiveness, Kelly et al. (2009) describe that AA helps individuals recover through self-efficacy, coping strategies, increasing motivation, and changing an individual’s social network.

In a study with recovering drug addicts (DeLucia et al., 2015) participants articulated characteristic, emphatic motives of the program (e.g., learning to take responsibility through the program) and their personal experiences (e.g., gaining greater self-knowledge) that are considered critical to the success of recovery. The 12-step community was described by study participants as a supportive, retaining, and essential element. A feature of 12-step programs is that while they return the responsibility to the addict, they

do not force any treatment on them, they do not reach out to members. At the same time, they make strong suggestions and recommendations as to what the addict should do if he or she chooses this path or if he or she wants to become sober. Among the plethora of slogans and guiding strategies spread through “oral tradition” that characterize anonymous communities, there are five recommendations from the AA and NA literature that will be key indicators of our research and which are as follows: 1. *Do not use!* (Complete abstinence from drugs / alcohol) 2. *Attend meetings!* 3. *Have a sponsor!* 4. *Take service!* 5. *Work on the steps!*

Subbamaran et al. (2011) conducted a study with members of AA / NA / CA (Cocaine Anonymous) in the process of developing the MAAEZ (Making Anonymous Alcoholics Easier) program. This program aimed to help addicts (even after a rehabilitation treatment) find their way into 12-step communities and be able to use them appropriately. The MAAEZ program included exercises such as applying for a temporary sponsor, role-playing games, ideas for sober ways of entertainment, etc., highlighting how the 12-step program can be applied most effectively. In those subgroups of the study that previously attended AA / NA or CA meetings, the effect of MAAEZ on maintaining 12-month abstinence was explained in approximately 5–11 % by doing service in the community (4. *Take service!*), while having a sponsor relationship (3. *Have a sponsor!*) accounted for 22–25 % of the total impact. Wendt et al. (2017) also describe in their results that the existence of a sponsor relationship predicted a higher probability of abstinence in recovering addicts who had previously used stimulants. Greenfield and Tonigan (2012) examined how step work in 12-step programs can predict abstinence or subsequent substance use. According to their results, the work on the 12 steps can be divided into two distinct factors in terms of its effects: spiritual and behavioral effects. The spiritual factors of step work were able to predict the percentage of later abstinent days.

Sobriety-work

Nagy (2014) calls *sobriety-work* the recovering addict’s pursuit for change, which presupposes a series of active, continuous, community-based operations aimed at both the recovery of the person performing them and the strengthening of the person’s supportive community. Although Nagy’s concept of *sobriety-work* does not refer strictly to compliance to the five suggestions of the 12 step programs, as it also comprises self-knowledge, spirituality and other factors, in this study the effort of maintaining sobriety was operationalized as the adherence to the five suggestions, a well-quantifiable indicator.

Recovery, stress and life satisfaction

Stress and recovery, or relapse to substance use, has been the subject of many research studies. Haleem (1996) described exposure to stressors as the most reliable experimental manipulation to restore substance use in previously substance-dependent rats. Gonzales et al. (2012) studied young drug addicts who already experienced a relapse during their recovery with regards to their treatment response. They were asked to conceptualize in retrospect the factors that they felt were determinants of the process leading to relapse. Life stressors were cited as such by 85 %. Hagen et al. (2017) in their research examined whether substance-dependent individuals who maintain continuous abstinence for at least one year show improvement in psychological characteristics such as perceived psychological distress (SCL-90-R) or life satisfaction (SWLS). Their results showed that participants who maintained a one-year abstinence showed significant improvement in both factors clinically as well as statistically. Laudet (2008) describes that the measured stress level of addicts in recovery decreases significantly, as time spent in recovery increases. In his research, Laudet examines the evolution of these variables through mediators of religiosity, spirituality, belonging and meaningful life. According to his results, recovering addicts accumulate a kind of “sobriety capital” that significantly reduces the stress in their lives and increases their satisfaction with their lives in the long run. Hosseini et al. (2016) state in their study that consistent participation in the NA community is significantly associated with higher life satisfaction in drug addicts. Yang et al. (2018) describe in their research findings that recovering drug addicts who have received stronger social support in recovering communities have reported higher life satisfaction and lower stress.

