



## **The role of social and emotional competence on risk behaviors in adolescence.**

**Mafalda Ferreira<sup>1, a, b</sup>, Celeste Simões<sup>a, b</sup>, Margarida Gaspar Matos<sup>a, b</sup>, Lúcia Ramiro<sup>a, b</sup>, José Alves Diniz<sup>a</sup> and Social Adventure Team**

*<sup>a</sup>Faculty of Human kinetics/ Technical University of Lisbon, Portugal.*

*<sup>b</sup>Center of Malaria and other Tropical Diseases, Lisbon, Portugal.*

The purpose of this study was to investigate the relation between social and emotional competence and substance use in adolescence, including tobacco, alcohol and illicit drugs. The sample included 3,494 students, mean age 15 years old, in the 8th and 10th grades of the public school system from Portugal. Data were collected using the Health Behavior in School-aged Children (HBSC) survey. For the purpose of this study, the questionnaire included questions about social and emotional competence and risk behavior, specifically past 30-day tobacco use, drunkenness, and illicit drugs use. Results showed that adolescent social and emotional competence was negatively related to substance use. All social-emotional competence subscales were significantly associated with illicit drug use. In addition empathy, cooperation and communication, and goals and aspirations subscales, were significantly associated with tobacco use. Results demonstrate the potential importance of social and emotional competence in levels of substance use among Portuguese adolescents, and may be used to inform the development of Portuguese substance use prevention programs.

**Keywords:** Social and Emotional Competence, Substance Use, Adolescence

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### **Introduction**

Adolescence is a time of psychological, physical, and contextual changes and transitions. It is also a period of increased risk-taking. Substance use, including tobacco, alcohol and illicit drugs, is one of the most concerning risk behaviors. Rates of smoking in adolescence have been growing over the last decade in some

<sup>1</sup> Corresponding author. Email address: [mafaldaferreira@fmh.utl.pt](mailto:mafaldaferreira@fmh.utl.pt)

countries (WHO, 2009). The most recent Portuguese statistics show that 15.6% of students from the 8<sup>th</sup> and 10<sup>th</sup> grades reported smoking at least once a week (Matos et al, 2011).

Alcohol consumption is also a significant public health problem since it is implicated in more than 60 different health outcomes, representing an enormous burden to both the individual and society (WHO, 2010). Adolescent risky drinking (including frequent drinking and drunkenness) is rather common. In Portugal, according to the data provided by the most recent Health Behavior in School-aged Children (HBSC) survey, 32% of students from the 8<sup>th</sup> and 10<sup>th</sup> grades have been drunk one or more times in life (Matos et al, 2011). In addition, risky drinking carries significant risks of adverse psychological, social and physical health consequences, including other risk behaviors such as violence, accidents, injury, as well as academic failure (Windle, 2003).

Finally, several studies indicate that illicit drug use has steadily increased among adolescents since the 1990's. Regarding illicit drug use in the past 30-days, 7.5% of Portuguese students from the 8<sup>th</sup> and 10<sup>th</sup> grades reported ever using (Matos, 2011). This upward trend underscores the need for identifying effective prevention approaches capable of reducing the use of both licit and illicit drugs in Portuguese adolescents.

In addition to availability, perceived safety and tolerance of substance use, and other established factors linked to substance use, adolescent substance use may be linked to deficits in social and emotional skills, or social-emotional competence (Schenker and Minayo, 2005). Competence refers to an individual's capacity to successfully manage developmentally relevant challenges (Masten, Burt, and Coatsworth, 2006). Currently there is an increasing emphasis on the multi-dimensional models of competence (Masten and Coatsworth, 1995), which include competence in social, cognitive and emotional spheres (Goleman, 1997; Masten et al., 1999; Werner and Smith, 2001) and which are required for healthy development and life success (Benard, 2004).

A number of skills are considered to fall under the rubric of social-emotional competence and which may be associated with substance use in adolescence (Hanson and Kim, 2007; Harter, 1999; Matos, 2011; Rutter, 1985; Skinner, 1995). For example, cooperation and communication have been shown to be associated with flexibility in relationships, team work skills and assertiveness, specifically with regards to the expression of emotions, feelings, ideas and needs (Austin and Kilbert, 2000). These skills promote interpersonal connection and relationship building (Benard, 2004), which are important protective factors for wellbeing as they may, among other things, play a role in successfully communicating assertive substance use resistance skills.

