

Eötvös Loránd University of Science
Faculty of Education and Psychology



DOCTORAL (PH.D) THESIS BOOKLET

JUDIT FARKAS

Motivational model of alcohol use in a longitudinal study

Doctoral School of Psychology
Personality and Health Psychology Program

Head of School and Program: Prof. Dr. Attila Oláh, CSc

Supervisor: Prof. Dr. Zsolt Demetrovics, habil. egyetemi tanár

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1 AIMS

Problematic alcohol use, especially heavy drinking (i.e., drinking large quantities of alcohol in one sitting, which is often referred to as „binge drinking”) among college students represents a major public health concern also in Hungary (Sebestyén & Németh, 2007; Elekes, 2009; Pikó, 2010). College students represent a group of individuals, who have unique drinking patterns and concerns related to problematic alcohol use, than the population in general. In their cases there are specific expectancies and motives attached to alcohol use, and therefore are also exposed to different risk factors. The examination of alcohol use motives is a relatively young, but a dynamically growing field of research. In the past decade several studies were conducted to assess motives of adolescents, high school students, and college (university) students (review: Kuntsche, Knibbe, Gmel & Engels, 2006), on the other hand there are less studies, which inform about the motives in adulthood or specific populations (i.e. older adults or clinical samples) to observe how the motives develop and change across time. At the same time there is evidence for drinking motives to play a great role in health psychology and clinical science, as it is more likely to get to know the changes or stabilities in behavior through the inducement that lies behind ones observed behavior. Studies suggest, that through motives we can achieve behavior change over time.

Epidemiological studies suggest, that binge drinking is related to young adults, aged 18-24 years, who show the highest rates of alcohol use and have the greatest percentage of problem drinkers. American studies among college students reported 44% binge drinking in the previous 2 weeks (Wechsler & Kuo, 2000). Most national studies provide a slightly lower but still alarming estimate, indicating that 2 in 5 students are binge drinkers (pl.: O’Malley at al., 2002; Wechsler at al., 2000). Our data from Hungary reveals that among university students the problem warrants serious concern, since every fifth student counts as heavy drinker, and had episodes of binge drinking during the past week (Farkas, 2008; Farkas at al. 2009), nevertheless we don’t have any information about the adult population in Hungary.

Schulenberg and colleagues (1996a) longitudinal study shows that the phenomenon is unique because it seems to be relatively variable across time into adulthood. After an initial increase in alcohol consumption, many students show a gradual reduction in alcohol consumption to a more moderate level throughout later years in college and following. The question has been suggested, to identify psychological aspects which could predict these changes. Gotham and colleagues (1996) suggest underlying their findings of a 7-year-follow-up study, that roles, variables of personality, expectancies and alcohol problems in family history are mostly responsible for changes in drinking behavior in this age. Evidence suggest, that as young adults gain more life responsibilities (e.g. employment and family obligations or marriage) their drinking rate declines, so it might be the transformation social roles and norms, which indicates the changes (see also: „role compatibility theory”: Kandel, 1980). This change, often referred to as „maturing out” seems to be a very complex phenomenon, determined by a set of factors.

To conclude, the aspects of problem drinking and binge drinking might change over the life-span, and it is most likely that mapping these underlying factors can only be studied through complex, and possibly longitudinal designs. During my thesis I would like to take these aims to consideration.

2 THEORETICAL BACKGROUND

Theorists refer to drinking motives as the final common pathway to its use, i.e. the gateway through which more distal influences, like expectancies, quantity of alcohol use, personality factors, situational contexts) are mediated (Cooper, Forne, Russell & Mudar, 1995; Kuntsche et al., 2005; Kuntsche et al., 2006; Urbán, et al., 2008b).

The concept of drinking motives is based on the assumption that people drink in order to attain certain valued outcomes (Cooper, 1994; Cox & Klinger, 1988). It also assumes that drinking behavior is motivated by different needs or serves different functions, and specific drinking motives are associated with unique patterns of precursors and consequences. Cooper and colleagues (1994) have proposed a four-factor model of drinking motives that includes two dimensions: source (internal or external reward) and valence (positive or negative reinforcement). The four specific drinking motives (table 1) were conducted as: coping (internal reward, negative reinforcement); conformity (external reward, negative reinforcement); enhancement (internal reward, positive reinforcement) and social (external reward, positive reinforcement). More studies in the field of motives emerged, as the questionnaire of drinking motives was created by Cooper (1994), which is an easy-to-use tool, with only 20 items, 5 item on each motive. Later on a short version of the questionnaire was conducted, with even less items (Kuntsche & Kuntsche, 2009). These two measures were adapted by our research group to Hungarian language in a sample of high school and university students (Németh, Urbán, Farkas, Kuntsche & Demetrovics, 2012).

Results reveal also that drinking motives explain up to 50% of the variance on adolescent alcohol use (Kuntsche, 2007) and are consequently very strong predictors of alcohol related problems and binge drinking (Kuntsche et al., 2006)

1. Table: Motivation for alcohol use, Four-Factor Model: Cooper (1994)

		EMOTIONAL CHANGE	
		positive	negative
SOURCE	internal	<p>Enhancement</p> <p><i>Drinking to enhance positive mood or well-being</i></p>	<p>Coping</p> <p><i>Drinking to reduce or regulate negative emotions</i></p>
	external	<p>Social</p> <p><i>Drinking to obtain positive social rewards</i></p>	<p>Conformity</p> <p><i>Drinking to avoid social censure or rejection</i></p>

Previous research suggests, that coping motives are related to avoidance, and negative emotional states (i.e. depression or anxiety: McCabe, 2002; Stewart & Power, 2002). Conformity motives have also been associated with negative reinforcement, due to the aim of avoiding social rejection, mostly in a context, where peer-pressure commonly occurs (Carey, 1993). Contrarily the enhancement motives, which function across positive reinforcement,

was more likely observed in men, and is associated with social gatherings, parties, and contexts experienced in night life in general (Kiarouz et al., 2002). Finally, the social motives, represents the external, positive reinforcement, are fulfilling the aims of affiliation, which means they are strongly defined through situational context and cultural aspects (Labouvie & Bates, 2002).

The link between drinking motives and personality has been examined in many studies (review: Kuntsche et al., 2006). Results indicate two distinct groups of risky drinkers. First, those who drink for enhancement, were shown to be extraverted, impulsive, and aggressive. They tend to be sensation seekers, to have low inhibitory control, low levels of responsibility and a weak will to achieve. Second, those who drink for coping, were shown to be neurotic, and to have a low level of agreeableness and a negative view of the own self (Loukas et al., 2000; Theakson et al., 2004; Stewart & Devine, 2000; Stewart et al., 2001). Also studies revealed, that motives of young adults involving coping could lead to more serious alcohol problems, additionally comorbid disorders can exacerbate the conditions later on during adulthood (Demetrovics, 2007).

2.1 SYSTEMATIC LITERATURE REVIEW

Systematic literature review of 20 publications was conducted, with a research focus on elevated alcohol use and ongoing psychiatric problems, where the use of alcohol can be seen as purpose of self-medication. The literature search showed that most studies support the concept of Khantzian's self-medication theory (1997). In most cases, in line with our expectancies, we found, that coping motives are associated with the psychiatric disorder and the underlying comorbid alcohol use. All studies examining posttraumatic stress disorder (Nishith et al., 2001, Kaysen et al., 2007; Dixon et al., 2009), or monitoring adolescent populations regardless to the psychiatric disorder (Dixon et al., 2009; Blumenthal et al., 2010; Windle et al., 2012) found, that without exception only coping motives were able to predict the problems. In cases, where coping motives came second in predicting problems, we could conclude that in fact, the examined comorbid disorder has different structure, which explains the difference in the function of alcohol use (i. e. antisocial personality disorder, hypomanic phases of bipolar depression, bulimia nervosa). In these examples the underlying motive (in most cases enhancement) addresses different needs of the patient to fill with alcohol. Results suggest to be aware of the situational (Norberg, 2010; Gonzales, 2009) and state-delimited (Meyer et al., 2012) actors, also the differences in gender, which need more attention in psychopathological interventions.

