

## **RISK BEHAVIORS IN PORTUGUESE ADOLESCENTS: AN EXPLANATORY MODEL**

Inês Camacho, Margarida Gaspar de Matos, Celeste Simões, Gina Tomé and José Diniz.

Technical University of Lisbon and CMDT/ Institute of Hygiene and Tropical Diseases, Lisbon Portugal

### **ABSTRACT**

**Objective:** *The goal of the present study was to analyse the influence and the impact of parents and the peer group in substance consumption and violence, while having as mediators health, well-being and school.*

**Research Design:** *Exploratory study*

**Place and Duration of Study:** *Questionnaires were administered in Portugal schools across the country during January, 2010*

**Sample and Method:** *The sample comprised of individuals that took part in Portuguese survey integrated in the European study HBSC-Health Behaviour in School-aged Children. The study included a total of 5050 students of Portuguese public schools that attended the 6<sup>th</sup>, 8<sup>th</sup> and 10<sup>th</sup> grades, with an average age of 14 years.*

**Results:** *The results showed that substance consumption and violence are defined by several factors – which are influenced by the relationship with family and friends - such as health, well-being and school satisfaction. School satisfaction proved to be a protective factor regarding the behaviours of risk studied. The ability to communicate with parents revealed itself as a predictor of well-being and in the satisfaction with school.*

**Conclusion:** *The results point out the importance of communication with parents for health and well-being of children and their satisfaction in the satisfaction with school and the role of these factors in substance consumption and violence.*

---

**Key Words:** *Family; friends; health; well-being, risk behaviours; adolescents*

---

## INTRODUCTION

The way that each adolescent connects with family, school, friends, the way he lives each and every physical and psychological change, and the involvement, or not, in risk behaviours is unique. Since we can establish many reasons that might influence adolescents to adopt risk behaviour instead of healthy behaviours, it is essential to understand what guides these youngsters in the adoption of behaviours of risk in order to adjust the politics of intervention.

The positive relationships in the family, the social and emotional support from parents and a constructive and consistent parental style of discipline are related with higher rates of well-being and adjustment in adolescence<sup>1,2</sup> and a lower involvement in misleading peer groups and risk behaviours<sup>3,4</sup>.

Family and its factors influence education, sociability, beliefs and values of youngsters, health and well-being<sup>5</sup>. Good communication with parents and friends is the essential condition for a good relationship with both, maintaining a balance in the development of the adolescent<sup>6</sup>. Friends have a fundamental role in the development in the adolescence and, like family; they can also act as a protective factor, but also of risk.

---

<sup>1</sup> Field, T., Diego, M., & Sanders, C. (2002). Adolescents' parents and peer relationship. *Adolescence*, 37 (145), 121-129.

<sup>2</sup> Branje, S., Van Aken, M., & Van Lieshout, C. (2002). Relational support in families with adolescents. *Journal of Family Psychology*, 16 (3), 351-362.

<sup>3</sup> Mounts, N. (2002). Parental management of adolescent peer relationships in context: the role of parenting style. *Journal of Family Psychology*, 16 (1), 58-89.

<sup>4</sup> Ardel, M., & Day, L. (2002). Parents, siblings, and peers: close social relationships and adolescent deviance. *Journal of Early Adolescence*, 22 (3), 310-349.

<sup>5</sup> Braconnier, A., & Marcelli, D. (2000). *As mil faces da adolescência*. Lisboa: Climepsi.[The thousand faces of adolescence].

<sup>6</sup> Matos, M., & Social Adventure Team (2006). *A saúde dos adolescentes Portugueses – Hoje e em 8 anos – Relatório Preliminar do estudo HBSC 2006*. Web site: [www.fmh.utl.pt/aventurasocial.com](http://www.fmh.utl.pt/aventurasocial.com). [The health of adolescents Portuguese - Today and in 8 years - Preliminary Report of the 2006 HBSC study]

In his study, Turner<sup>7</sup> refers to the positive effects of social support from peers in self-efficacy, self-esteem and *locus* of youngsters' control, which are particularly important to their health. Associated to a good relationship with peers, we point out a good level of social and scholarly adaptation, high academic performance, personal satisfaction, lower incidence of psychopathological disturbances.

Besides a good relationship with family and the integration in a peer group without the involvement in risk behaviours, a good relationship with school appears to have a protective role in the involvement in risk behaviours namely in the consumption of substances during adolescence. Piko and Kovács<sup>8</sup> have verified that good academic results provide a feeling of success, helping the youngster to avoid an association with risk behaviours, such as substance consumption<sup>9</sup> and violence<sup>10</sup> and influences positively the connection to school and teachers. An American study with the same purpose verified that adolescents who had no connection to school were those who presented more physical symptoms<sup>11</sup>.