Empathy is also considered a critical social-emotional skill and several authors highlight it as one of most important competences (Benard, 2004; Grotberg, 1997; Kumpfer, 1999; Parker, Cowen, Work, and Wyman, 1990). As Benard (2004) stated "empathy not only helps facilitate relationships development, it also forms the basis of morality, forgiveness, and compassion and caring for others" (p.15). This may prove critical for the formation of peer networks characterized as prosocial and non-substance using.

Problem solving is also critical for social-emotional competence as it entails important abilities such as planning, critical thinking and evaluating potential solutions prior to making a decision or taking action (Austin and Kilbert, 2000). Problem solving skills appear to play a fundamental role in risk and resource evaluation in the search for healthy environments or relationships (e.g., the evaluation of risks and environments associated with substance use), as well as in the development of realistic problem-solving plans (Werner and Smith, 2001).

Self-efficacy is a social-emotional skill related to one's ability to judge to what extent they will accomplish a certain level of performance (Bandura, 2001). According to Bandura, efficacy beliefs affect adjustment not only through their direct impact on outcomes (e.g., substance use), but also through their influence on the outcomes' determinants (e.g., resistance skills, coping strategies).

Self-awareness refers to the capacity to become the object of one's own attention (Morin, 2006). Self-awareness includes such skills as recognizing one's own emotions, values, strengths, and weaknesses. In adolescence this includes being able to analyze and internally manage factors that trigger their stress reactions. Adolescents who are skilled at regulating their emotions and internally managing stress may be less likely to use external sources (e.g., substances) to do so.

Finally, positive goals and aspirations are social-emotional skills associated with positive adolescent outcomes in health and the school context (Benard, 2004). Goals help to delay immediate gratification (Munist, et al., 1998) and pursuing self-concordant goals is associated with better global mood and well-being (Sheldon and Kasser, 2001), which may in turn be associated with decreased substance use. Thus, having constructive goals and aspirations is a determinant aspect in the active construction of our own lives (Bandura, 2001; Stein and Newcomb, 1999).

The public health impact of substance use emphasizes the importance of identifying the early predictors of use during adolescence. Among these early predictors may be skills associated with social-emotional competence (Matos, 2009; Simões, 2009). Some research has investigated associations between social-emotional learning and substance use (e.g., Corte and Zucker, 2008; Epstein et al., 2004; Tims et al., 2002; Trinidad and Johnson, 2002). However the vast majority of this work has been conducted in the U.S. making generalizations to European countries difficult. Additionally, the role of age and gender are also important variables to consider because older adolescents and males generally have higher rates of alcohol or illicit substance use than younger adolescents and females (Simões, 2007; Johnston et al., 2008; Matos, 2009).

Thus, the aims of this study are to: (1) analyze gender differences in substance use and social and emotional competence; (2) analyze the relation between social and emotional competence and substance use (tobacco, alcohol, and illicit drugs); and (3) test whether social and emotional competence moderate the relationship between gender and substance use in a sample of Portuguese adolescents.

## **Methods**

### *Sample*

Data were collected through a self-administered questionnaire from the Portuguese study of the Health Behavior in School-aged Children (HBSC) of 2010, a World Health Organization (WHO) collaborative cross-national study (Currie et al., 2004; Matos et al., 2011). The study provides nationally representative data of 3,494 Portuguese adolescents, randomly chosen from those attending 8<sup>th</sup> and 10<sup>th</sup> grades of high school. The majority of adolescents have Portuguese nationality (94.2%); 46.4% were boys and 53.6% were girls. The students were proportionally distributed among six educational Portuguese regions (North, 39.2%; Lisbon and Tagus Valley, 31%; Center, 15.1%; Alentejo, 6.6%; the Algarve, 4.7%; Madeira, 3.3%). More than half of adolescents were of low socio-economic status (55.9%).

### *Procedure*

The HBSC is a school-based survey of adolescent health behaviors and their psychosocial determinants, carried out every 4 years simultaneously in all participating countries, and using an internationally standardized methodological protocol (Currie et al., 2004; Currie et al., 2001). The study base includes school children aged 11, 13 and 15 (6<sup>th</sup>, 8<sup>th</sup> and 10<sup>th</sup> grade students) in 44 countries in Europe and North America. According to the study protocol, data from each country are gathered from nationally representative samples. The HBSC uses a standard, self-administered in-class questionnaire that includes both mandatory and optional items. A detailed description of the methods and instrument of the HBSC can be found elsewhere (Currie et al., 2004; Currie et al., 2008). This Nationwide Survey was conducted during 2009/2010 school year and the sampling unit used was the class. The 139 schools in the sample were randomly selected from the official national list of public schools, stratified by region. In each school, classes were randomly selected for each grade, according to the international research protocol (Currie et al., 2004). The questionnaire was administered by school teachers. This study had National Ethics Committee and the National Commission for Data Protection approval and strictly followed all human rights protection guidelines.