The advantage of the motivational model is, that it involves unconscious and automatized decisions, as well as expectancies, and the subjective interpretation of the person using alcohol. Most researches agree, that the range of motives, and their structure changes with ongoing age (Kuntsche et al., 2006; Farkas, 2011), and also strongly depends on cultural effects (Farkas et al., 2010; Kuntsche et al., 2014). At the same time it is difficult to gain conclusions about motives dynamics from cross-sectional studies, therefore to map the whole process, we need to conduct longitudinal studies, unfortunately very few such has been published in the field of drinking motives.

3 THE STRUCTURE AND HYPOTHESES OF THE STUDIES

Based on the theoretical framework, clinical observations and previous studies, the aims of the thesis were as follows:

1. to investigate validity, reliability and applicability of the four-factor structure of drinking motives in three different age groups and a clinical sample, because our previous validation studies focused on different populations (Németh, Urbán, Farkas, Kuntsche, Demetrovics, 2012)
2. to examine cross-sectional difference in the distribution of motives through the different samples, and also the difference in the predictive effect on problem drinking.
3. to access different groups (motivational profiles) through the combination of drinking motives across the 4 different samples, which can cover more of the variability of alcohol problems, then individual motives.
4. to proof the factor stability of the four-factor model across time in the follow-up sample after one year
5. to capture longitudinal change and difference in motives across two different age groups, and also the difference in the predictive effect on problem drinking.
6. to investigate psychopathological symptoms long-term effect on problem drinking and the mediating role of drinking motives across time

In following thesis I will present 6 studies. First 3 studies in a cross-sectional design across 3 different age groups and one clinical sample, then 3 more studies in a longitudinal design, in a matched sample of two age groups followed for one year. Aims of the studies were to continue previous research of validation in different age groups and a special, clinical sample. Another aim was the deeper investigation of drinking motives, through examination of the complexity via explorative latent class analysis, and verification of the longitudinal effects of psychopathology through motives via path analysis.

3.1 SAMPLES

All cross-sectional studies conclude an overall sample of 6000, which adds up as follows: 2913 high school students, 2283 college students, 670 adults, and 149 from a clinical sample. The longitudinal studies analyze 1095 of the former group of high school and college student's data, with a follow up of one year.

3.1.1 College students (CS - college sample)

The first survey, conducted in 2009, aimed all students' dormitories of the five biggest universities from various faculties in Hungary. Systematic data collection was carried out in all the 38 dormitories, which worked at the time. A person of interest counted as students past their 7th or more semester at the university. This condition of screening was needed to achieve a sample that finished their studies by the time of the second survey, so we could assess development after college years. In conclusion 2268 college students data was collected, from which 1352 men (60%) and 917 women, with an average age of 22.8 (SD 1.4).

3.1.2 High school students (HS - high school sample)

Similar to the college students, in case of the high school students we wanted to include students in their final year of school, to see the development later in life during the ongoing follow-up. To guarantee the comparison to the college student sample, we conducted the high school student sample according to the college students' answer to the question "Where did

you go to high school”. According to the answers provided by the college students we did a systematic conduction of the schools mentioned. In conclusion we visited 93 high schools across the country, and 130 classes participated in the study. These are the high schools where, with great probability, the university students in the capitols dormitories come from. The final sample counts 2913 students, from which 1292 are boys (44.4%) and 1621 are girls (55.6%), with an average age of 17.9 (SD 0.6).

3.1.3 Adults (AS - adult sample)

The adult sample was conducted by psychology students in their informal acquaintances, aged between 30 and 60. We included all the non-abstinent persons, who indicated at least one drink in the past 12 months. The final sample counts 670 adults, with gender distribution of 404 men (60.3%) and 266 women (39.7%), and average age of 43.8 (SD 8.6)

3.1.4 Clinical sample (CLIN)

The sample representing clinically significant symptoms was conducted from Nyíró Gyula Hospital-OPAI’s Drug Outpatient Centre, approached through the patients currently in treatment. Although not every patient approaching the Drug Outpatient Centre suffers obligatory from alcohol dependence, through the treatment questionnaire provided, we could select those with alcohol problems. Screening method was achieved via the AUDIT test (see later in 3.2.2) which provides a cut-off point measure to identify problem use. In conclusion 149 patients were included, from which 131 men (87.9%) and 18 women (12.1%), with an average age of 43.23 (SD 8.22).

3.2 MEASURES:

3.2.1 Drinking motives:

We measured drinking motives with the Drinking Motives Questionnaire Revised (DMQ-R: Cooper, 1994, validated for Hungarian language: Németh et al., 2012) and Drinking Motives Questionnaire Short Form (DMQ-R-SF: Kuntsche, 2009, validated for Hungarian language: Németh, 2012), from which we only conducted the long version, as the scales of the short form can be derivated form the long questionnaires items. In case of the long questionnaire each scale (motive) is represented by 5 items, and the short form is reduced to only 3 questions each.

3.2.2 Alcohol involvement:

The indicators of alcohol use were measured by the AUDIT (Alcohol Use Disorders Identification Test) screening questionnaire. The 10 items of the questionnaire are based on three conceptual fields: quantity of alcohol use (item 1-3), dependency symptoms (item 4-7), and signs of harmful use (item 7-10). Since the AUDIT’s questions are based on the use of the past 12 months, in order to get a more differentiated picture of binge drinking, respondents were also asked about frequency of binge drinking in the last 30 days.

3.2.3 Psychopathological symptoms

A widely used symptom checklist measured the psychopathological symptoms during the past week. The Brief Symptom Inventory (Derogatis, 1993) factor structure was assessed earlier (Urbán, Kun, Farkas, Paksi, Kökönyei, Unoka et al., 2014) which indicates stability of the following factors: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism,

3.3 ANALYSIS

Confirmatory factor analysis, structural equation modelling, multiple linear regression analysis and path analysis were conducted with MPlus 6.1 (Muthén & Muthén, 2007). Socio-demographical data, ANOVA, reliability analysis, t-tests and correlations were analyzed via SPSS 17.0.

4 CROSS-SECTIONAL STUDIES

4.1 VALIDATING THE FOUR-FACTOR STRUCTURE OF DMQ-R IN FOUR DIFFERENT SAMPLES

4.1.1 Aims

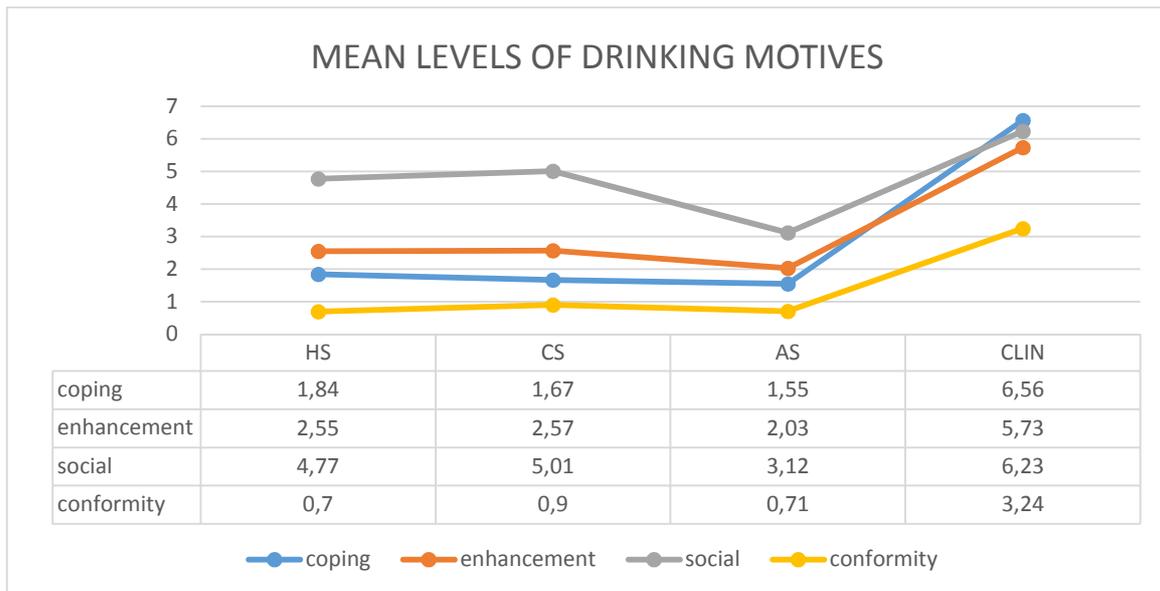
The aim of the study was, to test the Drinking Motives Questionnaire Revised four factor structures stability in four different samples, i.e. on three age groups and one clinical sample. Further aim was to focus on differences to our previously conducted study (Németh et al., 2012) and other international results. Previous results (Németh et al., 2012) suggest, that the structure and model fit of the DMQ-R (long version) questionnaire was not entirely adequate, so we also focused on the DMQ-R-SF (short version) questionnaires results. As the scales of the DMQ-R-SF can be derived from the DMQ-R, we had the possibility to compare results.