Well-being

Well-being is primarily a psychological, cognitive, health-related, behavioral, and social concept. The WHO defines mental health as “a state of well-being in which the individual is able to realize his or her abilities, cope with stressful situations in normal life, be able to work productively, and contribute to the life of his or her community” (World Health Organization, 1998).

Considering the nature and characteristics of the concept of recovery described above, we found that the changes in the psychological construct of well-being through the process of recovery is worth examining too, in addition to the perceived stress.

In the present study, we aimed to explore whether maintaining abstinence in itself, or abstinence coupled with a more intense sobriety-work (as indicated by adherence to the five recommendations) is predictive of

perceived stress levels or subjective well-being in people who identify as recovering drug addicts who participate in 12-step programs (typically in AA or NA groups) in Hungary.

We hypothesized that in the course of recovery from substance abuse:

Hypothesis 1. Higher efforts of recovery will be associated with lower perceived stress.

Hypothesis 2. Higher efforts of recovery will be associated with higher subjective well-being

Hypothesis 3. Active efforts to maintain recovery will mediate the relationship between duration of abstinence and low perceived stress.

Hypothesis 4. Active effort to maintain recovery will mediate the relationship between duration of abstinence and high subjective well-being.

Method

Participants

Volunteers (N = 148) identifying themselves as recovering from substance addiction participated in the online survey. Convenience sampling method was applied, sample was not representative for Hungary nor Hungarian recovery communities. Mean age was 41.6 years ($SD = 9.3$), 101 (68.2 %) were male participants. Most frequently, opiates, amphetamines and alcohol were declared as consumed substance. Sample was heterogenic in terms of marital status and addiction related characteristics. Descriptive statistics for demographic data are presented in Table 1, while substance abuse related data are presented in Table 2.

Table 1. Demographics

Total sample (N=148)	Mean \pm SD / Frequency (percentages)
Age	41.6 \pm 9.3
Gender	
Male	101 (68.2 %)
Female	47 (31.8 %)
Marital status	
Single	60 (40.5 %)
Married	30 (20.3 %)
Divorced	22 (14.9 %)
In relationship	32 (21.6 %)
Widow	4 (2.7 %)

Instruments

Demographics and queries on recovery effort. Beyond basic demographic data, several addiction-related data was also requested to measure the efforts subjects invest in the maintenance of recovery. Inspired by Nagy (2015) questionnaire on sobriety-work, items referred to addiction (duration, substance, no of trials to quit), duration of abstinence, presence in 12-step program/community, treatment prior to 12-step program, effort to achieve and maintain recovery in the present and in the past, social network, relapse and addiction related medical conditions.

Table 2. Descriptives for substance abuse related variables

Total sample	Mean ± SD / Frequency (percentages)
Abstinence/duration of sobriety	
1.12 month	17 (11.5 %)
1-5 years	61 (41.2 %)
> 5 years	70 (47.3 %)
Duration of active substance use	
> 10 years	116 (78.4 %)
5-10 years	21 (14.2 %)
2-5 years	10 (6.8 %)
< 2 years	1 (.7 %)
Attempts to quit	
Yes/yes, several times	131 (88.5%)
No, this is the first time	17 (11.5%)
Who proposed participation in 12 step program?	60 (40.5 %)
Rehabilitation program	30 (20.3 %)
Acquaintance/friend in recovery	26 (17.6 %)
Physician/psychiatrist	11 (7.4 %)
Social worker	1 (.7 %)
Psychologist	20 (13.5 %)
Other	
Participation in long-term rehabilitation/therapy	65 (43.9 %)
Yes, and completed it	31 (20.9 %)
Yes, but quit	52 (35.1 %)
No	
Frequented communities/ sessions	
AA	70 (47.3 %)
NA + AA	36 (24.3 %)
Other communities (CODA, ACA, Al- anon)	38 (25.8 %)
None	4 (2.8 %)

