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THESES OF THE DOCTORAL DISSERTATION

**BERNADETTE KUN**

**The role of emotional intelligence and social and emotional competencies in psychoactive substance use**

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## 1. Theoretical background<sup>1</sup>

Aim of the present dissertation is to investigate to details what kinds of roles can emotional intelligence and emotional and social competencies play in the background of psychoactive substance use.

Observations and analyses dealing with the phenomenon of psychoactive substance use have concerned the issue of emotions in many ways. Clinical observations were carried out, case studies were presented, various comorbidity studies were published and many personality and health psychology related factors have been examined among substance users and addicted persons, which raise the possible roles of emotional competencies. These experiences and research results are however diverse, and the objective of this dissertation is to summarize and discuss them in a uniform conceptual framework, namely the concept of emotional intelligence. Emotional intelligence is a young concept, which is in many aspects related to the formerly defined and studied psychological constructs, however deals with emotions through a new approach. Although there are commonly more accepted (e.g. Salovey & Mayer, 1990; Mayer & Salovey, 1997) and highly criticized definitions and theories (e.g. Goleman, 1995), there is no satisfactory consensus in the field of emotional intelligence regarding the components of the construct. For the reason in my empirical work I am not excluding any of the models, primarily the *different components, factors of emotional intelligence, specific emotional and social competencies* will be the focus of my research. I find it worth to follow the approach of Cherniss (2010) that differentiates between the concept of emotional intelligence and concepts of emotional and social competencies. According to Cherniss, for the reason that the definition and four-branch model of Mayer and Salovey (1997) is the one that is the most widely accepted, this is regarded as emotional intelligence. However, the other three most popular models – the ones of Bar-On (1997), Boyatzis, Goleman and McKee (2002), and Petrides et al. (2007) – should not be disapproved either; these grab emotional and social competencies. While emotional intelligence contains solely skills, emotional and social competencies are built upon skills lying in emotional intelligence. Emotional and social competencies are defined by Cherniss as such an umbrella concept that includes emotional and social skills, personality traits, attitudes, aims, values and narratives, which contribute to good performance. Cherniss opines these competencies are not equal to the concepts defined as mixed emotional intelligence models, because these are much wider; they include emotional and social competencies explored before the birth of the concept of emotional intelligence.

Only a few studies have targeted the relationship between psychoactive substance use and emotional intelligence or emotional and social competencies (see review of Kun & Demetrovics [2010a, 2010b]). However, there is ample literature dealing with the possible emotional factors in the background of substance use and these observations and empirical results entirely support the hypothesis that emotional intelligence and emotional and social competencies are related to substance use. Approaching from a historical aspect, first the early (and also the more recent) *psychoanalytic theories* and case studies need to be highlighted that clearly suggest that emotional disorders play role in the formation of psychoactive substance use (e.g. Radó, 1933; Glover, 1932; Wurmser, 1974, 1995; Khantzian, 1985). According to these theories, drug users are described by emotions that are undifferentiated, archaic and primitive manifested in somatic symptoms (Krystal & Raskin, 1970). Furthermore, characteristically they cannot cope with their unpleasant, troublesome and painful emotions, thus turn toward some kind of chemical substance (Hartmann, 1969; Wurmser, 1974).

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<sup>1</sup> I wish to express my thanks first to my supervisor, Dr Zsolt Demetrovics for his major contribution to my doctoral research and PhD dissertation.

Wurmser (1974, 1995) in his *self-treatment* theory emphasizes that addicted persons try to compensate by means of their substance use for those deficits that are present regarding the management of their own emotions – especially anger, pain, shame, feelings of guilt and loneliness. Khantzian (1985), based on the theory of Wurmser, in his widely known *self-medication* theory also suggests that dysfunction of emotional regulation is a major factor regarding addictions.

Like emphasized by psychoanalytic theories, later a vast number of *comorbidity studies* also supported that psychoactive substance use is very often associated with mental disorders and these comorbid disorders are very often present in forms of *affective and/or mood disorders* (e.g. Myrick & Brady, 2003; Kushner et al., 2008). These results unambiguously demonstrate the presence of emotional dysfunctions among addicted persons.

Psychoanalytic authors have written down and later empirical studies also supported that addictions are often accompanied by the problem of *alexithymia* (e.g. Rybakowski et al., 1988). For the reason that this term primarily refers to the dysfunction of expressing and recognizing emotions it is by all means an important antecedent concerning the research of emotional intelligence. There is evidence for alexithymia correlating with more frequent psychoactive substance use and problematic use, being predictive of coping motivations regarding substance use (use aiming to decrease negative mood and negative feelings) and acting controversially in keeping abstinence (Uzun et al., 2003; Stewart et al., 2002; Ziolkowski et al., 1995).

Regarding personality traits, the role of *neuroticism* is definitive. Several meta-analyses in the topic have proved that the trait of neuroticism can be regarded as a risk factor for smoking and alcohol consumption (Malouff et al., 2006, 2007). This result has appeared with regards to several other illicit substances as well (e.g. Abu-Arab, 1995; Narayan et al., 1997; Saiz et al., 2000; Nishith et al., 1994). Besides neuroticism, the trait of impulsivity is also a risk factor of more intensive and problem substance use (e.g. Dawe and Loxton, 2004). The issue of impulsivity is tightly connected to *self-regulation*, which not only gets a central role in the research of addictions but also involves the subject of regulating emotions, thus leads to the issue of emotional intelligence (e.g. Baumeister, 2003).

Baumesiter, Heatherton and Tice (1994) suggest that two main types of self-regulation dysfunctions are present in relation with psychoactive substance use: *dysregulation* and *hyporegulation*. While the core issue of the latter one is that the person for one reason or another is not – or only to a limited extent – capable of self-regulation and self-control (see e.g. the decreased prefrontal functions and impulsivity), in case of the former deficit the person makes attempts of self-regulation in order to reach the desired aim, but the chosen approach is not suitable. For example the person uses alcohol or an illicit substance in order to regulate emotions (see e.g. the relationship between neuroticism and substance use or mental disorders and substance use). To this latter approach might belong the relevant theories of psychoanalytic authors, like self-treatment and self-medication hypotheses. Empirical studies have proved that substance use shows association with both types of self-regulation deficits.

Further relevant points are studies in the field of *coping*. Though even psychoanalytic theories have raised the importance of coping in relation with addictions, we know of several studies recently that highlight the role of coping mechanisms (e.g. Anderson et al., 2006). According to these studies, maladaptive – avoidant and emotion-focused – coping strategies are more often associated with substance use and substance use disorders than more adaptive coping strategies (e.g. Grüsser et al., 2007).