4.1.2 Key results and discussion

Results in all samples confirmed the four-dimensional structure of drinking motives. While the model fit of the multigroup analysis of the DMQ-R was not adequate, the indices of the analysis of the DMQ-R-SF proved to be good. ($\chi^2_{HS}=468$; $\chi^2_{CS}=465$; $\chi^2_{AS}=276$; $\chi^2_{CLIN}=231$; $df=240$; $CFI=0.939$; $TLI=0.933$; $RMSEA=0.058$ [0.055 – 0.061]; $SRMR=0.048$). All factor loadings across samples were over 0.5, except one loading on the scale of enhancement.

As the next step, factor structure was tested for controlled effects of gender and age. Differences of χ^2 in the constrained and freely estimated model were measured by the Satorra-Bentler test. Results reveal a significantly less adequate fit, but still acceptable results. This shows us, that there is significant difference in terms of gender and age, but the factor structure is valid across groups, in conclusion the measurement properties of the DMQ-R-SF are very good.

Internal consistency was measured by Cronbach's α . Results show that apart from two scales, all the samples scales had excellent consistency. Although the two lower results are only lagging behind by a bit, it seems that in both cases the enhancement motives are involved in the college sample ($\alpha_{enhancement}=0.687$) and in the clinical sample ($\alpha_{enhancement}=0.636$). Consistent with our previous studies on university students (Németh et al., 2012) the deterioration of the internal consistency in those two samples is due to one item's poor factor loading, mentioned already above ("... drinking, because it's fun"). The results lead to the conclusion, that with age this particular item becomes more difficult to interpret, and could result in misleading effects.



1. Figure: Mean levels of drinking motives in four samples

Examining the mean levels of motives in the four different samples (Figure 1.), we conclude, that the means are the highest in the clinical sample, and the lowest in the sample of adults. According to ANOVA and Games-Howell's post hoc test, the clinical sample differs significantly from all the other groups. Mean levels of drinking motives was in line with previous, international studies (Kuntsche et al., 2009), as the rank of order was the same in the three age groups: social → enhancement → coping → conformity. The clinical sample differs from the others, as it resulted coping on the first place.

All three age groups differ significantly in gender effects, as men showed higher levels on motives subscales than women. These effects can result from the fact, that alcohol use and problems prevalence in men are generally higher (Anderson et al, 2006). Consistent with our own results, and findings of a Swiss (Kuntsche et al, 2009) and an Italian (Mazzardis et al, 2010) study, the measurement properties of the DMQ-R-SF were good. Besides the reliability and validity of the measure, it is an additional advantage, that is easier to use and takes less time to complete, which considering manly impulsive clinical populations might be an important issue.

4.2 MOTIVES PREDICTIVE EFFECTS ON PROBLEMATIC ALCOHOL USE

4.2.1 Aims

To integrate and also logically complete the previous study, in our second study we assessed predictive effects of drinking motives on the indicators of alcohol use. Our primary aim was to compare different effects in the four samples introduced earlier, so besides younger and older populations, we also can differentiate and analyze variant levels and forms of problems.

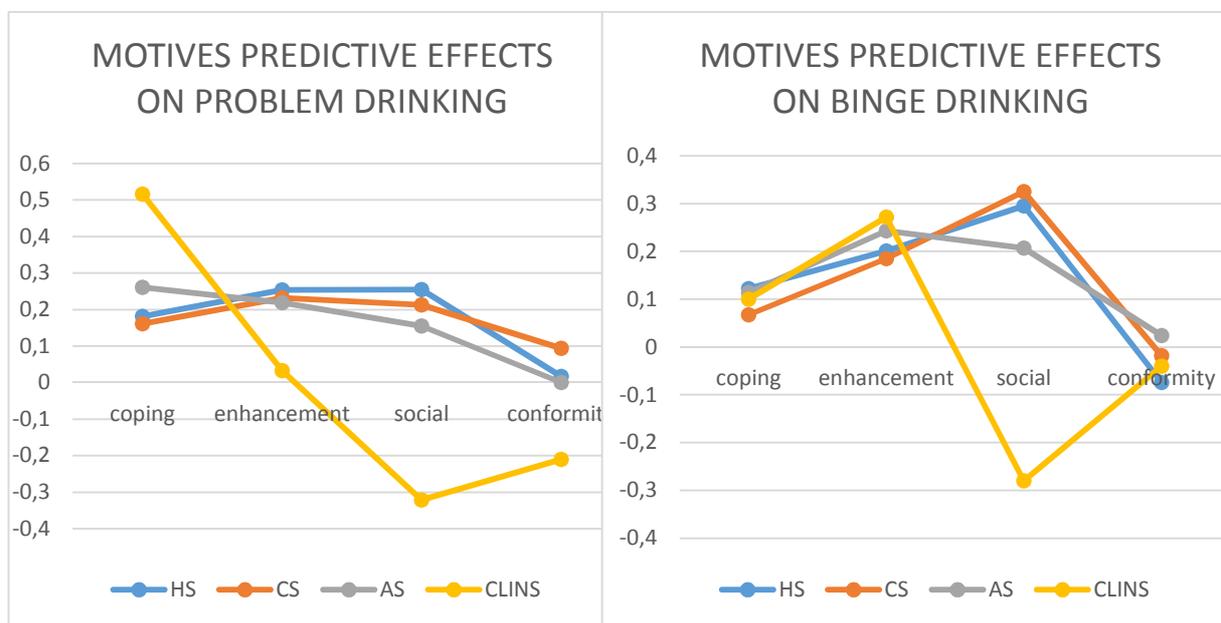
4.2.2 Key results and discussion

To test the predictive effects of motives, structural equations modeling was used. The results showed good model fit ($\chi^2_{HS}=294$; $\chi^2_{CS}=263$; $\chi^2_{AS}=123$; $\chi^2_{CLIN}=47$; $df=247$; $CFI=0.887$; $TLI=0.875$; $RMSEA=0.089$ [0.085 – 0.092]; $SRMR=0.063$).

According to the findings of the study, problematic alcohol in younger participants were predicted similar through enhancement ($\beta_{HS}=0.254$; $\beta_{CS}=0.255$; $p<0.001$) and social motives

($\beta_{HS}=0.255$; $\beta_{CS}=0.213$; $p<0.001$), and with ongoing age difference the coping motives become more dominant ($\beta_{AS}=0.261$; $p<0.001$). In the clinical population, where the extent of problem use is higher, coping motives were the most dominant predictive motive through the entire sample ($\beta_{CLIN}=0.516$; $p<0.001$).

Examining the development of problematic alcohol use, we can conclude that at the beginning both internal and external motives are relevant, but with developing problems and ongoing age, the motives become more specific, more internal, and at last it is only the coping motives, which predict problems in alcohol use. Similar process of differentiation of motives were found in early studies (Cooper, 1995). Results suggest, that in younger populations more impulsive and episodic drinking is considered to be a problem, and in older adults it is more likely that drinking becomes a source of pain-relief, which causes the problems later on.



2. Figure: Motives predictive effect on problem drinking (AUDIT)

3. Figure: Motives predictive effect on binge drinking

The results discussed above are summarized in figure 2 and 3., which leads to the conclusion, that the three age groups predictive effects are almost at the same level, on the other hand in the clinical population two types can be separated: (1) the most likely depressive and/ or anxious dependent participants, where the coping motives are dominant, and drinking alone is preferred, as they drink to ease problems, and (2) the binge drinking participants, where enhancement motives are dominant, and drinking in social context is preferred. These results are similar to the early typology (Jellinek, 1960) of problem drinkers, where people are distinguished between those who are not able to abstain, and are showing constant heavy drinking behavior (delta) and episodic drinker, with impaired control mechanisms (gamma and epsilon).