Total sample	Mean \pm SD / Frequency (percentages)
No of frequented sessions per week in the past year (during abstinence)	
Almost daily	9 (6.1 %)
1-2 per week	61 (41.2 %)
2-3 per week	47 (31.8 %)
< 1 per week	31 (20.9 %)
Having a home group	
Yes, currently	96 (64.9 %)
Not now/Never	52 (35.1 %)
Service in community	
Yes, currently	84 (56 %)
Not now/Never	64 (43.2 %)
Having a sponsor	
Yes, currently	91 (61.5 %)
Not now/Never	57 (38.5 %)
Undertaking sponsorship	
Yes, currently	46 (31.1 %)
Not now/Never	102 (68.9 %)
Actively working on the steps	
Yes, currently	69 (46.6 %)
Not now/Never	79 (53.4 %)

Perceived Stress Scale (PSS, Cohen et al., 1993). The Perceived Stress Scale was developed to measure how subjects perceive stressing life events. The scale measures perceived stress on a 5-point Likert scale (1-never, 5-almost always). PSS is a widely used scale in normal and clinical populations (e.g. Jovanović & Gavrilov-Jerković, 2015; Schneider et al., 2020). Authors reported high internal consistency of the 10-item version of PSS and Cronbach-alpha was found to be good ($\alpha = .79$) on a Hungarian sample (Stauder & Konkoly-Thege, 2006), as well. In the current study Cronbach alpha ($\alpha = .87$) was found to be high.

Well-being Scale. The 5-item scale elaborated is the most widely used instrument to measure subjective well-being. On a Hungarian sample, Susánszky et al. (2006) found good internal consistency ($\alpha = .85$). In the current study reliability was found high $\alpha = .80$.

Design and procedure

To gather more exploratory data and to validate responses on the newly developed query on recovery efforts, three semi-structured interviews with recovering addicts and several months of fieldwork (participatory observation)

in anonymous meetings took place beforehand. The final version surveys the exact steps of practicing the program and the length of time in abstinence.

A cross-sectional design was applied. Survey link was distributed in closed social networking communities of the 12-step recovery program. During the six week of data collection 400 members received the survey link, and 148 completed all questionnaires adequately and declared themselves addicts in recovery. Other respondents either claimed not to be addicts in recovery or declared themselves as actively dealing with substance abuse. Thus, the final sample consisted of $N = 148$ respondents declaring themselves as being in the process of recovery from some form of substance abuse. Prior to data collection, informed consent was obtained highlighting the anonymity of participation. Study is in line with research ethical standards.

Data analysis

Statistical analysis was performed via IBM SPSS 25, except for mediation models where Jamovi package in R was applied.

Descriptive statistics were performed for demographics and addiction related responses, as follows: frequency and percentage for categorical variables, mean and standard deviation for continuous variables. Internal consistency of scales was tested by calculating Cronbach alpha values. Normality of variables was tested by Shapiro-Wilk test at $p < .05$ significance level and non-parametric statistics were performed for non-normally distributed data.

For multiple regression enter method was applied including all predictors in the regression equation. The two-step cluster analysis with log-likelihood measure and Schwartz's Bayesian Information Criterion (BIC) was performed to reveal natural groupings within the data set. No prescribed number of clusters was suggested. Components of recovery effort (dichotomous variables) were set as classifiers. Differences in sample characteristics according to cluster membership were compared using one-way ANOVA for continuous variables and Chi-square statistics with Cramer's V effect size measures for categorical variables. Levene's Test of Equality of Error Variances was performed to check for the error variance of the dependent variable is equal across the groups.

Results

Descriptive statistics

Descriptive statistics for perceived stress and well-being are presented in Table 3. Mean score on PSS was $M = 17.7$ ($SD = 5.4$) out of a maximum of 40 points attainable, while for WBS $M = 8.25$ ($SD = 2.78$) out of a maximum of 15 points attainable.