### *Measures*

The questionnaire consisted of three levels of questions which were used to create national survey instruments: core questions that each country was required to include to create the international dataset; optional packages of questions on specific topic areas from which countries could choose; and country-specific questions related to issues of national importance.

Survey questions covered a range of health indicators and health-related behaviors as well as the life circumstances of young people. Questions were subject to validation studies and piloting at national and international levels. The core questions provided information on: demographic factors (e. g., gender, age and

state of maturation); social background (e. g., family structure and socio-economic status); social context (e. g., family, peer culture, school environment); health outcomes (e. g., self-rated health, injuries, overweight and obesity); health behaviors (e. g., eating and dieting, physical activity and weight reduction behavior); and risk behaviors (e. g., smoking, alcohol use, cannabis use, sexual behavior, bullying).

*Social and Emotional Competence* (California Healthy Kids Survey - CHKS, 2000) were measured through 18 items rated on a 5-point rating scale (1=Never to 5=Always) referring to six internal assets, with three items each: *Cooperation and Communication* (Items: I can work with someone who has different opinions than mine; I enjoy working together with other students my age; I stand up for myself without putting others down) (alpha=.76); *Empathy* (Items: I feel bad when someone gets their feelings hurt; I try to understand what other people go through; I try to understand what other people feel and think) (alpha=.83); *Problem Solving* (Items: When I need help I find someone to talk with; I know where to go for help with a problem; I try to work out my problems by talking or writing about them) (alpha=.84); *Self-efficacy* (Items: I can work out my problems; I can do most things I try; There are many things I do well) (alpha=.82); *Self-awareness* (Items: There is a purpose to my life; I understand my moods and feelings; I understand why I do what I do) (alpha=.85); *Goals and Aspirations* (Items: I have goals and plans for the future; I plan to graduate from high school; I plan to go to college or some other school after high school) (alpha=.68). Items of each subscale were summed to obtain the six social and emotional competences subscales. Each subscale's final score ranged from 3 to 15 with high scores suggesting higher levels of competences and they were already validated in previous studies (Martins, 2007; Simões, 2007b). Psychometric properties of these scales have also been reported elsewhere (Simões et al., 2009).

*Substance use behavior* included tobacco use, drunkenness, and illicit drugs use. *Tobacco use* was assessed by the question: "How often do you smoke tobacco at present?" with four answer options: 1 = 'I do not smoke', 2 = 'Less than once a week', 3 = 'At least once a week, but not every day', 4 = 'Every day'. The tobacco use item was subsequently recoded to 1 = 'I do not smoke' and 2 = 'I smoke' (if participants responded to choices 2, 3 or 4). *Drunkenness* was assessed by the question: "Have you ever had so much alcohol that you were really drunk?" with five answer options: 1 = 'No, never', 2 = 'Yes, once', 3 = 'Yes, 2-3 times', 4 = 'Yes, 4-10 times', 5 = 'Yes, more than 10 times', recoded to 1 = 'No, never' and 2 = 'Yes, once or more'. *Illicit drugs use* was assessed by the question: "**How often did you use illicit drugs in the last month?**" with four answer options: 1 = '**None**', 2 = '**Once**', 3 = '**More than once**', 4 = '**Often**', recoded to 1 = 'None' and 2 = 'Yes, once or more'.

#### *Data analysis*

The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 19. Descriptive statistics including frequencies, means and standard deviations were performed to give general descriptions of the data. Reliability analyses were conducted with items of each social and emotional competence subscale. Primary analyses were conducted utilizing one-way between-groups analysis of

variance which explored differences in the six social and emotional competence subscales between those reporting substance use or drunkenness versus those reporting no use or drunkenness. For the moderation analyses, each of the six social and emotional competences scales were categorized in two groups, low and high scores, through visual binning in SPSS. For the two way analyses of variance, the Z scores of substance use variables were used.