4.3 MOTIVATIONAL PROFILES IN FOUR SAMPLES

4.3.1 Aims

From the results above we can conclude, that there are main differences in the four samples regarding motives, in age, gender and alcohol use. It is questioned if motives do overlap, or if there are any combinations of motives, which could result in a more adequate fit of alcohol related problems, then considering just separate effect of motives.

4.3.2 Key results and discussion

A systematic and stepwise latent class analysis was conducted, where first the number of profiles was analyzed. According to the Lo-Mendell-Rubin test the fit indices at 5 profiles were not adequate anymore (Lo-Mendell-Rubin test: 1410.13; $p=0.054$), so as a result, we identified 4 latent profiles (Lo-Mendell-Rubin test: 1550.26; $p<0.001$).

According to the findings, the profiles ranked by means of motives. To identify the profiles even better, examination on the covariates age, gender, problematic alcohol use and binge drinking was conducted. To compare alcohol use, problems and binge drinking ANOVA was calculated.

	Σ sample	men	women
1. profile	60.9% (3657)	45.4% (1661)	54.6% (1996)
2. profile	27.7% (1665)	64.1% (1067)	35.9% (589)
3. profile	8.1% (491)	57.4% (282)	42.6% (209)
4. profile	3.11% (187)	89.8% (168)	10.2% (19)

1. táblázat: Motivational profiles gender distribution

The profiles (figure 4.) can be distinguished between two groups, underlying two dimensions: (1) across age: participants in profile 1 and profile 2 are younger (average age 20.3 and 20.6), while participants in profile 3 and profile 4 are older (average age 47.07 and 43.09), and (2) across alcohol problems: participants in profile 1. and 3. are considered non problematic (AUDIT points < 8), while participants in profile 2. and 4. are considered problematic (Audit points >8).

		PROBLEMATIC ALCOHOL USE	
		NON-PROBLEMATIC	PROBLEMATIC
AGE	YOUNG	Profile 1: coping: ↓↓ enhancement: ↓↓ social: ↓ conformity: ↓↓	Profile 2: coping: ↓ enhancement: ↓ social: ↑ conformity: ↓↓
	OLD	Profile 3: coping: ↑ enhancement: ↑↑ social: ↑↑ conformity: ↓↓	Profile 4: coping: ↑↑ enhancement: ↑ social: ↑ conformity: ↑↑

4. Figure: Characteristics of motivational profiles

While the profile summing up general problem use is related to negative reinforcement motives, on the other hand, the profiles summing up binge drinking are related to positive reinforcement motives. Previous social studies underline, that younger people are consuming less alcohol overall, with less frequency, but the prevalence of consuming big quantities occasionally, can result in same problems (Pikó, 2010b). It is an important result, that there are equal gender effects in three out of four profiles, which indicates, that there is convergence between genders over time (Stewart et al., 1996). Examining the two profiles considered problematic in alcohol use, we conclude that in profile 2 the level of genders are equal, which leads to the future consideration of young binge drinking women.

The resulting profiles are in line with previous studies considering alcohol use types. Differences in gender and age are also reflected through the profiles. Advantages can be discussed, how profiles might be useful in praxis when planning prevention or interventional programs.

5 LONGITUDINAL STUDIES

5.1 DMQ-R FACTORS STABILITY ACROSS TIME

5.1.1 Aims

The following study is needed to assess the questionnaires factors stability across time, to conclude if it measures motives similar in one year perspective. Also we can measure if the motives show any development or change in the two age groups of high school and college students discussed above. The study is unique in a sense, that it is examining two populations in transition from high school to college, and from college to adulthood.

5.1.2 Key results and discussion

The questionnaires stability of internal consistency was measured with Cronbach's α . The results show, that all scales approve good internal consistency. Exception is only one scale, where the measured index is above 0.7. Consistent with previous result in the first study, it is again the scale of enhancement motives in case of the college students, which results at both measuring points in low consistency between 0.7 and 0.6. Interestingly, by the time of the second survey also high school students' enhancement motives scale got low internal consistency.

The questionnaires factors stability through time, was analyzed with Pearson correlations. Comparing the two motives show the range of order as follows: (1) high school students: social ($r=0.552$; $p<0.001$); enhancement ($r=0.551$; $p<0.001$); coping ($r=0.476$; $p<0.001$), and conformity ($r=0.379$; $p<0.001$), also (2) college students: social ($r=0.671$; $p<0.001$); conformity ($r=0.599$; $p<0.001$); enhancement ($r=0.595$; $p<0.001$); and coping ($r=0.55$; $p<0.001$). According to findings, all four motives scales showed higher correlation to the later administered same scale than all the other scales, which proves stability over time.

As second step structural equation modeling was conducted between the motives measured at two different times. Multiple linear regression was measured to examine stability of predictive effects over time. Model fit indices showed a good fit ($\chi^2_{HS}=15.460$; $\chi^2_{CS}=8.334$; $df=15$; $CFI=0.996$; $TLI=0.982$; $RMSEA=0.033$ [0.000 – 0.056]; $SRMR=0.014$). As a result we can conclude, that motives measured at the first survey (COP- t_1 , ENH- t_1 , SOC- t_1 , CON- t_1) predictive probability focuses mostly on the same motive measured at the second survey

(COP-t₂, ENH-t₂, SOC-t₂, CON-t₂). In case of college students the variance explained was much higher, than in case of the high school students, also regressions results scored higher in the college students' sample.

2. Table: Predictive effects of motives over time

		COP-t ₂	ENH-t ₂	SOC-t ₂	CON-t ₂
COP-t ₁	HS	0.442***			
	CS	0.489***			
ENH-t ₁	HS		0.423***	0.163**	
	CS	0.098*	0.512***	0.091**	
SOC-t ₁	HS			0.420***	
	CS			0.642***	
CON-t ₁	HS				0.395***
	CS				0.591***
R ²	HS	23.2%	27.7%	32.2%	14.7%
	CS	31.4%	36.1%	45.3%	35.9%

It seems that the most instable motive over time is enhancement, because, as table 2. shows, ENH-t₁ is the only motive which predicts other motives beside ENH-t₂ over time. It seems, that in this particular age, the enhancement motive goes through a major change, a sin only one year there is transformation observable in both groups.

Enhancement, as the best predictor of binge drinking (Kuntsche et al., 2006) might go through transformation in this particular population, because binge drinking doesn't serve its previous purpose of enjoying night life anymore and roles of peer pressure are also reduced (Péley, 2002). If the previous college student finds work, or starts a family, the social roles are transforming (Gotham, 1997, Labouvie, 1996). On the other hand results suggest, that drinking motives in younger people are more formable, than later in time, because according to the findings in case of high school student, less variance is explained through motives. These findings point to the importance of early presentational work, especially in high school students.

To conclude, DMQ-R-SF questionnaires stability has been proved, also according to our findings in the first study, enhancement motives scale showed low internal consistency, also its predictive effect has decreased. These results suggest similar findings to the first study, i.e. that enhancement motives interpretation should be considered with ongoing age.

5.2 MOTIVES CHANGE AND LONG-TERM PREDICTIVE EFFECT ON ALCOHOL PROBLEMS

5.2.1 Aims

The research partly relies on the results of the previous study, where the motives measured at two different times had predicting effects on each other. In this study our aim was, to expand the previous results, and similar to the second study measure the predicting effects of motives on alcohol use across time.

5.2.2 Key results and discussion

As a first step, to screen the significant results a paired samples t-test was conducted, to monitor the changes in motives and alcohol use. Results showed similar tendencies in

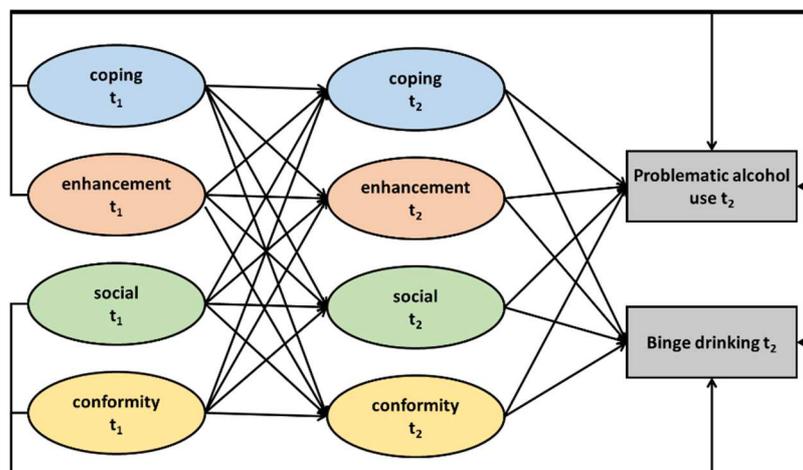
motives, but different in alcohol use. When examining motives, with the exception of coping motives, all other motives showed an increase in means over one years' time. Motives means increased in both samples, but major change only happened regarding social motives in both samples ($\Delta t_{HS}=-1.21$; $t=-6.17$; $df=270$; $p<0.001$; and $\Delta t_{CS}=-0.97$; $t=-10.62$; $df=823$; $p<0.001$).