After examining the broader context of psychoactive substance use and emotions, we have analyzed studies specifically focusing on the relationship between emotional intelligence and substance use in a systematic literature review (Kun & Demetrovics, 2010a, 2010b). Thirty-three studies have dealt with this issue so far, which suggested that lower level of

emotional intelligence correlate with more intensive and more problematic alcohol consumption, smoking and more intense illicit substance use. Vast majority of the studies analyzed emotional intelligence and emotional competencies with regards to alcohol use and there are scarce results concerning different illicit substances. In addition, studies mostly targeted college or university students and clinical populations (problem and compulsive drug users) were not really involved. A further shortcoming of the studies to date is that they tell us nearly nothing about the role of emotional intelligence in differentiating between groups with different patterns of substance use (e.g. experimental, recreational, intensive and compulsive users) as well as the comparison between users of different substances is also ahead of us. The latter aspect is extremely important for the reason that clinical case studies indicate that there might be different emotion regulation deficits in the background of the use of specific substances.

Overall, we can say that only the first steps are over in the research of the relationship between emotional intelligence and addictions. At the same time, even these preliminary results yield valuable experience that can bring us closer to understanding the nature of addictions.

## **2. Hypotheses and design of the studies**

A great number of clinical observations and empirical studies call the attention to the fact that psychoactive substance use is closely connected to emotional states and emotional problems. The main explanatory models available highlight the roles of coping capacity and self-regulation, pointing out that substance use is associated with deficits in these areas. In the last two decades however, a few emotional intelligence studies have raised the issue that different emotion related competencies might have a role in the pattern of substance use. Our systematic review highlighted that it would worth conducting more research concerning this issue. Present dissertation seeks answers for the following questions:

- Are more developed emotional intelligence and emotional and social competencies associated with lower level of psychoactive substance use?
  - Is the negative relationship between emotional intelligence, emotional and social competencies and substance use present
  - among adults?
  - among adolescents?
- Is the negative relationship between emotional intelligence, emotional and social competencies and substance use present
  - among occasional substance users?
  - among addicted substance users?
- Is lower level of emotional intelligence and emotional and social competencies present among addicted patients than among non-user persons?
- Do specific emotional competencies (or components of emotional intelligence), which have special roles regarding substance use, show stronger relatedness compared to other competencies?
- Whether in case of different psychoactive substances, different emotional competencies (or emotional intelligence components) have specific roles?

Beyond that I aimed to explore the relationship between substance use and emotional intelligence and emotional and social competencies, I found it important to analyze the assessment tools I applied in these studies from a psychometrical aspect. Based on all these, my empirical work can be divided into several sections.

In case the grouping is based on the *objective* two main branches can be separated:

1. Psychometric studies
  - a. confirmation of the factor structure of the EQ-i YV(S) questionnaire (Bar-On & Parker, 2000), testing the model (study 1),
  - b. confirmation of the factor structure of AES (Schutte et al., 1998), testing the model (study 3),
  - c. analysis of the reliability of LEAS-A (Lane et al., 1990) (study 4).
2. Analysis of the relationship between substance use and emotional intelligence, emotional and social competencies (study 2, 5 and 6).

If we approach the question from the perspective of *data collection*, three main branches are set:

1. Analysis of substance use and emotional and social competencies among *adolescents* (study 2),
2. Analysis of substance use and emotional intelligence/emotional and social competencies among *healthy adults* (study 5)
3. Substance use and emotional intelligence/emotional and social competencies among *substance users* (study 6).

The study series containing altogether six sections will be presented along two main branches. The first two studies focus on *adolescents*; (1) one is psychometrical, while the other (2) is an exploratory study. Following these, I focus on adults and after the psychometric analysis of two scales (3, 4) the relationship between substance use and emotional intelligence of adults will be analyzed and presented in the framework of two studies (5, 6).

### **3. Studies**

#### **3.1. Study 1: Hungarian adaptation of the Bar-On EQ-i YV (S)**

##### **3.1.1. Aims**

Considering that the Young Version of the Bar-On Emotional Intelligence Questionnaire has not been tested to date, aim of the present study is to verify the factor structure suggested by Bar-On and Parker (2000).

##### **3.1.2. The sample**

The target population of the study was the high school student population of Zalaegerszeg (9<sup>th</sup> to 15<sup>th</sup> grade students). The sample consisted of on one hand 9<sup>th</sup> to 12<sup>th</sup> grade pupils, while on the other hand of 13<sup>th</sup> to 15<sup>th</sup> grade adolescents participating in supplementary education. From the former population, a random sample of 2254 students was achieved, stratified along grade and type of school. In the 13<sup>th</sup> to 15<sup>th</sup> grade students, altogether 824 persons, we aimed at reaching all students. From the 2492 successful contacts, 2380 responses were adequate for analysis. Those persons, who left more than 10% of the questions regarding emotional and social competencies unanswered, were sorted out from the database. Mean age of the respondents was 17.0 years (sd: 1.86), rate of boys was 47.9%.

### 3.1.3. Measures

Emotional and social competencies were assessed by means of the short form of the Youth Version of Bar-On Emotional Intelligence Questionnaire (EQ-i YV[S]) (Bar-On & Parker, 2000). The 30 items are divided into the following 5 scales: 1) *Intrapersonal EQ scale*; 2) *Interpersonal EQ scale*; 3) *Stress management scale*; 4) *Adaptability* and 5) *Positive impression scale*.

### 3.1.4. Results and discussion

As a first step the original, five-factor model was tested on the full sample (N = 2380). The fit indices did not confirm the original factor structure ( $\chi^2=3546$  df=395  $p<0.0001$ ; CFI=0.808; TLI=0.789; RMSEA=0.058 [0.056-0.060]; Cfit=0.001; SRMR=0.073), therefore the most suitable solution was looked for in multiple steps.

The whole sample was divided into several parts randomly in order to carry out the analyses on independent samples. On the first sample (N = 400) an exploratory factor analysis was carried out, which was repeated on sample 2 (N = 400). After this an exploratory factor analysis was executed on the combined sample of 1 and 2 (N= 800) to test the structure that was the result of the first two EFAs. This provided a possibility for testing the structure after excluding the problematic items. The third sample (N = 400) provided the basis of executing the combinatory factor analysis combined with the exploratory one (E/CFA). It had the advantage of providing possibility for testing the statistical significance of cross-loadings and to explore possible salient error covariances (Brown, 2006). Finally, the new structure was tested by means of confirmatory factor analysis on sample 4 (N = 1180).