## Results

### *Descriptive data and gender differences in substance use and social and emotional competence.*

The majority of students in the sample did not smoke (84.4%), never got drunk (68%) and never used illicit drugs in the last month (92.5%). However, in analyzing the differences between genders we see that boys reported drunkenness and illicit drugs use more frequently than girls (see Table 1). The correlations between the different types of substance use were positive and mainly moderate (range  $r=.34 - .50$ ,  $p<.001$ ). The correlations between the different types of social and emotional competences were strong and positive (range  $r = .50 - .81$ ,  $p < .001$ ). The analysis of the differences by gender for the social and emotional competences show that girls demonstrated higher levels of all social-emotional subscales (see Table I). Cronbach Alpha for each of the six subscales of the social and emotional competences ranged from  $\alpha=.68$  (goals and aspirations sub-scale) to  $\alpha=.85$  (self-awareness sub-scale).

### *Relationship between social and emotional competence and substance use.*

For tobacco use, there was a statistically significant difference for *Empathy*  $F(1, 3162) = 7.69$ ,  $p<.01$ , for *Cooperation and Communication*  $F(1, 3162) = 4.63$ ,  $p<.05$  and for *Goals and Aspirations*  $F(1, 3085) = 6.26$ ,  $p<.05$ . Comparison of mean differences demonstrate that the no tobacco use group reported significantly greater empathy ( $M=11.48$ ;  $SD=2.45$ ) than the tobacco use group ( $M=11.15$ ;  $SD=2.60$ ), greater communication and cooperation ( $M=11.79$ ;  $SD=2.32$ ) than the tobacco use group ( $M=11.55$ ;  $SD=2.51$ ) and goals and aspirations, ( $M=12.30$ ;  $SD=2.61$ ) than the tobacco use group ( $M=11.97$ ;  $SD=2.90$ ).

There were no significant differences between participants who reported drunkenness versus those who never reported being drunk on any of the social-emotional competence subscales. However, for past 30-day illicit drug use, there were statistically significant differences on each of the social-emotional competences subscales: *Empathy*  $F(1, 2950) = 32.20$ ,  $p<.001$ , in *Cooperation and Communication*  $F(1, 2949) = 28.99$ ,  $p<.001$ , in *Goals and Aspirations*  $F(1, 2877) = 28.90$ ,  $p<.001$ , in *Self-Awareness*  $F(1, 2935) = 16.93$ ,  $p<.001$ , in *Self-Efficacy*  $F(1, 2937) = 10.98$ ,  $p<.01$ , and in *Problem Solving*  $F(1, 2927) = 9.21$ ,  $p<.01$ . Comparisons of mean differences were as follows: *Empathy*- no illicit drug use ( $M=11.50$ ;  $SD=2.41$ ), illicit drug use ( $M=10.52$ ;  $SD=3.10$ ); *Communication and cooperation*- no illicit drug use ( $M=11.84$ ;  $SD=2.29$ ), illicit drug use ( $M=10.96$ ;  $SD=2.88$ ); *Goals and aspirations*- no illicit drug use ( $M=12.33$ ;  $SD=2.58$ ), illicit drug use ( $M=11.32$ ;  $SD=3.50$ ); *Self-Awareness*- no illicit drug use ( $M=12.04$ ;  $SD=2.39$ ), illicit drug use

**Table I – Gender differences in substance use and social-emotional competence**

	Gender				$\chi^2$ (df)
	Girls		Boys		
	N	%	N	%	
Tobacco use (N=3446)					
I do not smoke	1562	84.60%	1346	84.10%	0.16(1)
I smoke	284	15.40%	254	15.90%	
Drunkness (N=3473)					
No, never	1306	70.00%	1056	65.70%	7.26(1)**
Yes, once or more	560	30.00%	551	34.30%	
Illicit drugs use (N=3075)					
Never	1565	94.90%	1278	89.60%	30.62(1)***
Once or more	84	5.10%	148	10.40%	
SEC Subscale	Girls		Boys		F
	Mean	SD	Mean	SD	
Cooperation/communication	12.05	2.23	11.41	2.44	60.48***
Empathy	11.9	2.28	10.87	2.59	145.06***
Problem solving	11.74	2.31	11.1	2.55	55.47***
Self-efficacy	11.8	2.17	11.36	2.39	30.15***
Self-awareness	12.16	2.3	11.78	2.58	19.22***
Goals and aspiration	12.59	2.48	11.83	2.81	64.16***

SEC = Social Emotional Competence

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

( $M=11.34$ ;  $SD=2.98$ ); *Self-efficacy*- no illicit drug use ( $M=11.64$ ;  $SD=2.23$ ), illicit drug use ( $M=11.11$ ;  $SD=2.74$ ); *Problem solving*- no illicit drug use ( $M=11.50$ ;  $SD=2.38$ ), illicit drug use ( $M=10.98$ ;  $SD=2.99$ ).