At the same time, examining problem drinking and binge drinking, there was an opposite tendency in samples. High school students showed an increase in both measured indicators of alcohol use, (binge drinking: ($\Delta t_{HS}=-0.11$; $t=-2.95$; $df=270$; $p<0.001$; and problem drinking: $\Delta t_{HS}=-0.30$; $t=-1.36$; $df=270$; n.s.) while college students showed significant decrease (binge drinking: $\Delta t_{CS}=0.13$; $t=-5.46$; $df=823$; $p<0.001$; and problem drinking: $\Delta t_{CS}=0.86$; $t=7.89$; $df=823$; $p<0.001$)

3. Table: Change of motives and indicators of alcohol use in two samples

		t ₁ (SD)	t ₂ (SD)	t ₁ -t ₂	t	df	p
HS	AUDIT	4,73 (4,12)	5,03 (3,86)	-0,30	-1,36	270	0,174
	binge drinking	0,32 (0,52)	0,43 (0,63)	-0,11	-2,95	270	<0,001
	coping	4,58 (2,24)	4,74 (2,33)	-0,16	-1,11	270	0,267
	enhancement	5,35 (2,58)	5,70 (2,42)	-0,35	-2,33	270	0,020
	social	7,65 (3,43)	8,86 (3,38)	-1,21	-6,17	270	<0,001
	conformity	3,77 (1,43)	4,08 (1,76)	-0,31	-2,86	270	0,005
CS	AUDIT	6,38 (4,88)	5,52 (4,06)	0,86	7,89	822	<0,001
	binge drinking	0,57 (0,75)	0,44 (0,61)	0,13	5,46	823	<0,001
	coping	4,59 (2,11)	4,65 (2,23)	-0,06	-0,84	823	0,400
	enhancement	5,49 (2,44)	5,94 (2,49)	-0,45	-5,78	823	<0,001
	social	7,97 (3,2)	8,94 (3,3)	-0,97	-10,62	823	<0,001
	conformity	3,88 (1,46)	4,18 (1,83)	-0,30	-5,59	823	<0,001

As a next step SEM model was conducted, with multiple regressions path analysis, to measure motives predictive effect on problem drinking and binge drinking, analyzing all possible paths and indirect paths, which are shown in figure 5.



5. Figure: Predictive effects of motives over time – hypothetical model

The model showed medium fit ($\chi^2_{HS}=39.485$; $\chi^2_{CS}=100.699$; $df=25$; $CFI=0.960$; $TLI=0.836$; $RMSEA=0.092$ [0.077 – 0.107]; $SRMR=0.038$). The measured effects explained variance was similar for high school and college students binge drinking ($R^2_{HS}=19.7\%$; $R^2_{CS}=16.7\%$) and problem drinking ($R^2_{HS}=28.2\%$; $R^2_{CS}=26.1\%$).

4. Table: Direct and indirect effects of drinking motives predicting alcohol use over time

	HS		CS	
	AUDIT t ₂	binge drinking t ₂	AUDIT t ₂	binge drinking t ₂
enhancement t ₁		0,191*		
social t ₁	0,125*		0,110**	0,100*
coping t ₁ → coping t ₂			0,145***	0,017*
enhancement t ₁ → enhancement t ₂	0,166**	0,024***	0,152***	0,022***
social t ₁ → social t ₂			0,140***	0,020***
coping t ₂			0,139***	0,110**
enhancement t ₂	0,208***	0,224***	0,149***	0,149**
social t ₂	0,118*		0,154***	0,165***
R²	28,2%	19,7	26,1%	16,7%

Major conclusion of the study is, that the transition in roles of the two samples are mirrored differently in their drinking habits. While high school students are elevated in both indicators of drinking, college students show a decrease of risky alcohol use and attached problems. These results are in line with our hypotheses, that high school students on the countryside, who are moving to the capital, and starting college life, also leaving their homes and families behind show aggravation of problems, Former college students on the other hand, experiencing other social roles and growing responsibility, will moderate their drinking (see: Kandel, 1980: „role compatibility theory” or „maturing out”)

Results also suggest, that coping motives are the most stable predictors of problems over time, which lends us to the conclusion, that if no changes in problematic behavior is induced when drinking for coping reasons in young people, motives later on will have a more distinct effect. In other words, if students are drinking to forget about problems or elevate mood, then with growing negative emotional states, the problematic alcohol use will also exacerbate.

To sum up, motives in younger people are more formable, than later in time, so prevention program building on motives should achieve better results in case of high schools students. Additionally, planning preventions for high school students is more important in cases of transition to university, especially when moving to dormitories, and leaving the family, and increased effect of peer are involved (Odo, McQuiller & Stretsky, 1999, Clapp & Shillington, 2001).

5.3 PSYCHOPATHOLOGICAL SYMPTOMS LONG-TERM EFFECT ON PROBLEM DRINKING AND THE MEDIATING ROLE OF DRINKING MOTIVES

5.3.1 Aims

In the last study's path model psychopathological symptoms long-term effect, and motives as mediators on problem drinking are questioned. Previous studies prove the role of motives as mediators, in case of alcohol use frequency (Kuntsche, 2005), personality factors (Stewart & Devine, 2000), or alcohol related expectancies (Urbán, Kökönyei & Demetrovics, 2008). Results reveal also that drinking motives explain up to 50% of the variance on adolescent alcohol use (Kuntsche, 2007) and are consequently very strong predictors of alcohol related problems and binge drinking (Kuntsche et al., 2006)

5.3.2 Key results and discussion

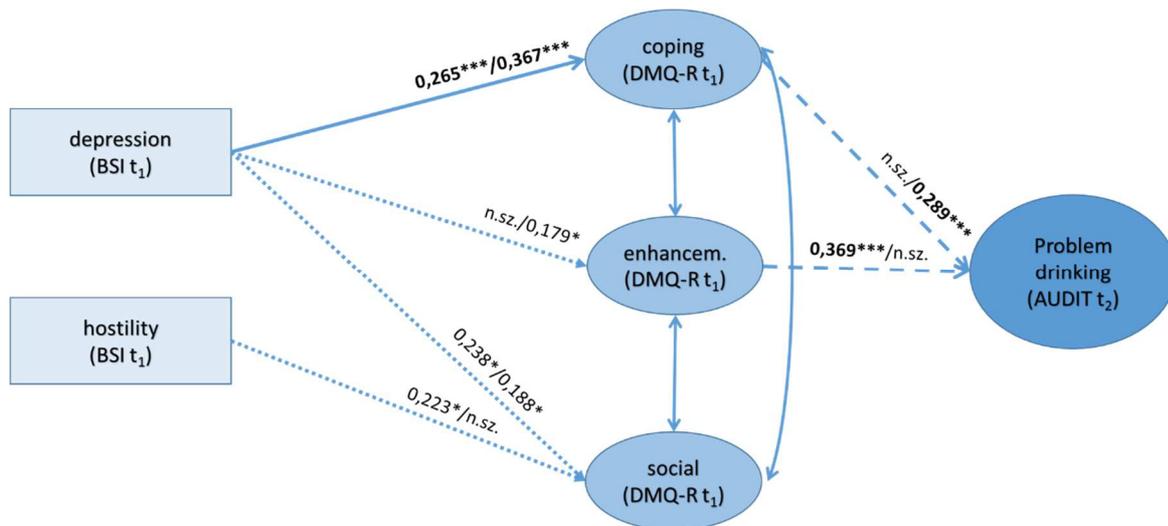
Previous correlation and linear regression analysis was conducted, in order to decide which psychopathological symptoms to include into the model.