Table 3. Descriptive Statistics and Correlations for Study Variables

Scale	n	Mean (min — max) /%	SD	1	2	3	4
1. Perceived stress	148	17.703 (5 — 37)	5.465	—			
2. Well-being	148	8.256 (1—15)	2.777	.606***	—		
3. Recovery effort	148	0.000 (-6.82—7.00)	4.373	.022	.283***	—	
4. Abstinence	148			.111	.125	.100	—

Note. Spearman's rho; * $p < .05$, ** $p < .01$, *** $p < .001$

Hypothesis 1.

Components of recovery effort (participating on meetings, service in community, actively working on the steps, having a sponsor, attaining a home group) were analyzed as predictors of subjective well-being in the model. Results show that although none of these components have a significant individual contribution to the model, all together they significantly predict subjective well-being ($F(6,140) = 2.57$; $p < 0.5$, $aR^2 = .0606$.)

Hypothesis 2.

Similarly, components of recovery effort were examined as predictors of perceived stress, and the model was found not to be significant ($F(6,139) = .909$; $p = .49$; $aR^2 = -.004$).

The better understand the possible patterns of efforts to maintain recovery and to delineate profiles by the components of recovery effort, two-step cluster analysis performed. As a result, four predictors were found to have relevance, and three clusters emerged in this model. The Silhouette clustering quality index (average .05) proved to validate this two-step cluster solution; the model fit was good.

The composition of the clusters and the importance of variables within the cluster were examined. Clusters were identifiable as “active” group with all members actively working on the 12 steps, attaining a home group, having a sponsor and having service in community, as well, “passive” group with none of its members working actively on the 12 steps, nor having a home group, a sponsor or a service in community, and “labile/mutable” group (see Table 4).

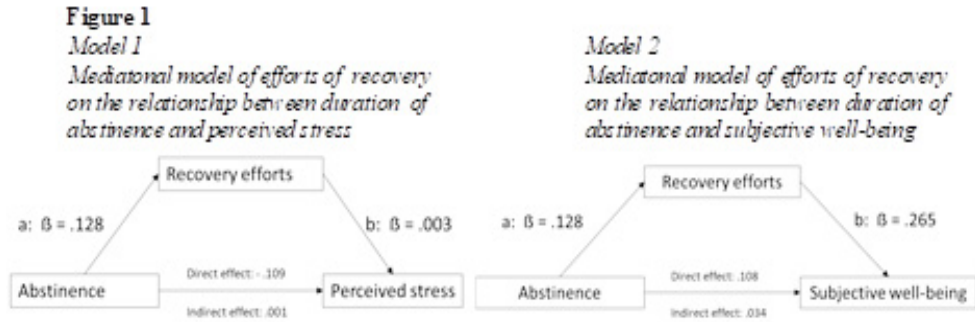
Actively working on the 12 steps proved to be the strongest predictor ($= 1$), followed by attaining a home group ($= .99$), having a sponsor ($= .91$), and having service in community ($= .89$).

Table 4. Two-step cluster analysis and cluster characteristics

Cluster descriptor	Active group 34.7 %	Passive group 28.8 %	Mutable group 041.5 %
Cluster size	(n = 51)	(n = 35)	(n = 61)
Input variables (classifiers)			
Presently working active on the 12 steps	100%	0%	29.5%
Presently attaining a home group	100%	0%	73.8%
Presently having a sponsor	100%	0%	63.9%
Presently having service in community	100%	0%	54.1%
Age	40.37 (9.37)	41.02 (8.08)	43.03 (9.90)
Sex			
male	35 (68.6%)	41 (67.2%)	24 (68.6)
female	16 (31.4%)	20 (32.8%)	11 (31.4%)
WBS	8.94 (2.73)	7.17 (2.34)	8.30 (2.91)
PSS	17.82 (5-73)	17.20 (4.60)	17.83 (5.79)
Duration of abstinence	Frequency (% within cluster/abstinence)	Frequency (% within cluster/abstinence)	Frequency (% within cluster/abstinence)
< 1 year	1 (2% / 5.9%)	9 (25.7% / 52.9%)	7 (11.5% / 41.2%)
1-5 years	28 (54.9% / 45.9%)	12 (34.3% / 19.7%)	21 (34.4% / 34.4%)
5 years	22 (43.1% / 31.9%)	14 (40%% / 20.3%)	33 (54.1% / 47.8%)

