



Sense of coherence, resilience, alcohol use among Slovak university students. A brief universal drug use prevention program

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The aim of this study was to explore the efficacy of brief universal drug use prevention program among university students. The changes (pre- and post-program) in scores of sense of coherence (SOC-13; Antonovsky, 1993), resilience (Notario-Pacheco et al., 2011), and alcohol use (AUDIT, Babor, Higgins-Biddle, Suanders, Monteiro, 2001) were explored (34 program participants, 75 students in control group). A statistically significant increase in comprehensibility and resilience, as well as a significant decrease of alcohol use from baseline to follow-up measures were found following participation in the program among students in the experimental group. Findings of this study supported flexibility, a potential for changes in cognitive component of SOC, resilience, and alcohol use among university students who participated in short universal drug use prevention program.

Universal drug use prevention program. AUDIT. Sense of coherence. Resilience. University students.

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Drug use prevention programs were based on a variety of theoretical approaches (model of risk and protective factors, 'Behaviour Image Model', the Theory of Planned Behaviour, Social development theory, Gender theory, Alternatives to drinking approaches (Cairns et al., 2011). A new generation of theory, research, and practise of drug use prevention has emerged through the implementation of resilience model (Braverman, 2001) in drug use prevention programs aimed at development of highly-specific resilience skills (Soole, Mazerolle, Rombouts, 2008). The flexibility of drug education programs could be developed by implementing social constructivist theoretical background, which is based on development of critical thinking, self-reflection, active construction of new knowledge and deconstruction of the meanings (Heyne, Bogner, 2012).

Successful drug use prevention programs used social influence approach, life skills training, as well as a more comprehensive approach (Meschke, Patterson, 2003, Sanci et al., 2002).

The skills training was identified as one of the best known and effective of social influence approaches (Botvin, Baker, Filazzola, Botvin, 1990).

Life skills development approach to alcohol education, as well as other drug use aimed to prevent or reduce alcohol use behaviour by enhancing intrapersonal and social skills through protection or offset of risk factors associated with drug use (Cairns et al., 2011). Complementary life skills can be paired to reveal 5 main life skill areas: critical thinking, creative thinking, self-awareness, interpersonal relationships, decision-making, problem solving, and coping (Erawan, 2010).

Coping as a sense of coherence provided a theoretical background for explaining how coping might have been developed (Langeland et al., 2006) and resilience as a capacity to change and cope with adversity (Burns, Anstey, 2010) present two of the constructs / indicators of possible change investigated in brief universal drug use prevention program among Slovak university students. The importance of the constructs in drug use prevention had been confirmed by a number of earlier research studies (Midanik, Zabkiewicz, 2009, Sagy, Shani, Leibovich, 2009).

Main objective

This study aimed to explore the changes in scores of sense of coherence, resilience, and alcohol use pre- and post- brief drug use prevention program among university students in experimental group (program participants) and control group.

Methods

Subjects, research design, and ethical consideration

The study was conducted during the academic year 2002/03. The sample consisted of university students studying social work, and teaching. Students for the experimental group were recruited via university intranet ($n = 148$). 50 students confirmed their participation in the prevention program. Students in the experimental group were divided into two training groups (25 students per one training group). The same three trainers were selected for both training groups. Control group participants were invited in person by their teachers during teaching lessons ($n = 100$), 75 of them confirmed their participation in the study.

All students in the experimental group took part in the short universal drug use prevention program while control group received no training. Participants of experimental and control groups were tested before and after the duration of the program. Participation in the prevention program, as well as in the scientific research had to be voluntary. Students remained anonymous; a clearly defined identification coding systems was used for the follow-up study.

Students who did not pass all parts of prevention program, and did not fully complete questionnaires at both times (the baseline, Time 1) and two months follow-up data-collection (Time 2) were excluded from the research sample.

Final research sample consisted of 109 university students (84.4% women, mean age 22.62, $SD = \pm 1.61$); 34 (31.2%) participants of short drug use prevention program (experimental group), 75 (68.8%) students of control group.

Universal drug use prevention program for university students and the research of its efficacy were carried out with approval of the Research Ethical Committee at Pavol Jozef Šafárik University in Kosice.

Universal drug use prevention program for university students

Universal drug use prevention program for university students (UDUPPuS) was based on implementation of the life skills training approach. The entire population (university students of study programs with the important professional relation to drug use prevention in this research) was the target group of universal prevention programs (Small, Memmo, 2004). Theoretically, the program draws on the social constructivist approach to work with individuals and groups (Mann, Carney, Parameswaran, 1996, Ludewig, 1992, Ulehla, 1996). Constructivist approach is based on Bruner's view on the process of learning, which should be proactive, collaborative and given over the construction of meanings rather than receiving them (Le Cornu, 2009).