Correlations results proved, that symptoms are mainly associated with coping motives, because here the highest correlations were measured, i.e. depression ($r=0.402$; $p<0.001$). Second to line up is conformity, which is also a motive underlying negative reinforcement. Linear regression showed different results, and not all correlates proved also to be good predictors of motives, i.e. conformity was involved in very weak effects, also contrary to previous finding anxiety had no effect either. On the other hand depression/coping revealed great effect ($\beta=0,275$; $p<0,001$), as well as hostility/enhancement ($\beta=0,211$; $p<0,001$). This relationship also proved to be strong on the opposite motive as well. There was one more significant effect in case of hostility/social motive ($\beta=0,103$; $p<0,001$), which relationship shows us, that enhancement and social motives have same underlying functioning in this age groups. The rest of the psychopathological symptoms had no significant effect.

Included to the path model where only those symptoms, which had high correlation or significant linear regression values. This way, the conducted model showed good model fit indices ($\chi^2_{HS}=1.886$; $\chi^2_{CS}=0.319$; $df=4$; $CFI=1.000$; $TLI=1.014$; $RMSEA=0.000$ [0.000 – 0.049]; $SRMR=0.005$). However, this model showed no significant path in case of the conformity motive, therefore it was not included in further analysis.

Significant pathways are shown by figures 6 and 7¹. The indirect standardized effects (SE) in case of college students where as followed. Girls: depression₁→coping₁→AUDIT₂ ($SE_{CS}=0.080$; $p<0.001$), and boys: hostility₁→enhancement₁→AUDIT₂ ($SE_{CS}=0.094$; $p<0.001$). In case of the high school students only girls showed significant indirect standardized effects (SE), which show similar but stronger effects as in the sample of college students: depression₁→coping₁→AUDIT₂ ($SE_{HS}=0.120$; $p<0.001$).

¹ Dotted line represents no significant results in either sample, $p>0,001$, so only tendencies effects can be revealed. The dashed line represents significant findings in one of the groups. Full line represents significant effects in both groups, or samples. Arrows both ways represent covariance between motives.

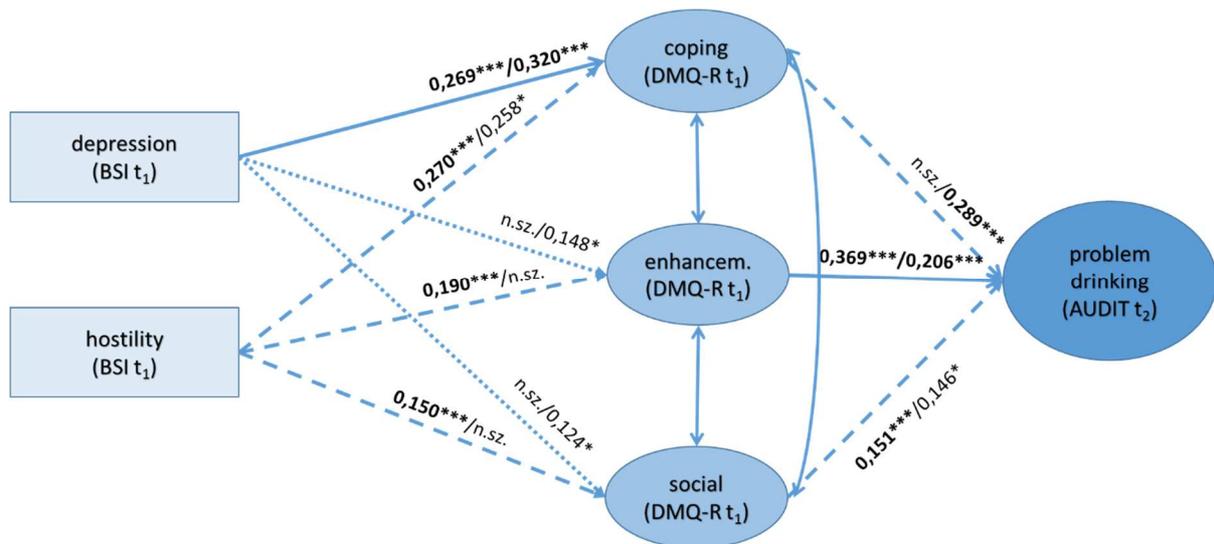


6. Figure: Mediating effects of motives between psychopathological symptoms and problem drinking over time in high school students (first value is representing boys, second is representing girls)

According to findings two internal motives (coping and enhancement) are differentiated by gender already in high school, and also difference in predicting problem drinking was found. While girls are characterized by negative reinforcement, in case of boys positive reinforcement motives tend to predict problem drinking across time.

The most alarming, earliest phenomenon is the long-term effect of depression in high school girls, which calls for attention. The characteristics of this age, where the psychological balance of girls is set to challenge indicates the exacerbation of depression and related symptoms (Pikó & Fitzpatrick, 2003). During this period growing needs of autonomy, the urge of separation from the family, parallel to the growing role of peers (Pikó, 2010), also the alcohol present and its symbolical relation to freedom and adulthood (Pikó, 2007), could be elevated in the studied population, since most of the participants are leaving home and moving to the capital, which feeds the needs of autonomy and at the same time can cause the feeling of loneliness.

According to results, it seems, that high school students' motives are mainly explained through depression, and in case of college students hostility is more dominant. The role of hostility/aggression appears already in the earliest theories of young people's drug use. Jessor (1977) in explanation of problem behavior, sees the central element in aggressive, antisocial personality, which can cause decrease in academic performance as well as elevating conformity issues.



7. Figure: Mediating effects of motives between psychopathological symptoms and problem drinking over time in college students (first value is representing boys, second is representing girls)

Wurmser (1974) and Khantzian (1975) sees aggression also in an emotional deficit resulting from drug- or alcohol use. In their theory they explain, that people addicted to alcohol or drugs are likely to handle their emotions (i.e. aggression, frustration) through drug use, if their avoidance mechanisms are failing.

Later Khantzian (1985) focuses on drug use as a secondary reinforcement, which has the aim to reduce pain caused by psychopathology. This shed s a light on our findings as the model might explain the mechanism of psychopathology with depressive and hostile symptoms and the pathways of self-medication with alcohol in these cases.

In conclusion, we can retrieve that in this sample, which is currently imbalanced and in transition of social roles and upcoming challenges two symptoms: depression and hostility are the once which had a long term effect on alcohol use. Kuntsche and Gmel (2004) differentiate between two groups of binge drinkers, then later also reveal underlying motives (Kuntsche, 2010a). First (1) the socially developed, sometimes aggressive binge drinkers, who manly drink in social situations, and secondly (2) the socially impaired, characterized by anxiety and depression, who are manly the victims of the previous group, and therefore mostly are drinking alone.

6 SUMMARY

6.1 CROSS-SECTIONAL FINDINGS

1. The motivational models four-factor structure showed stability in three age groups and a clinical sample, although the findings reveal weakness of DMQ-R, on the other hand DMQ-R-SF shows good psychometric properties and excellent model fit, which indicates quick assessment and stability also in special, i.e. clinical populations.
2. Cross-sectional studies revealed the impaired internal consistency of enhancement scale in college students' and clinical sample, which effect is due to the low factor loadings of one item („drinking because it's fun"). Results suggest that enhancement motives in older populations are more difficult to interpret, or can be misleading.
3. Results of studies on predicting effects of motives on alcohol use suggest, that in younger populations more impulsive and episodic drinking is considered to be a problem, and in older adults it is more likely that drinking becomes a source of pain-relief, which causes the problems later on.
4. Examining the development of problematic alcohol use, we can conclude that at the beginning both internal and external motives are relevant, but with developing problems and ongoing age, the motives become more specific, more internal, and at last it is only the coping motives, which predict problems in alcohol use.
5. Novelty of our findings is the examination of clinical population, where two types can be separated: (1) the most likely depressive and/ or anxious dependent participants, where the coping motives are dominant, and drinking alone is preferred, as they drink to ease problems, and (2) the binge drinking participants, where enhancement motives are dominant, and drinking in social context is preferred.
6. Analyzed four motivational profiles can be distinguished between two groups, underlying two dimensions (age, and problem drinking) as followed: 1: young/non problematic; 2: young/problematic; 3: older/non problematic; 4: older/problematic

6.2 LONGITUDINAL FINDINGS

1. Enhancement, as the best predictor of binge drinking (Kuntsche et al., 2006) might go through transformation in this particular population, because binge drinking doesn't serve its previous purpose of enjoying night life anymore and roles of peer pressure are also reduced
2. To conclude, DMQ-R-SF questionnaires stability has been proved, also according to our findings in the first study, enhancement motives scale showed low internal consistency, also its predictive effect has decreased. These results suggest similar findings to the first study, i.e. that enhancement motives interpretation should be considered with ongoing age.
3. Results also suggest, that coping motives are the most stable predictors of problems over time, but also motives in younger people are more formable, than later in time

4. Conclusion of the study is, that the transition in roles of the two samples are mirrored differently in their drinking habits. While high school students are elevated in both indicators of drinking, college students show a decrease of risky alcohol use and attached problems.