Explorative factor analysis was carried out on sample 1 by means of maximum-likelihood method and promax rotation. Although not only the five-factor model, but the fit of the six-factor model was also adequate, in the latter case one factor contained only two items that loaded adequately ( $>0,30$ ) on their own factor, however these items loaded similarly on other factors as well. For this reason the six-factor model was rejected and a five-factor one was found adequate ( $\chi^2=569.4$ ; df=295;  $p<0.0001$ ; RMSEA=0.048 [0.042-0.052]; Cfit=0.682). Consecutively we have repeated the exploratory factor analysis on sample 2. Similarly to the first analysis, a five-factor structure appeared again ( $\chi^2=540.0$ ; df=295  $p<0.0001$ ; RMSEA=0,046 [0.039-0.052]; Cfit=0.885). Item 15 was not connected to any of the factors eligibly and item 28 and 30 belonged to different factors than they did in the first analysis. These three items were excluded. In the first step an EFA was executed on the rest 27 items, with closing up sample 1 and 2. The five-factor structure showed perfect fit in this case as well ( $\chi^2=497.3$ ; df=226;  $p<0.0001$ ; RMSEA=0.039 [0.034-0.043]; Cfit=1.00). Sample 3 was used for testing the 27-item, five-factor model. As a transitional step between EFA and CFA analyses a combined exploratory and confirmatory factor analysis was carried out (E/CFA; Brown, 2006). As result of the analysis, fit indices were satisfactory ( $\chi^2=356.8$ ; df=226;  $p<0.0001$ ; CFI=0.950; TLI=0.923; RMSEA= 0.038 [0.030-0.045]; Cfit=0.997), but we considered it useful to test whether the analysis of the modification indices, and consequently inserting error covariances of specific items, can improve the fit of the model. As a consequence, the fit of the model became perfect ( $\chi^2=291.4$ ; df=223;  $p<0.0001$ ; CFI=0.974; TLI=0.959; RMSEA=0.028 [0.018-0.036]; Cfit=1.000). Item 20 loaded higher on the factor of Interpersonal EQ than on the Positive impression scale to which it originally belonged; therefore it was excluded from the model. Based on the analyses on samples 1, 2 and three, the five-factor model was tested on sample 4 (N=1180). Because in the first step the structure did not show adequate fit ( $\chi^2=1078.1$ ; df=284;  $p<0.0001$ ; CFI=0.884; TLI=0.868; RMSEA=0.049 [0.46-0.052]; Cfit=0.755; SRMR=0.066), modification indices were analyzed. It turned out that factor loadings of items 12 and 26 are lower than the minimally expected (on the Intrapersonal EQ factor), therefore these items were excluded.

The next analysis – on the remaining 24 items – resulted adequate fit ( $\chi^2=760.0$ ;  $df=238$ ;  $p<0.0001$ ;  $CFI=0.917$ ;  $TLI=0.904$ ;  $RMSEA=0.043$  [0.040-0.047];  $Cfit=1.000$ ;  $SRMR=0.049$ ). That is, *the presented multiple step analysis confirmed a 24-item, five-factor structure.*

The *latent profile analysis* carried out on the 24-item scale was suitable for creating groups among adolescents along emotional and social competencies. Altogether a 7-class solution was verified ( $AIC = -50752.466$ ;  $BIC = -50486.919$ ;  $SSABIC = -50633.071$ ;  $Entropy = 0.752$ ;  $L-M-R$  Test = 70.333;  $p = 0.0412$ ), however the analysis shed light on two groups with specific response biases that were excluded from further analysis. Above these five latent profiles have been identified: “average”, “calm, under average”, “emotionally competent”, “adaptive alexithymic” and “impulsive emotionally competent” youth. Identifying these groups made it possible for us to execute the comparisons along psychoactive substance use in the next, second step of research (Table 1).

Table1: Emotional and social competencies of the seven latent profiles based on the Bar-On EQ-i YV (S)

Class	1.	2.	3.	4.	5.	6.	7.	Mean of Total sample
N	650	142	40	59	24	241	1219	
Intrapersonal EQ	4.5	4.2	1.2	14.7	16.7	13.5	8.9	7.9
Interpersonal EQ	9.0	11.4	2.4	13.7	16.5	14.3	11.4	11.0
Positive Impression	3.9	5.0	1.4	5.0	15.6	9.6	6.6	5.6
Adaptability	6.3	13.5	1.5	14.7	16.6	13.2	9.4	9.3
Stress management	12.1	9.8	16.4	8.3	2.7	11.4	11.0	11.2
Name of classes	„calm, under average”	„adaptive alexithymic”	„mechanical responder for lower extreme”	„impulsive emotionally competent”	„mechanical responder for upper extreme”	„emotionally competent”	“average”	

### **3.2. Study 2: Relationship between psychoactive substance use and emotional and social competencies among adolescents from Zalaegerszeg**

#### **3.2.1. Aims**

Aim of the study is to reveal the relationships between emotional and social competencies and psychoactive substance use among adolescents. Our systematic review pointed out that three of the four available studies on adolescent populations focused on smoking exclusively while one study analyzed emotional intelligence from the aspect of smoking and alcohol consumption. Studies on other substances are not known by us; therefore this study might serve with important new results concerning health behavior of adolescents (Kun, Rózsa, Paksi, Vargáné Csóbor and Demetrovics, 2009; Rózsa, Paksi, Kun, Vargáné Csóbor and Demetrovics, 2007).

#### **3.2.2. Study sample**

Respondents of the study were those adolescents that have been already introduced in the first study (N = 2380). Because during the latent profile analysis in the first sample response bias was detected in case of 64 persons on the EQ-i YV (S), these adolescents were excluded. Further 5 persons the analysis could not group into any of the latent profiles, therefore they were excluded as well. This way, altogether 2311 persons participated in the present study. Mean age was 17.0 years (sd: 1.86), ratio of boys was 47.4%.

### 3.2.3. Measures

*Substance use.* To get data on substance use patterns and other related characteristics, the questionnaires of the ESPAD'03 survey (Hibell et al., 2004) Hungarian version were applied.

*Depression.* The ESPAD survey includes the short, 6-item version of the Center of Epidemiological Studies Depression Scale (Radloff, 1977).

*Self-esteem.* For assessing self-esteem, the 10-item Rosenberg scale was applied (Rosenberg, 1965).

*Emotional and social competencies* For assessing emotional and social competencies the 24-item EQ-i YV (S), which was verified by our research, was applied.

### 3.2.4. Results and discussion

According to the results of Pearson's correlation method, emotional and social competencies show *only weak correlation* with psychoactive substance use; the coefficients have not exceeded 0.2 in any of the cases. While higher level of emotion regulation competence is associated with lower level of substance use, higher scores on the Adaptability scale – meaning mainly problem solving – were associated with more frequent licit and illicit drug use. Though not in case of all substances but interpersonal competencies regarding empathy and helping others were also linked to less frequent substance use. These results were also supported by one way ANOVA, structural equation modeling (SEM) and multiple linear regression analysis: to a low extent, but Stress management, Interpersonal EQ and Adaptability scale has predictive value concerning substance use. Stress management and empathy related problems predict higher alcohol consumption, binge drinking and drunkenness and also drug use and smoking. Interestingly though, better adaptability, which is related to problem solving, predicts more frequent substance use. Summarizingly however, we can say that emotional and social competencies explain only a small part of the variance of substance use, therefore their independent role is not definitive (Table 2 and 3).