When differences between cluster groups were examined, significant differences were found with regard to age $F(2,145) = 5.74, p = .005$. No group differences in PSS, $F(2,144) = .18, p = .84$, but significant group differences in

WBS $F(2,144) = 4.40$, $p = .014$ were found. Scheffe post-hoc analysis for pairwise comparisons revealed that the active group declared significantly higher well-being as compared to the passive group, $p = .014$. The three clusters were then compared by the duration of abstinence to get further information about the characteristics of the groups. More than half of the participants who declared being abstinent for less than 1 year belong to the passive group, while almost half of those being abstinent for 1-5 years belong to the active group. The majority of participants with a more than five years duration of abstinence are members of the mutable cluster. For detailed presentation of observed frequencies see Table 4. Chi-square statistic revealed a significant relationship between cluster membership and duration of abstinence, $\chi^2 = 14.691$, $p = .005$, with a low effect size, Cramer's $V = .224$.



Hypothesis 3.

In the first mediation model we tested whether abstinence can predict perceived stress directly or indirectly through the effort of recovery (Figure 1). The model was found to be not significant, $F(1,146) = 2.437$, $p = .121$, $R^2 = .016$.

Neither the indirect (abstinence – efforts of recovery – perceived stress), $\beta = .001$, nor the direct path (abstinence – perceived stress), $\beta = -.108$ was significant in our mediation model (see Table 5).

Table 5. Results of mediation analysis: Efforts of recovery on the relationship between duration of abstinence and perceived stress

Type	Effect	Estimate	SE	95% C.I. (a)		β	z	p
				Lower	Upper			
Indirect	abstinence \Rightarrow recovery efforts \Rightarrow perceived stress	0.00260	0.0848	-0.164	0.169	3.24e-4	0.0307	0.97
Component	abstinence \Rightarrow recovery efforts	0.82384	0.5242	-0.204	1.851	0.12812	1.5716	0.11
	efforts of recovery \Rightarrow perceived stress	0.00316	0.1030	-0.199	0.205	0.00253	0.0307	0.97
Direct	abstinence \Rightarrow perceived stress	-0.87357	0.6620	-2.171	0.424	-0.10873	-1.3196	0.18
Total	abstinence \Rightarrow perceived stress	-0.87096	0.6588	-2.162	0.420	-0.10840	-1.3221	0.18

Note. Confidence intervals computed with method: Standard (Delta method); Betas are completely standardized effect sizes

Hypothesis 4.

Table 6. Results of mediation analysis: Efforts of recovery on the relationship between duration of abstinence and subjective well-being

Type	Effect	Estimate	SE	95% C.I. (a)		β	z	p
				Lower	Upper			
Indirect	abstinence \Rightarrow efforts of recovery \Rightarrow subj. well-being	0.139	0.0974	-0.0523	0.330	0.0339	1.42	0
Component	abstinence \Rightarrow efforts of recovery	0.824	0.5242	-0.2036	1.851	0.1281	1.57	0
	effort of recovery \Rightarrow subj. well-being	0.168	0.0502	0.0698	0.267	0.2649	3.35	<
Direct	abstinence \Rightarrow subj. well-being	0.441	0.3230	-0.1926	1.074	0.1079	1.36	0
Total	abstinence \Rightarrow subj. well-being	0.579	0.3334	-0.0743	1.233	0.1418	1.74	0

Notes. Confidence intervals computed with method: Standard (Delta method); Betas are completely standardized effect sizes

Next, we tested whether sobriety-work mediates the relationship between abstinence and subjective well-being (see Figure 2). The mediation model was insignificant, both the indirect ($\beta = .034$; $p > .05$) and direct path ($b = .824$, $SE = .528$, $t(146) = 1.561$, $p = .121$, $\beta = -.128$) was below statistical significance.