*The role of social and emotional competence as moderators of the relationship between gender and substance use.*

The previous analysis showed statistically significant differences in some of the social and emotional competences under study. Nevertheless, a set of two-way between-groups analysis of variance was conducted in order to explore the moderating effect of each of the six social and emotional competences on the relation between substance use and gender. As mentioned above, each social and emotional competency was divided into two groups according to their scores (low and high). There were no statistically significant main effects for any of the six social-emotional competences subscales by gender interactions in predicting substance use (see Table II).

**Table II Interaction effect between Social and Emotional Competence (SEC) Subscales and gender for the different types of substance use**

	Subscale	Gender	SEC	Interaction Gender x Sec
Tobacco	Empathy	$F = .81, p= n.s.$	$F = 1.77, p= n.s.$	$F = .00, p= n.s.$
	Problem solving	$F = 2.34, p= n.s.$	$F = 3.69, p< .10$	$F = .49, p= n.s.$
	Self-efficacy	$F = 1.60, p= n.s.$	$F = 3.58, p< .10$	$F = .33, p= n.s.$
	Cooperation and communication	$F = 1.82, p= n.s.$	$F = .15, p= n.s.$	$F = .02, p= n.s.$
	Self-awareness	$F = 2.12, p= n.s.$	$F = 1.11, p= n.s.$	$F = .38, p= n.s.$
	Goals and aspiration	$F = 2.63, p= n.s.$	$F = 1.09, p= n.s.$	$F = .16, p= n.s.$
Been drunk	Empathy	$F = 22.74, p<.001$	$F = .48, p= n.s.$	$F = 1.09, p= n.s.$
	Problem solving	$F = 26.60, p<.001$	$F = 2.20, p= n.s.$	$F = 3.64, p <.10$
	Self-efficacy	$F = 24.33, p<.001$	$F = .60, p= n.s.$	$F = .67, p= n.s.$
	Cooperation and communication	$F = 23.50, p<.001$	$F = .56, p= n.s.$	$F = 2.07, p= n.s.$
	Self-awareness	$F = 24.16, p<.001$	$F = .91, p= n.s.$	$F = 1.50, p= n.s.$
	Goals and aspiration	$F = 24.37, p<.001$	$F = .29, p= n.s.$	$F = .02, p= n.s.$
Illicit drugs	Empathy	$F = 24.00, p<.001$	$F = .84, p= n.s.$	$F = .01, p= n.s.$
	Problem solving	$F = 33.55, p<.001$	$F = .87, p= n.s.$	$F = 2.30, p= n.s.$
	Self-efficacy	$F = 26.25, p<.001$	$F = .14, p= n.s.$	$F = .30, p= n.s.$
	Cooperation and communication	$F = 27.05, p<.001$	$F = 1.95, p= n.s.$	$F = .18, p= n.s.$
	Self-awareness	$F = 28.30, p<.001$	$F = .89, p= n.s.$	$F = .01, p= n.s.$
	Goals and aspiration	$F = 24.20, p<.001$	$F = 1.82, p= n.s.$	$F = 1.70, p= n.s.$