In another study carried out in 2005, with a sample of 7,033 youngsters, from 5<sup>th</sup> to 10<sup>th</sup> grade, concluded that having a good relationship with parents and

---

<sup>7</sup> Turner, G. (1999). Peer support and young people's health. *Journal of Adolescence*, 22 (4), 567-572.

<sup>8</sup> Piko, F., & Kovács, E. (2010). Do parent and school matter? Protective factors for adolescent substance use. *Addictive Behaviors*, 35, 53-56.

<sup>9</sup> Shochet, L., Smyth, T., & Homel, R. (2007). The impact of parental attachment on adolescence perception of the school environment and school connectedness. *Australian and New Zeland Journal of Family Terapy*, 28(2).109-118.

<sup>10</sup> Chapman, R., Buckley, L., Sheehan, M., Shochet, I., & Romaniuk, M. (2011). The impact of school connectedness on violent behavior, transport risk-taking behavior, and associated injuries in adolescence. *Journal of School Psychology*, 3, 156-165.

<sup>11</sup> Bonny, A., Britto, M., Klostermann, B., Hornung, R., & Slap, G. (2000). School disconnectedness: Identifying adolescents at risk. *Pediatrics*, 106, 1017-1021.

enjoying school emerge as protective factors in the use of guns among adolescents<sup>12</sup>, which highlights the importance of these two contexts.

Experiences lived in school do not affect only the academic performance, but also the influence in social and emotional development of adolescents. Studies suggest that the involvement and the discipline in school influence the well-being and life satisfaction<sup>13</sup>.

Parents are an important resource for the emotional development of adolescents, helping them to explore social contexts and forming closer friendships. Positive social relationships, inside and outside of the family, promote positive experiences and the healthy development of adolescents.

The issues that have been mentioned served as a base to the development of an explicative model of risk behaviours in adolescence. This model proposes:

1. Family presents a negative impact regarding symptoms (greater easiness in communicating with parents, lower frequency of symptoms) and a positive impact in well-being and in satisfaction with school (greater easiness in communicating with parents, higher signs of well-being and satisfaction with school).
2. Friends have a negative impact regarding symptoms (greater easiness in communicating with friends, lower frequency of symptoms and higher will be the signs of well-being and the satisfaction with school).
3. Physical and psychological symptoms present a negative impact regarding the well-being (the higher the frequency of physical and psychological symptoms, the lower will be the signs of well-being).
4. The well-being presents a negative impact in the substance consumption and in violence (the higher the signs of well-being, the lower will be the rates of substance consumption and the signs of violence).
5. School presents a positive impact regarding the well-being and a negative impact in health and in behaviours of risk (higher satisfaction with school

---

<sup>12</sup> Henrich, C., Brookmeyer, K., & Sahar, G. (2005). Weapon violence in adolescence: parent and school connectedness as protective factors. *Journal of Adolescent Health, 37*, 306-312.

<sup>13</sup> Saab, H., & Kingler, D. (2010). School differences in adolescent health and wellbeing: Findings from the Canadian Health Behaviour in School-aged Children Study. *Social Science and Medicine, 70*, 850-858.

higher will be the signs of well-being and lower will be the frequency of symptoms and of risk behaviours).

6. Substance consumption presents a positive impact in violence (higher the substance consumption, higher will be the rates of violence).

## **METHOD**

### ***Sample***

The sample used in this study comprised of individuals that took part in the Portuguese study that integrates the European study HBSC-Health Behaviour in School-aged Children carried out in Portugal in 2010.

The aim of the study is to achieve a new and expanded understanding of health behaviour among adolescents, health and well-being in their social context, through the gathering of data that allow for national and international comparisons to achieve this objective<sup>14</sup>.

The Portuguese study includes students from 6<sup>th</sup>, 8<sup>th</sup> and 10<sup>th</sup> grades of public school with an average of 14 years old ( $SD=1.85$ ). The national sample consisted in 5050 students from 256 classes, from 125 Portuguese schools selected randomly. Regarding gender distribution: 52.3% were girls and they were distributed thus: 30.8% in 6<sup>th</sup> grade, 31.6% in 8<sup>th</sup> grade and 37.6% in 10<sup>th</sup> grade. The response rate was 89.9%.

### ***Procedure***

The unity of analysis used in this study was the class. The teachers administered the questionnaires in the classroom. The participation of the students was voluntary. The study occurred in January, 2010. This study was approved by the the scientific committee, an ethical national committee and the Portuguese data protection authority.