Discussion

As 12 step programs become more and more popular in Hungary among recovering addicts, and new recovery-based treatment centers emerge (National Psychiatric and Addictology Institute; Szigetvár Addictology), more in-depth studies of this subject are needed to promote progress in the field of medicine, as well as clinical psychology.

Addiction recovery is a long-term process. Sustained stable recovery presumes strengthened sobriety skills. These skills refer to the challenging endeavour of maintaining sobriety and dealing with problems commonly encountered by recovering addicts. In the present study we aimed to explore the way efforts of sobriety as advocated by the 12-steps recovery programs, relates to perceived well-being and distress in a heterogenic sample of recovering substance addicts at various stages of sobriety.

With respect to the study sample, it is essential to mention that two-third of our sample attended a rehabilitation therapy, and almost every second participant completed a long-term drug or alcohol rehabilitation therapy before attending the 12-step community. It is noteworthy that nearly half of the participants are abstinent for more than five years, suggesting the beneficial role of long-term rehabilitation programs.

Perceived stress

The hypothesis regarding the mediation effect of the sobriety-work on the relationship between abstinence and perceived stress showed that by itself, the duration of abstinence does not predict the perceived stress, but neither the efforts of recovery acts as a mediator between these variables. Abstinence does not predict perceived stress, regardless of its duration and the active efforts of maintaining it.

Therefore, the results did not confirm our expectations regarding the effects of recovery efforts on the level of perceived stress. Daily stress of addicts in recovery proved not to be related to the adherence to the five recommendations of the 12-step programs. Though we also hypothesized that the duration of

abstinence can only predict low perceived stress and high subjective well-being in the presence of active efforts to maintain recovery, in our study the abstinence/ the duration of recovery was found to be unrelated to the level of stress. Additionally, participants who actively put efforts into maintaining recovery (e.g., working on the 12 steps, having a sponsor, having a home-group, participating on meetings, taking a service) show no difference in perceived stress as compared to the participants clustered as passive or mutable in terms of ongoing efforts of recovery.

This result disproves Laudet (2018), who had shown that the duration of abstinence was related to lower levels of stress. Moreover, several data in the literature (Haleem, 1996; Gonzales, 2012) shows that stress is one of the most powerful predictor of addiction relapse. Accordingly, for a long-term abstinence, low levels of perceived stress are essential. In the interpretation of the lack of association found in the present study, we might consider that current stressors encountered by participants may be independent of the level or quality of recovery, an idea confirmed by the interviews conducted with recovering addicts. These indicated that recovery is not consistent, but rather an unbalanced state with alternating stressful and more balanced periods. Furthermore, the scale chosen for the assessment of perceived stress refers only to one month preceding the data collection. Our results are in line with the idea that by its nature, recovery from substance abuse is not linear.

Subjective well-being

Results also show that the duration of abstinence cannot predict subjective well-being either, and the efforts of recovery does not act like a mediator in between the two variables. Subjective well-being was found to be positively related to some components of the five recommendations of the 12-step programs, and adherence to these recommendations all together, but not individually, predicted the subjective well-being. Therefore, actively putting effort on the maintenance of recovery, as specified by the 12-step communities, predicts higher well-being in recovering addicts, confirming our hypothesis. This goes along with the finding that active participants, as clustered in the analysis (currently working on the steps, having a sponsor, having a home group, participating on meetings) exceed passive and mutable participants in self-rated well-being. Furthermore, participants being sober for less than one year found hard to comply with the five recommendations. Several reasons might lie behind this finding that should be clarified in future research. For example, integration in 12-step communities and commitment to their recommendations takes time, and one year might be far too short for