5. In this sample, which is currently imbalanced and in transition of social roles and upcoming challenges two symptoms: depression and hostility are the once which had a long term effect on alcohol use. Kuntsche and Gmel (2004) differentiate between two groups of binge drinkers, then later also reveal underlying motives (Kuntsche, 2010a). First (1) the socially developed, sometimes aggressive binge drinkers, who manly drink in social situations, and secondly (2) the socially impaired, characterized by anxiety and depression, who are manly the victims of the previous group, and therefore mostly are drinking alone.

6. According to results, it seems, that high school students' motives are manly explained through depression, and in case of college students hostility is more dominant. The most alarming, earliest phenomenon is the long-term effect of depression in high school girls, which calls for attention

7 IMPLICATIONS

Binge drinking is, according to epidemiological data, mostly common in adolescents and young adults, a very difficult to define, complex phenomenon, which also depends on gender and cultural effects. Biological, genetically background is jet to describe, and related psychological studies are just in uprising for the past decade. Nevertheless the need of preventions and interventions is needed, due to the long- and short-term effects of binge drinking.

The research of alcohol use motives and expectances have been a found promising cognitive field, which could lead to answers regarding variability of development in drinking patterns, and to the fact, that in some cases binge drinking in adolescence decreases in adulthood and in others it exacerbates to alcoholism.

Clinical studies suggest, that in the development of a multifactorial alcohol dependence various factors can have different roles. Genetical, neurobiological, psychological, environmental effects are discussed in the etiology of alcohol problems (Környei & Kassai-Farkas, 2009). It is a known fact, that mapping motives in patients with additive disorders is essential, which states not only for the motives to quit drinking, but also the motives for use, since the most sensitive issue in addition treatment is addressing relapse prevention.

Treatment of alcohol dependent patients is a complex process, on more than one level, involving more than one technique. Additionally every single patient's treatment has its own unique properties, characteristics. Therapy should always address the patients' needs and adapt to the patients' motivation.

Findings of the studies could be used for prevention and interventions purposes. Intervention based on the motivational profiles can be focused on the unique aspects of the given motivational structure. Longitudinal findings suggest the stability of coping motives over time, and its relationship with problem drinking. We concluded that, if the young people are drinking to regulate negative emotions, and the negative emotional states persists, it could lead to much more severe alcohol use problems. These results suggest that future preventions and interventions should focus on coping motives in young adults.

On the contrary transformable, modifiable enhancement motives were found in cross-sectional and longitudinal findings. Results suggest, that in older populations, the enhancement motives

are more difficult to interpret. Future research addresses the development of a questionnaire, which can be used across all age groups, regardless on alcohol use or motivational background.

Examining the transition of social roles in two age groups, we found that the development of patterns of alcohol use vary in the two samples. While in case of high school students we found an increase, in case of college students we found a decrease in alcohol use and binge drinking. These results underline the previously discussed socialization and role transition models. The high school students, living on the countryside in Hungary are at risk of developing problematic alcohol use, when moving to the dormitories where the role of peers is elevated. On the other hand college students were presented with greater responsibility and the change of social role, which lead to maturing out. In practical terms, this should mean that prevention should address the personal goals of young adults and motivate them to take action in their lives.

According to results, the motives in younger people are more flexible and changeable, which calls to attention the importance of early prevention that could lead to more success in case of high school students.

Further, praxis oriented conclusion of findings is that we could differentiate between two types of binge drinkers: First (1) the socially developed, sometimes aggressive binge drinkers, who manly drink in social situations, and secondly (2) the socially impaired, characterized by anxiety and depression, who are manly the victims of the previous group, and therefore mostly are drinking alone. Results suggest that these two groups should attend different prevention programs that take into account their specific needs and problems. It is assumes, that coping drinkers need interventions aimed at reducing the stress level, developing their coping strategies, increasing the self-esteem and enhancing multiple competences through life skill trainings. Contrarily, enhancement drinkers need interventions based on social effects, or alternative sources of stimulation, cognitive restructuring and assertive resistance skills to offers of alcohol.

To conclude, drinking motives in praxis could be used as an early screening instrument, to identify maladaptive motives and young people at risk. This could happen providing feedback, during which we reflect to the long and short-term risk effects. Last motives could be used in interventions to create personalized, problem-focused therapy, to predict treatment outcome, or when planning groups of interventions.

8 REFERENCES

- Anderson, P., Baumberg, B. (2006). *Alcohol in Europe. A public health perspective*. London: Institute of Alcohol Studies.
- Blumenthal, H., Leen-Feldner, E. W., Frala, J. L., Badour, C. L., Ham, L. S. (2010). Social anxiety and motives for alcohol use among adolescents. *Psychology of Addictive Behaviors*, 24(3), 529–34.
- Bradizza, C. M., Reifman, A., Barnes, G. M. (1999). Social and coping reasons for drinking: Predicting alcohol misuse in adolescents. *Journal of Studies on Alcohol*, 60, 491–9.
- Clapp, J. D., Shillington, A. M. (2001). Environmental predictors of heavy episodic drinking. *American Journal of Drug and Alcohol Abuse*, 27(2), 301–13.
- Cooper, M. L., Russell, M., Skinner, J. B., Frone, M. R., Mudar, P. (1992a). Stress and alcohol use: Moderating effects of gender, coping and alcohol expectancies. *Journal of Abnormal Psychology*, 101(1), 139–52.
- Cooper, M. L. (1994). Motivations for alcohol use among adolescents: development and validation of a four-factor model. *Psychological Assessment*, 6(2), 117–128.
- Cooper, M. L., Frone, M. R., Russell, M., Mudar, P. (1995). Drinking to regulate positive and negative emotions: A motivational model of alcohol use. *Journal of Personality and Social Psychology*, 69(5), 990–1005.
- Cox, W. M., Klinger, E. (1988). A motivational model of alcohol use. *Journal of Abnormal Psychology*, 97(2), 168–80.
- Cox, W. M., Klinger, E. (1990). Incentive motivation, affective change and alcohol use: A model. In Cox, W. M. (szerk.) *Why people drink? Parameters of alcohol as a reinforcer*. New York/Oxford: Gardner Press. 291–314.
- Demetrovics Zs. (2007). *A droghasználat funkciói*. Budapest: Akadémiai Kiadó.
- Dixon, L. J., Leen-Feldner, E. W., Ham, L. S., Feldner, M. T., Lewis, S. F. (2009). Alcohol use motives among traumatic event-exposed, treatment-seeking adolescents: Associations with posttraumatic stress. *Addictive Behaviors*, 34(12), 1065–8.
- Elekes Zs. (2009). *Egy változó kor változó ifjúsága. Fiatalok alkohol- és egyéb drogfogyasztása Magyarországon – ESPAD 2007*. Budapest: L'Harmattan.
- Farkas, J., Rózsa, S., Németh, Z., Demetrovics, Z. (2008) A nagyivás motivációs hátterének vizsgálata. *Psychiatria Hungarica*, 23 (Supp) 41-42.
- Farkas, J., Futaki, L. Kun, B. Urbán, R., Demetrovics, Z. (2009) Fiatalok alkohol- és marihuana fogyasztási motivációinak vizsgálata magyar és spanyol egyetemi hallgatók mintáján. *Addiktológia- Addictologia Hungarica*, 8 (Supp) 23-24.
- Farkas, J., Németh, Z., Urbán, R., Paksi, B., Demetrovics, Z.,(2011) Drinking motives among two different age groups in Hungary. In: *14th Conference of the European Association of Substance Abuse Research*, Niederpöcking, Germany, 2011.04.18-2011.05.01.