These low correlations are in line with former results of the few studies carried out in the field. Trinidad and Johnson (2002, 2004a) also found low correlations ( $r= 0.1-0.2$ ) between adolescents' drinking and emotional intelligence or smoking and emotional intelligence. One important new result of our study was the exploration of the associations between adolescent *illicit substance use* and emotional and social competencies. While emotion regulation problems, as expected, correlate with more frequent substance use, adaptability also shows positive relationship with substance use. In the former case it is hypothesized that emotion regulation deficits lead to more frequent substance use through the lack of alternative options (see psychodynamic theories). The relationship between adaptability and more frequent substance use raise the possible roles of problem solving, creativity and openness for novel solutions. Adaptability might refer to the adolescent thinking more freely and having looser associations therefore might find solutions easier to different problems that finally results in better adaptation to various situations. All these are in line with openness and sensory seeking concepts that are known to have positive relationship with substance use (Kuntsche et al., 2008; Zuckerman, 1989). The higher scores on the adaptability scale and more frequent substance use might also raise the *ego-resilience* concept of Block and Block (1980): persons with higher ego-resilience are able to dynamically modify the level of their ego-control according to the requirements of the actual situation. Shedler and Block (1990) in their longitudinal study on adolescents followed three groups defined by their marijuana use habits: abstinent, experimenters and regular users. According to their results, not the abstinent adolescents showed the best adaptation in the following years but the experimenters. These young people had better social and emotional adaptation than their abstinent or regular user peers. This can be interpreted as persons with more ego-resilience

(experimenters) have more successful adaptation in different fields of life than over-controlled (abstinent) or under-controlled (regular user) young people. Because in the present study the results do not refer to regular use, the higher scores on the adaptability scale might pertain to this experimenter, ego-resilient group of youth.

Table 2: The fit indices of the three SEM testing the relationship between substance use and EQ-i YV (S)

Model	$\chi^2$	df	RMSEA (CI)	CFI	TLI
1st model (lifetime prevalence)	3328.4	366	0.058 [0.057-0.060]	0.918	0.902
2nd model (last year prevalence)	3283.4	347	0.060 [0.058-0.062]	0.917	0.904
3rd model (last month prevalence)	3316.4	366	0.058 [0.056-0.060]	0.917	0.901

Table 3: Standardized  $\beta$  indices and  $R^2$  values of the three SEM testing the relationship between EQ-i YV (S) and substance use

Output variables	Standardized $\beta$ values					$R^2$
	Intra-personal EQ	Inter-personal EQ	Stress Management	Adaptability	Positive Impression	
<b>1st model: lifetime prevalence</b>						
Frequency of alcohol use	0.03	-0.04	<b>-0.20***</b>	0.05	-0.07	5%
Frequency of drunkenness#	<b>0.13***</b>	<b>-0.10**</b>	<b>-0.25***</b>	-0.00	-0.06	9%
Frequency of binge drinking	<b>0.06*</b>	<b>-0.17***</b>	<b>-0.18***</b>	0.04	0.05	7%
Frequency of cannabis use	0.01	<b>-0.16***</b>	<b>-0.13***</b>	<b>0.19***</b>	-0.02	6%
<b>2. model: last year prevalence</b>						
Frequency of alcohol use	0.05	<b>-0.14***</b>	<b>-0.19***</b>	<b>0.07*</b>	-0.01	6%
Frequency of drunkenness	<b>0.11***</b>	<b>-0.16***</b>	<b>-0.22***</b>	0.02	-0.01	9%
Frequency of cannabis use	-0.01	<b>-0.16***</b>	<b>-0.11***</b>	<b>0.15***</b>	0.03	4%
<b>3. model: last year prevalence</b>						
Frequency of alcohol use	<b>0.07*</b>	<b>-0.17***</b>	<b>-0.17***</b>	0.04	<b>0.08*</b>	7%
Frequency of drunkenness	<b>0.06*</b>	<b>-0.21***</b>	<b>-0.19***</b>	0.04	<b>0.08**</b>	8%
Frequency of cannabis use	-0.02	<b>-0.18***</b>	<b>-0.08***</b>	<b>0.15***</b>	<b>0.07*</b>	3%
Smoking (daily use)	0.04	<b>-0.12**</b>	<b>-0.17***</b>	0.04	0.02	5%

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

Another new and important result of our study is that we have tested whether emotional and social competencies *contribute to the frequency of substance use beyond other relevant psychological factors*. It was tested by multiple linear regression analysis whether *depressive tendencies and self-esteem* have a more/less significant role in substance use with regards to emotional and social competencies. It turned out that depressive tendencies have a (positive) significant role only concerning the monthly prevalence of cannabis use and not the rest of the variables. Self-esteem appeared as a significant predictor only in case of alcohol consumption. Interestingly, only a positively signed relation was present indicating that higher self-esteem is associated with more frequent alcohol consumption and drunkenness. The analysis however also pointed out that coefficients of determination are extremely low ( $R^2$  values are between 2-6%), and do not overcome the explanatory values of emotional and social competencies in any of the cases. This indicates that although emotional and social

competencies are not key factors of adolescent drug use, they are *individual explanatory terms compared to self-esteem and depressive tendencies*. These results are important on one hand for the reason that it is well known in literature that depression and low self-esteem correlate with more frequent adolescent psychoactive substance use (Rohde et al., 1996; Kelly et al., 2004; Goodwin et al., 2004; Butler, 1982; Young et al., 1989), while on the other hand these results support the *incremental validity* of the EQ-i YV (S). The validity of the scale is verified by those results that indicate low to middle correlation between emotional and social competencies and depression or self-esteem. This means that the three factors can be well differentiated, thus the EQ-i YV (S) measures independent dimensions compared to the other two psychological variables. The scale therefore has adequate *discriminative validity* as well.

The result telling that emotional and social competencies are separate factors with respect to the frequency of substance use was confirmed by the latent profile analysis as well, because groups of adolescents can be well defined along specific substance use patterns. Along *drinking, abusive sedative drug use and amphetamine-type drug use* it is visible that specific patterns of emotional and social competencies differentiate significantly between adolescents. *Adolescents with emotional and social competencies under average* are the most vulnerable regarding the frequent use of the abovementioned substances. It is interesting however, that concerning amphetamines (amphetamine and ecstasy) adolescents with *emotion regulation problems (“impulsive”) but having good competencies in other aspects* belong to the risk group. These results call attention to the validity of the self-medication hypothesis stating that in the background of the use of different psychoactive substances, different background mechanisms – e.g. specific emotional problems – can be found (Khantzian, 1985). results of the present study therefore support that while with respect to the use of depressant substances (alcohol, sedatives), recognizing and expressing emotions and interpersonal skills (e.g. empathy) have deficits, use of stimulant substances are rather linked to disturbances in regulating emotions. The former results are also in line with results of studies exploring the relationship between alexithymia and alcohol use (see e.g. Kauhanen et al., 1992).