SEC = Social Emotional Competence

Gender presents a significant main effect for all Social and Emotional Competence Subscales, in case of drunkenness [*Empathy*: boy ( $M=.24$ ;  $SD=1.22$ ), girl ( $M=.06$ ;  $SD=.98$ )]; [*Communication and cooperation*: boy ( $M=.25$ ;  $SD=1.22$ ), girl ( $M=.06$ ;  $SD=.99$ )]; [*Goals and aspirations*: boy ( $M=.25$ ;  $SD=1.22$ ), girl ( $M=.05$ ;  $SD=.98$ )]; [*Self-Awareness*: boy ( $M=.24$ ;  $SD=1.21$ ), girl ( $M=.05$ ;  $SD=.98$ )]; [*Self-efficacy*: boy ( $M=.24$ ;  $SD=1.22$ ), girl ( $M=.06$ ;  $SD=.98$ )]; [*Problem solving*: boy ( $M=.24$ ;  $SD=1.22$ ), girl ( $M=.06$ ;  $SD=.99$ )] and illicit drugs use [*Empathy*: boy ( $M=.18$ ;  $SD=1.33$ ), girl ( $M= -.05$ ;  $SD=.88$ )]; [*Communication and cooperation*: boy ( $M=.19$ ;  $SD=1.34$ ), girl ( $M= -.05$ ;  $SD=.88$ )]; [*Goals and aspirations*: boy ( $M=.18$ ;  $SD=1.33$ ), girl ( $M= -.05$ ;  $SD=.88$ )]; [*Self-Awareness*: boy ( $M=.17$ ;  $SD=1.31$ ), girl ( $M= -.05$ ;  $SD=.88$ )]; [*Self-efficacy*: boy ( $M=.18$ ;  $SD=1.34$ ), girl ( $M= -.05$ ;  $SD=.88$ )]; [*Problem solving*: boy ( $M=.19$ ;  $SD=1.34$ ), girl ( $M= -.04$ ;  $SD=.88$ )] (see Table II).

## Discussion

The aim of the present study was to explore relationships between social and emotional competence and past 30-day substance use in adolescence. Results showed that adolescents that report no tobacco and



illicit drug use report higher levels of social and emotional competences. With respect to illicit drug use, data confirm that the adolescents who report no past 30-day illicit drug use also report greater competence in each of the six social-emotional subscales. For smoking, significant differences were limited to empathy, cooperation and communication, and goals and aspirations. Problem solving and self-efficacy were not statistically significant and in fact non-significant differences were in the opposite direction: adolescents that reported higher problem solving and self-efficacy skills reported higher levels of tobacco consumption. This suggests the potential importance of peer influence and social acceptance, which are well reported contributors to adolescent substance use (Ikiz and Cakar, 2010).

There were no significant differences in any of the six social and emotional competence subscales and drunkenness. Interestingly the same pattern was observed in which positive problem solving and self-efficacy were non-significantly correlated with higher levels of drunkenness. This pattern of findings suggests that prevention efforts may want to be tailored to specific substances.

Analyses demonstrated that social and emotional competence did not moderate the relation between substance use and gender. It is unclear why this may have been the case. Perhaps other factors need to be taken into account. For example the school context (peer group) and social environment in which the adolescent is integrated has been identified as the most consistent predictor of substance use in adolescence (Kuntsche and Jordan, 2006), highlighting the need to explore the behaviors associated with these specific contexts. In addition, the motivations and the perceptions of belonging to a culture or group are other consistent predictors of substance use that need to be further analyzed. These are crucial in order to enhance the prevention of behaviors that are harmful to one's health (Filho and Ferreira-Borges, 2008; Bachman, et al, 2008).

Study findings suggest the importance of considering social and emotional competence as a potential contributor to substance use in addition to other personal characteristics, parental, and peer relationship factors (Simões, 2007; Filho and Ferreira-Borges, 2008). Future longitudinal research confirming study findings may prove critical in establishing adolescent substance use prevention programs which focus in part upon promoting social and emotional competence (Matos, 2009; Schenker and Minayo, 2005).

Study findings should be considered in the light of limitations. The first concerns the self-report nature of the surveys. Self-reported data depends on selective memory and other types of reporter bias. Future studies should consider including multi-method approaches to the assessment of both social-emotional competence and substance use. Such a research strategy would greatly improve the validity of study findings. A second limitation is related to study generalizability. Although a great strength of the study is that it is among the first to demonstrate the association between social-emotional competence and substance use in Portugal, current findings cannot be generalized beyond Portugal and the culturally specific values and beliefs related to the variables being studied. A third limitation is the cross-sectional nature of the study design, which renders it impossible to make any definitive conclusions regarding causation. Specifically, it is not

possible to determine whether social-emotional competence predicts substance use or vice versa. Future, longitudinal studies are necessary to inform the field in this regard.

Despite limitations, the current study contributes to the field of global adolescent substance use. It is among the first to demonstrate relations between social-emotional competence and adolescent substance use in Portugal. Should future longitudinal studies confirm these relationships they would have implications for the ultimate development and implementation of adolescent substance use prevention programs in this country.