- Gonzalez, V. M., Collins, R. L., Bradizza, C. M. (2009). Solitary and social heavy drinking, suicidal ideation, and drinking motives in underage college drinkers. *Addictive Behaviors*, 34(12), 993–9.
- Gotham, H. J., Sher, K. J., Wood, P. K. (1997). Predicting stability and change in frequency of intoxication from the college years to beyond: Individual-difference and role transition variables. *Journal of Abnormal Psychology*, 106(4), 619–29.
- Jellinek, E. M. (1960). *The Disease Concept of Alcoholism*. New Haven: Hillhouse.
- Jessor, R., Jessor, S. L. (1977). Problem behavior and psychosocial development. A longitudinal study of youth. New York, NY: Academic Press, Inc.
- Kandel, D. B. (1980). Drug and drinking behavior among youth. *Annual Review of Sociology*, 6, 235–85.
- Kaysen, D., Dillworth, T. M., Simpson, T., Waldrop, A., Larimer, M. E., Resick, P. A. (2007). Domestic violence and alcohol use: Trauma-related symptoms and motives for drinking. *Addictive Behaviors*, 32(6), 1272–83.
- Khantzian, E. J. (1975). Self selection and progression in drug dependence. *Psychiatry Digest*, 36, 19–22.
- Khantzian, E. J., (1997). The self-medication hypothesis of substance use disorders: A reconsideration and recent applications. *Harvard Review of Psychiatry*, 4, 231–44.
- Környei E., Kassai-Farkas Á. (2009). Alkoholfogyasztás és következményes egészségkárosodások. In Demetrovics Zs. (szerk.) *Az addiktológia alapjai II*. Budapest: ELTE Eötvös Kiadó, 63–88.
- Kuntsche, E., Rehm, J., Gmel, G. (2004). Characteristics of binge drinkers in Europe. *Social Science & Medicine*, 59, 113–27.
- Kuntsche, E., Knibbe, R., Gmel, G., Engels, R. (2005). Why do young people drink? A review of drinking motives. *Clinical Psychology Review*, 25, 841–61.
- Kuntsche, E., Knibbe, R., Gmel, G., Engels, R. (2006). Who drinks and why? A review of socio-demographic, personality, and contextual issues behind the drinking motives in young people. *Addictive Behaviors*, 31, 1844–57.
- Kuntsche, E., Knibbe, R., Engels, R., Gmel, G. (2007a). Drinking motives as mediators of the link between alcohol expectancies and alcohol use among adolescents. *Journal of Studies on Alcohol and Drugs*, 68, 76–85.
- Kuntsche, E., Kuntsche, S. (2009). Development and validation of the Drinking Motive Questionnaire Revised Short Form (DMQ-R-SF). *Journal of Clinical Child & Adolescent Psychology*, 38, 899–908.
- Kuntsche, E., Gabbanin, S. N., Roberts, C., Windlin, B., Vinco, A., Bendsten, P., Hublet, A., Tynjälä, J., Välimäa, R., Dankulincová, Z., Aasvee, K., Demetrovics, Z., Farkas, J., van der Sluijs, W., de Matos, M. G., Mazur, J., Wicki, M. (2014) Drinking motives and links to alcohol use in 13 European countries. *Journal of Studies on Alcohol and Drugs*, 75 (3), 428-437.

- Labouvie, E. (1996). Maturing out of substance use: Selection and self-correction. *Journal of Drug Issues*, 26(2), 457–76.
- Loukas, A., Krull, J. L., Chassin, K., Carle, A. C. (2000). The relation of personality to alcohol abuse/dependence in a high-risk sample. *Journal of Personality*, 68(6), 1153–75.
- Meyer, T. D., McDonald, J. L., Douglas, J. L., Scott, J. (2012). Do patients with bipolar disorder drink alcohol for different reasons when depressed, manic or euthymic? *Journal of Affective Disorders*, 136(3), 926–32.
- Mazzardis, S., Vieno, A., Kuntsche, E., Santinello, M. (2010). Italian validation of the Drinking Motives Questionnaire Revised Short Form (DMQ-R-SF). *Addictive Behaviors*, 35(10), 905–8.
- Norberg, M. M., Norton, A. R., Olivier, J., Zvolensky, M. J. (2010). Social anxiety, reasons for drinking, and college students. *Behavior Therapy*, 41(4), 555–66.
- Németh Zs., Urbán R., Farkas J., Kuntsche, E., Demetrovics Zs. (2012). Az Alkoholfogyasztás motivációi módosított kérdőív hosszú és rövid változatának hazai alkalmazása. *Magyar Pszichológiai Szemle*, 67(4), 673–94.
- Nishith, P., Resick, P. A., Mueser, K. T. (2001). Sleep difficulties and alcohol use motives in female rape victims with posttraumatic stress disorder. *Journal of Traumatic Stress*, 14(3), 469–79.
- Odo, J., McQuiller, L., Stretsky, P. (1999). An empirical assessment of the impact of RIT's student alcohol policy on drinking and binge drinking behavior. *Journal of Alcohol and Drug Education*, 44(3), 49–67.
- O'Malley, P. M., Johnston, L. D. (2002). Epidemiology of alcohol and other drug use among American college students. *Journal of Studies on Alcohol*, 14, 23–9.
- Péley B. (2002). *Rítus és történet: Beavatás és kábítószeres létezés módja*. Budapest: Új Mandátum Kiadó.
- Pikó B. (2002). *Egészségtudatosság serdülőkorban. Középkorúak kockázati magatartásának és kockázatészlelésének egészségpszichológiai elemzése*. Budapest: Akadémia Kiadó.
- Pikó B. (2007). A devianciák szociológiai és szociálpszichológiai modelljei. In Demetrovics Zs. (szerk.) *Az addiktológia alapjai I*. Budapest: ELTE Eötvös Kiadó. 357–78.
- Pikó B. (2010). Szegedi ifjúságkutatás 2000–2008: Káros szenvedélyek és a depressziós tünetegyüttes előfordulása serdülők körében. In Pikó B. (szerk.) *Védőfaktorok nyomában. A káros szenvedélyek megelőzése és egészségfejlesztés serdülőkorban*. Budapest: L'Harmattan. 39–54.
- Schulenberg, J. E., O'Malley, P. M., Bachmann, J. G., Wadsworth, K. M., Johnston, L. D. (1996a). Getting drunk and growing up: Trajectories of frequent binge drinking during the transition to young adulthood. *Journal of Studies on Alcohol*, 57, 289–304.
- Sebestyén E., Németh Á. (2007). Alkoholfogyasztási szokások. In Németh Á. (szerk.) *Serdülőkorú fiatalok egészsége és életmódja. Az iskoláskorú gyermekek egészség-magatartása*

elnevezésű, az Egészségügyi Világszervezettel együttműködésben zajló nemzetközi kutatás 2006. évi felmérésének nemzeti jelentése. Budapest: Országos Gyermekegészségügyi Intézet. 81–7.

Stewart, S. H., Zeitlin, S. B., Samoluk, S. B. (1996). Examination of a three-dimensional drinking motives questionnaire in a young adult university student sample. *Behaviour Research and Therapy*, 34(1), 61–71.

Stewart, S. H., Devine, H. (2000). Relations between personality and drinking motives in young adults. *Personality and Individual Differences*, 29, 495–511.

Urbán, R., Kökönyei, G., Demetrovics, Zs. (2008b). Alcohol outcome expectancies and drinking motives mediate the association between sensation seeking and alcohol use among adolescents. *Addictive Behaviors*, 33, 1344–52.

Urbán, R., Kun, B., Farkas, J., Paksi, B., Kökönyei, Gy., Unoka, Zs., Felvinczi, K., Oláh, A., Demetrovics, Zs. (2014). Bifactor structural model of symptom checklists: SCL-90-R and Brief Symptom Inventory (BSI) as a non-clinical community sample. *Psychiatry Research*, 216, 146–54.

Wechsler, H., Kuo, M. (2000). College students define binge drinking and estimate its prevalence: Results of a national survey. *Journal of American College Health*, 49(2), 57–64

Windle, M., Windle, R. C. (2012). Testing the specificity between social anxiety disorder and drinking motives. *Addictive Behaviors*, 37(9), 1003–8.

Wurmser, L. (1974). Psychoanalytic considerations of the etiology of compulsive drug use. *Journal of the American Psychoanalytic Association*, 22(4), 820–43.