Another central aim of our study was to investigate emotional and social competencies from the aspect of *problems resulting from psychoactive substance use*. Single and multiple variable statistical methods also suggested that *emotion regulation problems and lower interpersonal competencies are associated with more frequent substance use related problems*. At the same time it is an interesting result that adaptability scale appeared as a positive predictor of substance use, especially drug use, related problems. According to these results, those young people who have encountered more difficulties solve their problems more effectively. This in fact appears logical. During adolescence, recognition of individual opportunities and competencies and finding one’s limits are especially important. Facing problems and coping with them can enhance the young person’s resilience, which in turn might contribute to better adaptation to everyday life.

We have also extended our latent profile analysis to the different, substance use related problems. Like in the case of the frequency of substance use, in case of the problems resulting from alcohol use we got the result that those having lower emotional and social competencies than average are the most vulnerable. These results can be interpreted in different ways. It might be that the persons get into problematic situations as a result of their worse emotional and social competencies, but it is also possible that young people with higher emotional intelligence are able to get out of unpleasant situations more effectively; therefore they consider these less problematic afterwards.

### **3.3. Study 3: Hungarian adaptation of the Assessing Emotions Scale**

#### **3.3.1. Aims**

Aim of the study was to test by means of a confirmatory factor analysis, which one of the so far published structures of the AES is the most adequate for the description and assessment of emotional intelligence (Kun et al., 2010).

#### **3.3.2. Study sample**

Our analysis was carried out on a convenience sample of 702 persons. Students of various universities (ELTE, BCE, SOTE) and employees of several firms were assessed. Mean age of the sample was 25.5 yrs (sd: 6.73). 15.5% of the respondents had graduate, and 71.4% had high school qualification.

#### **3.3.3. Measures**

*Sociodemographic data.* In the questionnaire 10 questions referred to the sociodemographic characteristics of persons.

*Emotional intelligence.* Emotional intelligence was assessed by means of the 33-item assessment of Emotions Scale (Schutte et al., 1998). The scale originally contains a single factor, later studies published however 3, 4 and 6-factor solutions as well (Austin et al., 2004; Petrides & Furnham, 2000; Gignac et al., 2005).

#### **3.3.4. Results and Discussion**

The one- and six-factor models were clearly rejected due to inadequate fit. Indices of the three- and four-factor models were adequate, however, based on special fit indices and numbers of items belonging to specific factors, unambiguously the three-factor solution have been confirmed (Table 4).

Table 4: Fit indices and Cronbach alpha values of the confirmatory factor analyses of the one-, three-, and four-factor models of the AES

	<b>1 factor (Schutte et al, 1998)</b>	<b>3 factors (Austin et al, 2004)</b>	<b>4 factors (Petrides and Furnham, 2000)</b>
CMIN ( $\chi^2$ )	2137.321	768.833	1575.888
df	490	244	476
DMIN/df ( $\chi^2$ /df)	4.362	3.151	3.311
TLI	0.965	0.983	0.976
CFI	0.969	0.986	0.979
RMSEA (CI 90%)	0.070 (0.067-0.073)	0.056 80.051-0.060)	0.058 (0.055-0.061)
AIC	2345.321	928.833	1811.888
ECVI	3.399	1.346	2.626
Each factors'	0.882	1. factor: 0.732	1. factor: 0.783
Cronbach $\alpha$		2. factor: 0.712	2. factor: 0.712
		3. factor: 0.749	3. factor: 0.680
			4. factor: 0.478

The confirmed three-factor structure however contains only 24 items; it has an adequate internal consistency. We also made suggestions for the names of the three factors. The labels we suggest, “*appraisal of emotions*,” “*optimism and regulation of emotions*,” and the “*intrapersonal and interpersonal utilization of emotions*,” not only better describe the content of each factor, but are more in line with the theoretical starting point of Schutte et al. (1998), who based their work on the model of Salovey and Mayer (1990), than with the labels used by Austin et al. (2004). The early, three-branch EI model of Salovey and Mayer (1990),

proposing the dimensions *appraisal and expression of emotion, regulation of emotion, and utilization of emotions in solving problems*, is clearly present in the AES-HU questionnaire,

The three-factor, 24-item Hungarian version of the Assessing Emotions Scale (AES-HU) thus can be considered a *reliable emotional intelligence scale*. First steps of the Hungarian adaption have been carried out; the Hungarian validity study of the measure is still in process. Studies on the validity of the measure are also important for the reason that in the field of emotional intelligence, self-report questionnaires, like the AES, are often criticized from a psychometrical aspect.

### **3.4. Study 4: Hungarian adaptation of the Levels of Emotional Awareness Scale**

#### **3.4.1. Aims**

Aim of the present study is to present the Hungarian version of the short form of Levels of Emotional Awareness Scale (LEAS-A) and its presently available psychometrical characteristics.

#### **3.4.2. Study sample**

The analysis was carried out on a convenience sample of 694 persons<sup>2</sup>. Students of various universities (ELTE, BCE, SOTE) and employees of several firms were assessed. Mean age of the sample was 26.5 yrs (sd: 6.73). 55.5% were males. 14.9% of the respondents had graduate, and 81.0% had high school qualification.

#### **3.4.3. Measures**

*Sociodemographic data.* In the questionnaire 10 questions referred to the sociodemographic characteristics of persons.

*Emotional awareness.* For the assessment of emotional awareness the short version of the Levels of Emotional Awareness Scale (LEAS-A) was applied, developed by Lane and colleagues (1990). The scale contains 10 items, all of which presents a dyadic situation, and the responses have to be rated after a detailed rating system developed by the authors. The scores were defined by two independent raters for the 179 persons in order to test inter-rater reliability.

*Emotional intelligence.* For the assessment of emotional intelligence the confirmed, 24-item, Hungarian version (Kun et al., 2010, 2011) of the Assessing Emotions Scale (AES-HU; Schutte, Malouff et al., 1998) was used.

#### **3.4.4. Results and Discussion**

In order to test the reliability of ratings, the inter-rater differences have been computed. The computation was carried out for all items; the values were adequate for all cases (Kappa was not lower than 0.6). Thus inter-rater reliability of the LEAS-A was proved to be adequate.

As result of the reliability study, and first in literature, we could confirm Lane's results that the 10-item short version of the scale also has adequate internal consistency (Cronbach alpha for "own emotions" = 0.82; regarding „other's emotions" Cronbach alpha = 0.77; for total scores Cronbach alpha = 0.85).

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<sup>2</sup> The respondents were the same sample as the one involved in the psychometric analysis of AES-HU.