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### **References**

- Austin, G., and Kilbert, G. (2000). *Healthy Kids Resilience Module Report*. California: California Healthy Kids Program Office WestEd.
- Bachman, J.G., O'Malley, P.M., Schulenberg, J.E., Johnston, L.D., Freedman, P., and Messerschmith, E.E. (2008). *The education-drug use connection. How successes and failures in school relate to adolescent smoking, drinking, drug use, and delinquency*. New York, Lawrence Erlbaum Associates.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*  
Retrieved 20-09-2011 from [www.findarticles.com](http://www.findarticles.com)
- Benard, B. (2004). *Resiliency: What have we learned?* San Francisco: WestEd.
- California Healthy Kids Survey (CHKS). (2000). *Resilience Module*. Los Alamitos: California Department of Education (Safe and Healthy Kids Program Office) and WestEd (Health and Human Development Department).
- Corte, C., and Zucker, R. A. (2008). Self-concept disturbances: Cognitive vulnerability for early drinking and early drunkenness in adolescents at high risk for alcohol problems. *Addictive Behaviors*, 33(10), 1282–1290.
- Currie, C., Molcho, M., Boyce, W., Holstein, B., and Torsheim, T. (2008). Researching health inequalities in adolescents: the development of the health behaviour in school-aged children (HBSC) family affluence scale. *Social Science and Medicine*, 66(6), 1429–1436.
- Currie, C., Roberts, C., Morgan, A., and Smith, R. (2004). Young people's health in context: international report from the HBSC 2001/02 survey. In *WHO policy series: Health policy for children and adolescents*. Copenhagen: WHO regional office for Europe.
- Currie, C., Samdal, O., Boyce, W., and Smith, B. (2001). *Health behaviour in school-aged children: AWHO*

- cross-national study*. Research protocol for the 2001/2 survey. Edinburgh, Scotland: Child and Adolescent Health Research Unit (CAHRU), University of Edinburgh.
- Epstein, M. K., Renk, K., Duhig, A. M., Bosco, G. L., and Phares, V. (2004). Interparental conflict, adolescent behavioral problems, and adolescent competence: Convergent and discriminant validity. *Educational and Psychological Measurement*, 64(3), 475–495.
- Filho, H.C. and Ferreira-Borges, C. (2008). *Uso de Substâncias: Álcool, Tabaco e outras Drogas*. Lisboa: Coisas de Ler.
- Goleman, D. (1997). *Inteligência emocional*. Lisboa: Temas e Debates.
- Grotberg, E. H. (1997). The international resilience project. *Annual Convention , International Council of Psychologists*. Retrieved 20-06-2011 from <http://resilnet.uiuc.edu/library/grotb98a.html>
- Hanson, T. L., and Kim, J.-O. (2007). *Measuring resilience and youth development: the psychometric properties of the Healthy Kids Survey* (Issues and Answers Report, REL 2007-No. 034). Retrieved 20-06-2011 from <http://ies.ed.gov/ncee/edlabs>
- Harter, S. (1999). *The construction of the self: A developmental perspective*. New York: The Guilford Press.
- Ikiz, F. E., and Cakar, F. S. (2010). Perceived social support and self-esteem in adolescence. *Procedia – Social and Behavioral Sciences*, 5, 2338-2342.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., and Schulenberg, J. E. (2008). *Monitoring the future: National results on adolescent drug use. Overview of key findings, 2008*. Bethesda, MD: National Institute on Drug Abuse.
- Kumpfer, K. L. (1999). Factors and processes contributing to resilience: The resilience framework. In M. D. Glantz and J. L. Johnson (Eds.), *Resilience and development: Positive life adaptations* (pp. 179-224). New York: Klumer Academic / Plenum Publishers.
- Kuntsche, E., and Jordan, M. D. (2006). Adolescent alcohol and cannabis use in relation to peer and school factors: Results of multilevel analyses. *Drug and Alcohol Dependence*, 84, 167-174.
- Martins, M.H. (2007). In actas do II Congresso Família, Saúde e Doença - Modelos, Investigação e Prática em diversos contextos de Saúde. “Resiliência: Para além da adversidade e do risco!”. Universidade do Minho: Braga.
- Masten, A. S., Burt, K. B., and Coatsworth, J. D. (2006). Competence and psychopathology in development. In D. Cicchetti, and D. Cohen (Eds.), *Developmental psychopathology, Vol. 3: Risk, disorder, and adaptation (2<sup>nd</sup> ed)*. New York: Wiley.
- Masten, A. S., and Coatsworth, J. D. (1995). Competence, resilience, and psychopathology. In D. Cicchetti, and D. J. Cohen (Eds.), *Developmental psychopathology, Vol. 2: Risk, disorder, and adaptation*. Oxford, England: Wiley.