assimilation. Failure to assimilate the five recommendations might lower one's chance to achieve and exceed one year of abstinence, however the present study does not provide the frame for interpreting the association in terms of cause-and effect. It is essential to also consider that half of the sample already attended and completed a long-term rehabilitation program, so the first months of sobriety often coincides with or partially overlaps rehabilitation. In this phase, addicts are not yet fully committed, active members of the anonym community. A gradual increase in the adherence to the five recommendations is also supported by the finding that addicts with one to five years of sobriety are active in efforts of maintaining recovery as approached by the 12-step communities. At the same time, participants being sober for more than five years are heterogenic in terms daily endeavour. Therefore, the practice of the recommendations of these communities varies in virtue of individual needs. The program offered by these anonym communities gives ground for all members to freely apply the recommendations as it is best for them. These are indeed recommendations and not rules or assignments, and membership is not conditioned by their fulfillment. This goes along with the slogan of these communities, asseverated on their regular meetings, namely that "*It works, if you work it.*" Recovering addicts may only maintain long-term sobriety if they judge that it worth the effort, and they feel alright with their lives. Addicts therefore actively govern their own recovery and the maintenance of sobriety. The recommendations of the 12-step communities provide support for this process. Our study shows that adherence to these guidelines is associated not only to the higher probability of sobriety, but also to better subjective well-being. According to present knowledge, nothing guaranties that one can evade relapse, sobriety is not granted and addiction is not curable. However, if through the practice of the recommendations one goes through change and self-progression, this may be a convincing promise of a fuller, drug-free life.

Limitations and future directions

Our study makes a stand for anonymous recovery programs and argues that active efforts of maintaining sobriety are essential for sustainable recovery and long-term sobriety, and adherence to the five recommendations of these 12-step communities predict subjective well-being.

Despite these contributions, this research has some limitations. In the sampling process recovering addicts were included based exclusively on self-identification. No professional diagnosis was provided. To a certain extent, this enhances the probability of false positives: not everyone who considers

themselves addicts are indeed presenting the clinical characteristics of substance addiction. At the same time however, the list of queries chosen for this study aimed at response validation, so it not only prompted to the type of substance used, but to several aspects of substance use, duration of abstinence, former attempts to quit, as well. Therefore, it is reasonable to consider after all that the sample consists of substance addicts, indeed.

Scientific approach to recovery from substance abuse advocates for longitudinal and follow-up studies in the exploration of the mode of action of the techniques applied in favor of recovery. Our study however is a cross-sectional one. Responses were collected referring to the period of the last four weeks preceding data collection. This in turn may hold some bias: if a more stressful period coincides with the timing of the survey, responses may be irrelevant to the recovery in its entirety. Recovery is progressive, but inharmonious, non-linear, so one-time data gathering cannot be extrapolated to the whole course of recovery. Moreover, the present study design is not suitable for interpreting the associations between efforts of recovery and subjective well-being in terms of cause-and effect neither on the level of the whole sample, nor in the three clusters (active, passive and mutable) outlined based on active adherence to the five recommendations.

The phases of recovery could have been better differentiated. Instead of Betty Ford Institute's trichotomy, a partition based on Gorski's theory might have brought additional information especially in the delimitation of sober addicts for more than five years. More than half of the sample fell into this category, but BFI trichotomy did not allow any statistical grouping within the category. This would have been important, as different approaches to sobriety might be characteristic for those who are sober for five years than those who are sober for decades.

And finally, almost two-third of the sample participated some form of rehabilitation, and the majority completed it before data collection, possibly before joining the 12-step program. This is a fact that cannot be ignored when assessing sobriety. This is even more pronounced when predictors of the quality and stability of sobriety are targeted. Obviously, a professional treatment cannot be disregarded. In this study, although we asked about the participation in and completion of such rehabilitation programs, and also the number of sessions was noted, but no information regarding the type of these programs were collected. We have no data about the effect of these treatment programs on the quality and duration of sobriety, nor their beneficial effect on the psychological factors of subjective well-being and perceived daily stress, as measured in the present study. All these may serve as a starting point for future researches.

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