We have tested by means of Pearson's correlation method whether emotional awareness and perceived emotional intelligence has any kind of relationship. According to the results, there is a significant, though low positive correlation between the two constructs ( $r$  values are below 0.2). Regarding emotional intelligence, emotional awareness mainly shows relatedness with the factor of "Appraisal of emotions" ( $r = 0,164$ ), "Optimism and regulation of emotions" however, is not associated with the differentiation of emotions. "Intrapersonal and interpersonal utilization of emotions" is not linked to the level of differentiation regarding emotions of *others*, but a positive correlation appears regarding *one's own* emotions.

The significant, positive, however low correlation between the two measures well describe that the two scales are independent of each other and approach emotional competencies from different aspects. This means not only that they include other factors of emotional intelligence but that they operationalize these in different ways as well. While LEAS-A is closer to the so-called performance test, AES is a self-report questionnaire: assessment of the level of emotional awareness is based on the person expressing emotions regarding specific situations, while on the AES the perceived level of emotional intelligence of the respondent is measured. Both aspects have important roles, but they present different information. The correlation found between them in the present study is consistent with the results published in international literature regarding the low correlation ( $r = 0.1-0.3$ ) between performance and self-report emotional intelligence scales (Brackett & Mayer, 2003; Brackett et al., 2004, 2006).

Summarizingly, it can be stated that the Hungarian version of the short form of Levels of Emotional Awareness Scale (LEAS-A) is a reliable measure for the assessment of differentiation of emotions.

### **3.5. Study 5: Relationship between psychoactive substance use and emotional intelligence among university students**

#### **3.5.1. Aim**

Our aim was to test the relationship between emotion differentiation / emotional intelligence and psychoactive substance use on an adult population. In our study we also provide possibility for comparing use of specific substances with regards to emotional intelligence.

#### **3.5.2. Study sample**

In the study students of Hungarian universities participated (Eötvös Loránd University, Péter Pázmány Catholic University, Semmelweis University, Corvinus University of Budapest and Budapest university of Technology and Economics) ( $N = 541$ ). Mean age of respondents was 24.99 yrs (sd: 3.61), ratio of men: 43.8%.

#### **3.5.3. Measures**

*Emotion differentiation* (complexity) was measured by the Hungarian version of LEAS-A (Lane et al., 1990).

*Emotional intelligence*. For the assessment of emotional intelligence the confirmed, 24-item, Hungarian version (Kun et al., 2010, 2011) of the Assessing Emotions Scale (AES-HU; Schutte, Malouff et al., 1998) was used.

*Substance use*. Psychoactive substance use was measured by a questionnaire of four units, designed by us. besides the use of legal substances (smoking, alcohol, alcohol with medicines, prescription drug abuse and solvents) use of illegal substances (cannabis, ecstasy, amphetamine, LSD, mushrooms and other hallucinogenic drugs, cocaine, heroin and other

opiates) were asked after. Questions referred to lifetime prevalence, last year prevalence, last month prevalence and time of first use.

*Sociodemographic data.* In the questionnaire 10 questions referred to the sociodemographic characteristics of persons.

#### **3.5.4. Results and discussion**

Possible relationships between emotional complexity, emotional intelligence and frequency of substance use were tested by means of Pearson's correlation methods. Altogether it can be stated that significant *relationship was found in case of only a few substances, and these were usually low (0.2 or below) correlations.* It seems that emotion differentiation is a more important factor regarding psychoactive substance use than emotional intelligence. With the latter one, "*Optimism and regulation of emotions*" scale showed low, negative correlation with lifetime and last month prevalence of *smoking* ( $r = -0.115$ ,  $p < 0.01$ ), last month prevalence of *prescription drug abuse* ( $r = 0.095$ ,  $p < 0.05$ ) and use of other drugs ( $r = -0.108$ ,  $p < 0.01$ ). Even if the correlations are low, these results call the attention to the possible role of the competency of regulating emotions regarding smoking and prescription drug abuse. Of the emotional intelligence components "*Appraisal of emotions*" also show a weak, negative significant correlation with lifetime prevalence of drunkenness ( $r = -0.094$ ,  $p < 0.05$ ). These results are perfectly in line with the experiences that problem drinking is associated with worse capacities in recognizing and decoding emotions (see e.g. Kornreich et al., 2001a, 2001b). Our results furthermore can be linked to alexithymia studies as well, since alexithymia and emotional complexity are "complementary" (Lane et al., 1997) and several studies suggest that alexithymia is a risk factor of alcohol use (see review of Thorberg et al. [2009]).

These relationships are also supported by the results obtained with LEAS-A scale. Namely, results suggest that those persons who *more frequently drink to drunkenness* (lifetime or last month prevalence) can be described by *lower level of emotion differentiation.* Relationships here are also very weak (around 0.1). Regarding alcohol use therefore it is clear that recognition, identification, appraisal and expression of emotions (since LEAS is also "sensitive" for this) are important aspects. *Emotion differentiation however, correlates (negatively) with last month prevalence of cannabis, ecstasy and amphetamine use.* In case of amphetamine-derivatives the correlation was present regarding lifetime prevalence as well and a similar relationship appeared regarding *hallucinogens and two variables of the LEAS-A.* The more frequent use of typically recreational drugs (cannabis, amphetamines, and hallucinogens) thus correlates (slightly) with a lower level of emotional differentiation. The low correlations are not surprising; those few studies that analyzed links between psychoactive substance use, emotional intelligence and emotional competencies, found low to medium correlations as well (see review of Kun & Demetrovics [2010a]).

With latent profile analysis *substance use patterns* were identified and these groups were compared regarding emotional competencies. Analyses were executed concerning only use of four substances (tobacco, alcohol, drunkenness and cannabis derivatives) because these appeared prominently in the sample. The analysis differentiates six user groups according to the consumption of the three substances (AIC = 7988.559; BIC= 8140.241; SSABIC =8035.487; Entropy = 0.914;  $p = 0.005$ ) (Table 5).

The six latent profiles were compared by means of one way variance analysis regarding emotion differentiation and emotional intelligence. On the scale assessing the complexity of emotions, "*abstinent*" young people performed better. In case of those groups who had more frequent substance use, lower levels of emotional awareness were observed. In situations basically inducing positive emotional states *the most complex emotions were observed in cases of those people who used psychoactive substances less frequently.*

“Abstinent” showed more differentiated emotions than the regular alcohol and cannabis user groups; and occasional drinkers also achieved higher scores than more regular alcohol and cannabis users. In the Australian study where LEAS was used to compare substance-user and non-user groups no significant differences were found (Lindsay & Ciarrochi, 2009). Present study however proves that there are differences along the level of differentiation of emotions among groups with different patterns of substance use. The differences appearing in situations inducing positive emotions are interesting results. It is known that negative emotional states (e.g. anxiety, depression, feelings of guilt etc.) correlate with psychoactive substance use (e.g. Abu-Arab, 1995; Kilbey et al., 1992; Halikas et al., 1972; Kushner et al., 2008). “Problems” regarding positive emotions however are scarcely studied. Substance use can not only be present as defense mechanism against negative emotions, but maybe for the reason that the person cannot “elaborate” positive situations or utilize these for her/his own development. The ability to recognize/be aware of positive emotions might be a protective factor against more frequent substance use. Although here we do not deal with compulsive drug users but it is worth pointing out that among addicted drug users anhedonia is common; joy and laughter is missing from their personal and family lives (Hoyer, 2010). Lack of positive emotions not necessarily means their physical absence, but the lack of recognizing and utilizing these emotions as well.