UDUPPuS consisted of two parts:

- Psychosocial training (24 hours over three days) with three trainers (a psychologist, a gym teacher, a special pedagogy teacher; all trainers had received a special drug prevention training).
- Workshops (information dissemination, 4 workshops / 12 hours) with four trainers (two medical doctors - specialists and two psychologists - drug use prevention specialists).

Instruments

The following data collection instruments were used in the research.

The Sense of Coherence Scale (SOC-13; Antonovsky, 1993)

The scale has a five-point Likert scale format with two anchoring responses "never" and "very often". The items measured were perceived comprehensibility (5 items), manageability (4 items) and meaningfulness (4 items). The following Cronbach's alpha scores were computed for Manageability 0.61 (Time 1), 0.68 (Time 2), Comprehensibility 0.60 (Time 1), 0.72 (Time 2), and Meaningfulness 0.50 (Time 1), 0.52 (Time 2).

Resilience (CD-RISC, Notario-Pacheco et al., 2011)

Ten items of CD-RISC with Likert type additive scale had five response options (from "never" to "almost always"). Higher scores indicated higher levels of resilience. Cronbach's alpha were 0.78 (Time 1), 0.86 (Time 2).

AUDIT

AUDIT (The Alcohol Use Disorders Identification Test, Babor, Higgins-Biddle, Suanders, Monteiro, 2001) is a screening instrument for hazardous and harmful alcohol use (alcohol use, drinking behaviour, and alcohol related problems). In total, AUDIT consisted of 10 items; responses to each question were scored from 0 to 4. A higher total score indicated more risky drinking. Cronbach's alpha were 0.84 (Time 1), 0.89 (Time 2).

Statistical analyses

The differences between the pre-test and post-test scores separately for experimental subjects and control subjects were tested by Wilcoxon's signed-rank test. The differences between pre-test and post-test scores of experimental and control groups were analyzed by Mann-Whitney U test for Time 1 and Time 2. Bivariate relationships between resiliency, sense of coherence, and alcohol use at baseline were explored using nonparametric correlations. Statistical analyses were carried out in SPSS 15.

Results:

The bivariate relationships between resiliency, sense of coherence, and alcohol use at baseline

A medium positive correlation was found between resilience (as measured by the CD-RISC) and sense of coherence (as measured by the SOC-13), $r = 0.30$, $p < 0.001$. A small positive correlation was found between resilience (as measured by the CD-RISC) and Manageability (as measured by the SOC-13; $r = 0.28$, $p < 0.001$), Comprehensibility (as measured by the SOC-13; $r = 0.25$, $p < 0.001$), Meaningfulness (as measured by the SOC-13; $r = 0.20$, $p = 0.004$).

A small negative correlation was found between alcohol use (as measured by the AUDIT) and Sense of coherence ($r = -0.17$, $p = 0.016$), Comprehensibility ($r = -0.15$, $p = 0.035$). The relationships between alcohol use and Manageability ($r = -0.14$, $p = 0.061$), Meaningfulness ($r = -0.14$, $p = 0.051$), Resilience ($r = -0.10$, $p = 0.140$) were not statistically significant.

The relationships between alcohol use change from baseline to follow-up and sense of coherence change, resilience change were not significant ($r < 0.18$ alcohol use - sense of coherence, alcohol use - resilience) for experimental and control group.

„Were there any differences in the scores of sense of coherence, resilience, and alcohol use among students of experimental and control groups at Time 1, as well as at Time 2?“

A Mann-Whitney *U* test revealed no significant differences (Table 1, 2) in the sense of coherence, resilience, and alcohol use levels of students of experimental group and control group at baseline (Time 1), as well as at follow-up (Time 2) with the exception of two components of the AUDIT Dependence symptoms, and Harmful alcohol use. Significantly higher levels of Dependence symptoms (Mean Rank = 48.04 experimental group, 58.15 control group) and Harmful alcohol use (Mean Rank = 46.46 experimental group, 58.87 control group) were found among students of control group compared to students of experimental group at follow-up.