- Masten, A. S., Hubbard, J. J., Gest, S. D., Tellegen, A., Garmezy, N., and Ramirez, M. (1999). Competence in the context of adversity: Pathways to resilience and maladaptation from childhood to late adolescence. *Developmental Psychology*, *11*, 143-169.
- Matos, M. G., and Sampaio, D. (Eds.). (2009). *Jovens com Saúde: Diálogo com uma geração*. Lisboa: Texto.
- Matos, M.G.; Simões, C.; Tomé, G.; Camacho, I.; Ferreira, M.; Ramiro, L.; Reis, M., and equipa Aventura Social (2011). *A Saúde dos Adolescentes Portugueses – Relatório do Estudo HBSC 2010*. ACS/FMH/UTL/CMDT-UNL.
- Morin, A. (2006). Levels of consciousness and self-awareness: A comparison and integration of various neurocognitive views *Consciousness and Cognition*, *15*(2), 358-371.
- Munist, M., Santos, H., Kotliarenco, M. A., Ojeda, E. N. S., Infante, F., and Grotberg, E. H. (1998). *Manual de identificación y promoción de la resiliencia en niños y adolescentes*. Washington: Organización Panamericana de la Salud - Organización Mundial de la Salud.
- Parker, G. R., Cowen, E. L., Work, W. C., and Wyman, P. A. (1990). Test correlates of stress resilience among urban school children. *Journal of Primary Prevention*, *11*(1), 19-35.
- Rutter, M. (1985). Resilience in the face of adversity: Protective factors and resistance to psychiatric disorder. *British Journal of Psychiatry*, *147*, 598–611.
- Schenker, M., and Minayo, M. (2005). Factores de risco e de protecção para o uso de drogas na adolescência. *Ciência and Saúde Coletiva*, *10*, 707-717.
- Sheldon, K. M., and Kasser, T. (2001). Goals, Congruence, and Positive Well-Being: New Empirical Support for Humanistic Theories. *Journal of Humanistic Psychology*, *41*(1), 30-50.
- Simões, C. (2007). *Comportamentos de risco na adolescência*. Lisboa: Fundação Calouste Gulbenkian/Fundação para a Ciência e Tecnologia.
- Simões, C. (2007b, July). *Facing the adversity: the role of personal and social competences on well-being*. Communication presented at 3<sup>rd</sup> ESRA Conference, Warsaw.
- Simões, C., Matos, M. G., Tomé, G., Ferreira, M., Diniz, J. A., and Equipa do Projecto Aventura Social (2009). *Risco e Resiliência em adolescentes com NEE: Da teoria à prática*. Lisboa: Aventura Social e Saúde/Faculdade de Motricidade Humana.
- Skinner, E. A. (1995). *Perceived control, motivation, and coping*. Thousand Oaks, CA: Sage.
- Stein, J. A., and Newcomb, M. D. (1999). Adult Outcomes of Adolescent Conventional and Agentive Orientations: A 20-Year Longitudinal Study. *The Journal of Early Adolescence* *19*(1), 39-65.
- Tims, F. M., Dennis, M. L., Hamilton, N., Buchan, B. J., Diamond, G., Funk, R., et al. (2002). Characteristics and problems of 600 adolescent cannabis abusers in outpatient treatment. *Addiction*, *97*(Suppl 1), 46–57.
- Trinidad, D. R., and Johnson, C. A. (2002). The association between emotional intelligence and early

- adolescent tobacco and alcohol use. *Personality and Individual Differences*, 32(1), 95-105.
- Werner, E. E., and Smith, R. S. (2001). *Journeys from childhood to midlife: Risk, resilience and recovery*. New York: Cornell University Press.
- Windle, M. (2003). Alcohol use among adolescents and young adults. *Alcohol Research and Health*, 27(1), 79 - 86.
- World Health Organization (WHO) (Ed.). (2002). *The world health report 2002 - Reducing risks, promoting healthy life*. Geneva: World Health Organization (WHO).
- World Health Organization (WHO) (2009). *WHO report on the global tobacco epidemic, 2009: implementing smoke-free environments*. ISBN 978 92 4 156391 8.
- World Health Organization (WHO) (2011). *Global status report on alcohol and health*. Geneva: World Health Organization (WHO).