Table 5: Latent profiles along psychoactive substance use.

Latent classes	smoking	alcohol	cannabis
„abstinent”	↓	↓	↓
„occasional smokers and occasional drinkers”	↑	↑	↓
„smoker occasional drinkers”	↑↑	↑	↓
„nonsmoker drinkers”	↓	↑↑	↓
„nonsmoker drinkers and cannabis users”	↓	↑↑	↑↑
„smoker drinkers and cannabis users”	↑↑	↑↑	↑↑

Note: ↓=does not use actually or never used; ↑=occasional use; ↑↑=regular use

Among the components of emotional intelligence only the “Optimism and regulation of emotions” scale showed significant results; “abstinent” persons are more successful in regulating emotions than “smokers drinking alcohol occasionally”. The correlation is low here as well, however the explanation might be raised that persons with weaker competencies for managing and regulating unpleasant emotions and negative internal states turn more frequently towards psychoactive substances in order to reduce tension. Because the design of our study was not suitable for exploring causal relationships, we can only hypothesize these things. This explanation however is in line with several theories (see psychodynamic theories) and empirical results (see neuroticism and substance use or anxiety/depression and substance use) presented in the introduction section.

### **3.6. Study 6: Complexity of emotions and emotional intelligence among substance users**

#### **3.6.1. Aims**

Aims of the present study are to test the relations between emotional differentiation, emotional intelligence and substance use in substance user populations.

#### **3.6.2. Study sample**

In the study 1500 persons responded our questionnaires. The data collection was carried out by means of involving different sampling units. Besides four drug user groups two groups based on convenience sampling were involved according to the following:

- *Convenience sampling:*
  - (1) University students (Budapest),
  - (2) Students of night schools and/or employees of different firms (bus drivers, construction workers, dressmakers, hairdressers, mechanics, storekeepers, cleaners, waiters, shop assistants, drivers, security guards, semi-skilled workers and hospital workers).
- *Psychoactive substance users* were reached in four different groups:
  - (1) Opiate users in needle exchange or substitution (methadone/suboxone) programs (Nyíró Gyula Hospital Drug Outpatient and Prevention Center, Drogambulancia Foundation);
  - (2) Substance users in diversion programs (Nyíró Gyula Hospital Drug Outpatient and Prevention Center);
  - (3) Regular cannabis users,
  - (4) Recreational substance users at nightlife venues.

After excluding questionnaires with more than 10% of missing data, and with inconsistencies causing difficulties in understanding, finally data of 1404 persons have been administered (Table 6).

Table 6: Design of the study according to sample units

<b>Class</b>	Convenient sample (university students)	Convenient sample (evening students and workers)	Participants of drug diversion	Treated opiate users	Cannabis users	Party visitors	Total
<b>N</b>	541	491	144	115	54	59	1404
<b>Sex</b>							
Male	236	258	127	89	38	47	795
Female	303	228	17	26	16	12	606
<b>Age</b>							
Mean (SD)	24.99 (3.61)	34.00 (12.79)	25.76 (4.94)	32.26 (6.63)	23.86 (2.77)	25.81 (6.74)	28.75 (9.37)
<b>Level of education</b>							
Basic	43	358	108	63	9	30	611
Middle	453	57	25	39	40	19	633
High	43	71	5	9	5	9	142

### 3.6.3. Measures

*Emotion differentiation* (complexity) was measured by the Hungarian version of LEAS-A (Lane et al., 1990).

*Emotional intelligence*. For the assessment of emotional intelligence the 24-item, Hungarian version (Kun et al., 2010, 2011) of the Assessing Emotions Scale (AES-HU) was used.

*Substance use*. Psychoactive substance use was measured by a questionnaire of four units, designed by us. besides the use of legal substances (smoking, alcohol, alcohol with medicines, prescription drug abuse and solvents) use of illegal substances (cannabis, ecstasy, amphetamine, LSD, mushrooms and other hallucinogenic drugs, cocaine, heroin and other opiates) were asked after. Questions referred to lifetime prevalence, last year prevalence, last month prevalence and time of first use.

*Sociodemographic data*. In the questionnaire 10 questions referred to the sociodemographic characteristics of persons.

### 3.6.4. Results and Discussion

*Two latent profile analyses* were executed in order to identify substance use patterns of persons in the full sample regarding specific substances. In the first analysis only legal substances (tobacco, alcohol, solvents, prescription drug abuse, and medicine with alcohol) were included, in the second one all substances except for solvents (which appeared at a very low percentage in the whole sample [lifetime prevalence = 1.4%]) were involved.

As result of the analysis concerning legal substances, 3 latent profiles were identified (AIC = 30157.457; BIC = 30293.881; SSABIC = 30211.289; Entropy = 0.958; L-M-R test = 1323.820;  $p = 0.000$ ). One group was formed by “abstinents”, while there was a group of “smoker occasional drinker” and a “polydrug user” group. Members of the latter group are characterized by solvent abuse and prescription drug abuse besides smoking and regular alcohol use (Table 7).

Table 7: Substance use patterns of the latent profiles with medians belonging to 9-point scales.

Profile	1.	2.	3.	Total
Cigarette	1	8	7	6
Alcohol	3	5	4	4
Drunkenness	1	4	3	2
Inhalants	0	6	1	0
Medications	0	2	0	0
Medications with alcohol	0	4	0	0
Name of profiles	Abstinent	Polydrug users	Smoker occasional drinkers	

The three groups were compared regarding their emotional complexity and emotional intelligence. While along emotional complexity the three groups significantly diverge, none of the emotional intelligence components differentiate between classes. *Emotions are most differentiated in case of abstinent persons followed by the smoker occasional drinkers and polydrug users have the least complex emotions*. Therefore the more regular the substance use, the less differentiated are the emotions. As far as we know, this association has not been confirmed so far. Lindsay and Ciarrochi (2009) have made a comparative study on LEAS between addicted persons and non-users however they found no significant differences between the two groups. Overall, emotional complexity might be present as a protective factor against more intensive substance use.

The second analysis identified four latent classes (AIC = 38738.502; BIC = 38990.362; SSABIC = 38837.884; Entropy = 0.968; L-M-R test = 1142.116;  $p = 0.037$ ):

besides “abstinents” a “smoker occasional drinker”, an “opiate addicted” and a “cannabis, stimulant and hallucinogen user” profile were identified. Of the latter group smoking and alcohol use are also characteristic (Table 8).