Table 1: The differences between experimental and control groups in sense of coherence, resilience, and alcohol use at Time 1 and Time 2*

	Sense of coherence	Components of the Sense of coherence	Resilience	Alcohol use	Domains of the AUDIT														
Manageability	Comprehensibility	Meaningfulness	HA	DS	Hr														
Time	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	
<i>U</i>	1216.5	1001	1071	991	1251	980	1011	1186.5	1141.5	980	1194.5	1191.0	1136.5	1111.5	1114.5	1038.5	1100.5	984.5	
<i>Z</i>	-0.16	-1.29	-1.25	-1.78	-0.16	-1.63	-1.65	-0.48	-0.88	-1.63	-0.07	-0.31	-0.82	-0.86	-0.87	-2.17	-1.21	-2.10	
<i>p</i>	0.870	0.196	0.213	0.075	0.875	0.102	0.099	0.633	0.381	0.103	0.945	0.754	0.415	0.392	0.387	0.030	0.227	0.036	

Note: * Mann-Whitney *U* test;

HA = Hazardous alcohol use, DS = Dependence symptoms, Hr = Harmful alcohol use

Table 2: Median scores of sense of coherence, resilience, and alcohol use for experimental and control groups at Time 1 and Time 2

	Sense of coherence	Components of the Sense of coherence	Resilience	Alcohol use												
Manageability	Comprehensibility	Meaningfulness														
Time	1	2	1	2	1	2	1	2	1	2	1	2	1	2		
EG	43	45	13	14	16	17	14	14	37.5	39	5	3				
CG	43	43.5	13	13.5	16	15	15	14	37	37	4	3				
Total	43	44	13	14	16	16	14	14	37	37	4	3				

Notes: EG = experimental group, CG = control group

„Were there any changes in the scores of sense of coherence, resilience, and alcohol use among university students (total sample, experimental group, control group) from pre-program to post-program?“

Sense of coherence (SOC-13)

A Wilcoxon signed-rank test for total SOC-13 scores from baseline and Time 2 revealed no significant differences for the total sample ($z = -0.552$, $p = 0.581$), experimental group ($z = -1.861$, $p = 0.063$), and control group ($z = -0.956$, $p = 0.339$).

Components of the SOC-13

Manageability

A Wilcoxon signed-rank tests for Manageability scores from baseline and Time 2 were not significant for the total sample ($z = -1.147$, $p = 0.252$), experimental group ($z = -1.292$, $p = 0.196$), and control group ($z = -0.545$, $p = 0.586$).

Comprehensibility

A Wilcoxon signed-rank tests for Comprehensibility scores from baseline and Time 2 were not significant

for the total sample ($z = -0.487$, $p = 0.626$), and control group ($z = -0.922$, $p = 0.356$). A statistically significant increase in Comprehensibility was found following participation in the training prevention program among students of experimental group ($z = -2.096$, $p = 0.036$), with a medium effect size ($r = 0.26$). The median score of resilience increased from pre-program ($Md = 16$) to post-program ($Md = 17$).

Meaningfulness

A Wilcoxon signed-rank tests for Meaningfulness scores from baseline and Time 2 were not significant for the total sample ($z = -0.221$, $p = 0.825$), experimental group ($z = -1.069$, $p = 0.285$), and control group ($z = -1.035$, $p = 0.301$).

Resilience

A Wilcoxon signed-rank test revealed a statistically significant increase in resilience from baseline to follow-up for the total sample ($z = -2.152$, $p = 0.031$), with a small effect size ($r = 0.15$). A statistically significant increase in resilience was found following participation in the training prevention program among students of experimental group ($z = -2.335$, $p = 0.020$), with a medium effect size ($r = 0.29$). The median score on the resilience increased from pre-program ($Md = 37.5$) to post-program ($Md = 39$). A Wilcoxon signed-rank test scores for resilience at baseline and Time 2 were found not significant for control group ($z = -1.107$, $p = 0.268$).

Alcohol use

Most of students scored under the cut-off scores and could be considered to be at a low risk of alcohol-related problems (total score of AUDIT $< 8 = 73.6\%$, 78.8% for experimental group, 71.2% for control group at baseline; total score of AUDIT $< 8 = 81.5\%$, 87.9% for experimental group, 78.7% for control group at follow-up).

A Wilcoxon signed-rank test revealed a statistically significant reduction in alcohol use from baseline and follow-up for the total sample ($z = -2.857$, $p = 0.004$), with a small effect size ($r = 0.20$), the median score of alcohol use decreased from Time 1 ($Md = 4.5$) to Time 2 ($Md = 3$), as well as for experimental group sample ($z = -2.557$, $p = 0.011$), with a medium effect size ($r = 0.32$), the median score of alcohol use decreased from Time 1 ($Md = 5$) to Time 2 ($Md = 3$). A Wilcoxon signed-rank test scores for AUDIT at baseline and Time 2 were found not significant for control group ($z = -1.802$, $p = 0.072$).