Table 8: Substance use patterns of the four latent profiles with medians belonging to 9-point scales.

Profiles	1.	2.	3.	4.	Total
Cigarette	7	1	7	7	6
Alcohol	4	3	4	5	4
Drunkenness	3	1	3	4	2
Cannabis	3	0	2	6	1
Stimulants	1	0	0	2	0
Hallucinogens	2	0	0	3	0
Opiates	8	0	0	0	0
Medicines	0	0	0	0	0
Medicines with alcohol	3	0	0	1	0
Name of profiles	Opiate users	Abstinent	Smoker occasional drinkers	Cannabis, stimulant and hallucinogen users	

These groups were also compared with regards to emotional competencies using ANOVA. From the two emotional scales, again LEAS-A was proved to be more decisive: regarding this all subscales and the total scores as well differed significantly in case of the four groups. *Abstinent persons had the most differentiated emotions, followed by the smoker occasional drinkers. Cannabis, stimulant and hallucinogen users had better results than opiate users, but had less complex emotions than abstinents or occasional drinkers.*

From the aspect of emotional intelligence components, only *emotion regulation* differentiates between the groups. It turned out, that *abstinent persons scored significantly higher on this scale than occasional drinkers.* Regarding the other groups no significant differences were found. The total scores of emotional intelligence *was the lowest in case of opiate users* again, who scored lower than *abstinents or cannabis, stimulant and hallucinogen users.* According to the analysis, *abstinent persons have more developed emotional intelligence than occasional drinkers.* It is clear then, especially regarding emotion regulation, that substance user groups have worse emotional competencies than occasional users, experimenters or abstinents. Concerning causal relationships however, we still do not have data. These results however are very much in line with psychodynamic theories (see e.g. Wurmser, 1974; Khantzian, 1985) and clinical observations suggesting that addicted persons turn to psychoactive substances due to their emotional problems and deficits regarding managing and regulating them. Contrary to our assumptions however, we could not confirm that persons using and preferring different substances encounter problems and deficits concerning different emotional competencies. Complexity of emotions and emotion regulation similarly appeared as risk factors in cases of both groups (opiate users and cannabis, stimulant and hallucinogen users). This study therefore is not suitable for supporting Khantzian’s self-medication theory, rather calls attention to emotional deficits characteristic of substance users more generally. It appears that our study support the observation of Mueser and colleagues (2007): according to the *dysphoria-reduction* theory there is no specific emotion-drug relationship, but the person starts using – in fact any kind of – substances in order to reduce unpleasant, depressive emotional states.

As the last step of our analysis, we have tested what correlations can be found between psychoactive substance use and emotional intelligence in all four groups. It is an important result that while in the three substance user groups correlations between emotional intelligence and substance use were all negative, this relation was reverse in the abstinent group. All subscales of the AES-HU had significant correlations with the frequency of cannabis use: the higher level of emotional intelligence the person has the more frequent is cannabis use. The relationship however is very low (app. 0.1 in all cases). It is important to

remember that for this group only experimenting is characteristic and there is no actual substance use. Thus the positive correlation can be derived from the same causes that were presented regarding adolescents from Zalaegerszeg in our formerly presented study. Shedler and Block (1990) found in their longitudinal study that experimenters show better adaptation in adulthood compared to abstinent and regular users. This can be interpreted as persons with higher ego-resilience (experimenters) adapt better to different situations of life in various areas than over-controlled (abstinent) or under-controlled (regular user) persons. Because we cannot speak of regular use in the abstinent group, higher scores on the emotional intelligence scale possibly refers to these experimenting, ego-resilient group of young people. Where correlations were found, it turned out in all cases that more frequent substance use is associated with lower levels of emotional intelligence, however correlations were very low. Correlations were somewhat stronger in case of the two regular user groups, but even these were not exceeding the 0.3 value.

Complexity of emotions in all groups showed negative correlation with the frequency of substance use. The *correlation was again strongest in the two regular user groups* however coefficients did not exceed 0.3 either.

Summarizingly, we could present a new result – the negative correlation between substance use and differentiation of emotions. According to this it is not only that substance use goes together with the dominance of negative emotional states, but that emotions – independent of being positive or negative – appear in a more primitive, less complex form in these persons lives (or can express them in a less differentiated way). These results on one hand confirm the early observations of Krystal and Raskin (1970), suggesting that addicted persons tend to have archaic, overflowing, total, undifferentiated and at the same time mainly somatically manifested emotions, while on the other hand are in line with the results of studies concerning the relationship between alexithymia and psychoactive substance use (see e.g. Helmers & Mente, 1999; Gunnarsson et al., 2008).

## 4. Conclusions

Emotional intelligence represents a new branch of research in the field of addictology. Although the investigation of emotional problems and emotion characteristics has a long history concerning addictions, only a few studies were born along the concept of emotional intelligence introduced only two decades ago (Kun & Demetrovics, 2010a). Because several clinical and empirical studies underlined the relationship between psychoactive substance use and emotional problems, we hypothesized that emotional and social competencies and emotional intelligence are decisive factors of the intensity of substance use. This question was tested in three studies, our results however pointed out that *emotional intelligence and emotional and social competencies explain only part of the indicators of substance use*. Based on this result we have to draw the conclusion that health promotion and prevention interventions are not supposed to define development of emotional competencies as their primary aim. Hungarian prevention programs however put major emphasis on this factor at a high percentage (40%, Paksi et al., 2006), while effectiveness of these programs has no evidence (Rácz, 2005). Rácz has already called the attention to the fact that the widespread “emotional education” appearing in the 1970’s, which were popularized after the unsuccessful, information-focused prevention programs, were not effective. However, very often the real cause of failure was a non-suitable professional. Our results therefore highlight that regarding the experimenting behavior of adolescents, emphasis have to be put on other factors and not on emotional competencies.

Results of our studies among adults however pointed out that specific emotional competencies – complexity of emotions and ability of regulating emotions – clearly differentiates between abstinent, occasional and problem substance users. We opine that these results might be utilized in practice, especially concerning *clinical work*. Measures for the assessment of emotion differentiation and competency of emotion management might be suitable for *screening* problem substance users. Furthermore, we suggest that in the therapy of addictions, the competencies of recognizing and expressing more complex emotions and regulating negative and positive emotional states are worth improving.

Khantzian's (1985) self-medication theory is widely known, however only a few attempts have been made on empirical testing of the hypothesis. In case our suggestions on different substance user groups showing deficits in specific emotional competencies had been confirmed, we could have provided evidence for the validity of the self-medication theory. Our results however, rather support that intensive or problem substance users have common types of emotional deficits, thus a more general, dysphoria reduction motivation is more plausible to stand in the background of substance use (Mueser et al., 2007).

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