Domains of the AUDIT

A Wilcoxon signed-rank test did not reveal a statistically significant change in the first domain of the AUDIT Hazardous alcohol use among students of experimental group ($z = -1.196$, $p = 0.232$), and control group ($z = -1.713$, $p = 0.087$). The statistically significant reduction in the second domain of the AUDIT Dependence symptoms was found only among students of experimental group ($z = -2.486$, $p = 0.013$) with a medium effect size ($r = 0.30$), no significant change was found in this domain among students of control group ($z = -0.872$, $p = 0.383$). A statistically significant reduction in the third domain of the AUDIT, Harmful alcohol use, was found only among students of experimental group ($z = -2.023$, $p = 0.043$) with a medium effect size ($r = 0.25$). The median score on the Harmful alcohol use decreased from pre-program ($Md = 1.0$) to post-program ($Md = 0$). No significant change was found in this domain among students in control group ($z = -0.607$, $p = 0.544$).

Discussion

According to World Health Organization report, life skills development has always been included in health education differing in its objectives and content from country to country and from one location to another (Erawan, 2010). Life skills training approach has been implemented in the UDUPPuS as an informal health education program offered to university students annually since 2000. Social constructivism, which formed theoretical background of the UDUPPuS, allowed to flexibly adjust the annually program based on the priorities of students. This was consistent with findings of Braverman (2001) related to prevention programs with greatest chance for success if they managed to connect to young people on subjects of their high priority. Sense of coherence, resilience, and alcohol use presented

in this study represent three of the explored indicators of efficacy of the UDUPPuS.

Sense of coherence and resilience present related concepts and inconsistency in approaches could have been observed in terms of the definition and operationalization of resilience (Almedom, Tesfamichael, Mohammed et al., 2007, Harrop, Addis, Elliott, Williams, 2006, Almedom, 2005). A medium positive correlation was found between resilience (as measured by the CD-RISC) and sense of coherence (as measured by the SOC-13), and a small positive correlations were found between resilience (as measured by the CD-RISC) and components of sense of coherence in this study.

A small negative correlation was found between alcohol use (as measured by the AUDIT) and sense of coherence (as measured by the SOC-13), and Comprehensibility, a component of SOC. The relationship between sense of coherence and alcohol use, alcohol consumption as a result of failed coping strategies was confirmed by previous research (Neuner et al., 2006); however, other study did not support the relationship between the strength of SOC and alcohol use (Kuuppelomäki, Utriainen, 2003). Future research should focus in more detail on the analysis of this relationship and the positional mediating role of SOC in longitudinal studies controlling socio-demographic characteristics.

A statistically significant increase in Comprehensibility was found following participation in the training prevention program among students of experimental group in this study. Comprehensibility, as a cognitive component of sense of coherence (Langeland, 2007), was developed among experimental students and this finding provided support for the efficacy of a brief prevention program based on constructivist theoretical background. Findings of this study supported the flexibility and the potential for change of cognitive component of sense of coherence, which is in line with previous research (Langeland, 2007, Langeland et al., 2006).

To be resilient means to be able to understand that it may not be possible to fully control everything yet to have the power to influence what happens next, to have a capacity to change and cope with adversity (Johnson, Dismore, Hof, 2011; Burns, Anstey, 2010). An important result of this study was that a statistically significant increase in resilience from baseline to follow-up was found among university students of the total research sample, and among students of experimental group; however, no significant change of resilience was found among students in control group from Time 1 and Time 2. This study was conducted to explore the efficacy of a brief psychosocial training and confirmed expected results related to the promotion of resilience through participation in this program.

Johnson, Dismore, and Hof (2011) reported a significant negative correlation between resilience and alcohol use levels. Hodder et al. (2012) reported an effectiveness of a comprehensive school-based resilience intervention, and decreasing self-reported tobacco, alcohol and illicit drug use among adolescents. This study showed that the prevention program participants self-reported a significant decrease in alcohol use from baseline to follow-up measures, however the relationship between resilience and alcohol use was not found in this study.

Limitations

Despite some positive results reported in this study, there were limitations and future investigation is required. Further limitations are ought to be mentioned. First, it was found that brief interventions could achieve short-term effect compared to longer-term interventions and behaviour change should be considered the important indicator the effectiveness of a prevention program (Cairns et al., 2011). Future research should include follow-up measures aimed at investigation of long-term effect of a brief prevention program. Second, the inclusion of booster sessions with the possibility to strengthen the aims of original program content has been shown to enhance the effectiveness of program (Soole, Mazerolle, Rombouts, 2008). The follow-up booster sessions, which could contribute to the efficacy of prevention program must be included in future studies. Third, the recruitment of male students especially to experimental group is important for gender specific analyses. However, consistently low numbers of male students enrolled in teaching and social work study programs, as well as their lower interest in program participation present existing conditions, which have to be accepted.

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