---

<sup>14</sup> Roberts, C., Currie, C., Samdal, O., Currie, D., Smith, R., & Maes, L. (2007). Measuring the health behaviours of adolescents through cross-national survey research: recent developments in the Health Behaviour in School-aged Children (HBSC) study. *Journal of Public Health*, 15(3), 179-186.

### ***Measures***

#### **HBSC Questionnaire**

**HBSC Questionnaire**<sup>15</sup> assesses the relationship with family which is evaluated through the easiness that youngsters have in communicating with parents. The relationship with friends was evaluated through the easiness that youngsters have in communicating with friends (best friend, friend of the same gender and friend of the other gender).

#### **Cantril Scale**

The satisfaction with life (LS) was evaluated with the Cantril<sup>16</sup> scale, graphically represented like a scale, where the degree “10” corresponds to “better life possible” and the degree “0” represents “worse life possible”; it was requested that the adolescents marked the degree that better described their feelings on that precise moment.

The satisfaction with family (FS) was equally evaluated with the Cantril (1965) scale, graphically represented like a scale, where the degree “10” corresponds to “very good relationship” and the degree “0” represents “very bad relationship”

Physical and psychological symptoms were evaluated through the question: in the last 6 months, with what frequency did you feel: headaches, pain in the stomach, pain in the back, pain in the neck and shoulders, tiredness, dizziness, fear, being nervous, difficulty in sleeping and being sad and annoyed. They were also questioned on how they think their health is.

Regarding the happiness of youngsters, they were questioned about their feelings towards life (options of answer: I feel very happy; I feel happy; I feel little happy; I feel miserable).

---

<sup>15</sup> Currie, C., Roberts, C., Morgan, A., Smith, R., Settertubtle, W., Samdal, O., & Rasmussen, V. (2004). *HBSC, and WHO cross national study: research protocol for the 2001/2002 survey*. Copenhagen: WHO.

<sup>16</sup> Cantril, H. (1965). *The pattern of human concerns*. New Brunswick, NJ: Rutgers University Press.

Concerning school, the aim was to learn whether adolescents like school and if they feel that it is boring.

Violence was evaluated through a scale comprised of three items (How many times did you participate in provocation towards other students in last two months?; In the last 12 months, how many times were you involved in a fight?).

To evaluate substance consumption, a scale was prepared, comprised of three items (Have you ever got drunk?; How many times do you smoke tobacco; and How many times did you consume illicit drugs in the last month?).

The family factor was comprised of the easiness indicators in communicating with the mother and the father. The friends' factor was comprised of the indicators of communicating with the best friends, same gender and different gender.

The symptoms' factor was comprised of physical and psychological symptoms. The well-being factor was comprised of indicators of health, happiness, satisfaction with the relationship with family and the satisfaction with life.

The substance consumption factor was comprised of the indicators drugs consumption in the last month, frequency of tobacco usage and drunkenness. The violence factor was comprised of the indicators provoke others and fights in the last 12 months.

### ***Statistical Analysis***

To test the explicative model that we propose, the Structural Equations Modelling, SEM was used. The modelling of structural equations allows evaluating the quality of mediation of an assemblage of variables used to measure a latent construct (structural model). To evaluate the quality of a collection of variables, such as indicators of a latent construct, a confirmatory factorial analysis was used. To perform this analysis the statistical programme EQS, Structural Equation Modelling Software, version 6.1., was used.

Before the analysis of the global model (structural model), it is necessary to test the model partially, through a confirmatory factorial analysis. Three models of measurement were tested: the independent model of mediation that

tested the quality of measurement of the independent latent variables –family and friends. The mediator model of measurement that tested the quality of mediation of the mediators’ latent variables – symptoms, well-being, satisfaction with school. And the dependent model of measurement that tested the quality of measurement of the dependent latent variables – substance consumption and violence. The analysis of the measurement models let to the elimination of some indicators (totally, three indicators that presented saturations inferiores to 50) and the introduction of co-variances between errors of measures (totally, three co-variances between errors of measures in the mediator model of measurement). For every measurement model it were obtained good rates of adjustment (CFI e NNFI>.95; RMSEA e RMR<.05).

## RESULTS

The obtained results regarding the adjustment of the explicative model proposed (see figure 1) showed that these present a weak level of adjustment (see Chart 1 – 1<sup>st</sup> stage). The analysis of the LM test (Lagrange Multiplier test) showed that the introduction of co-variances between measurement errors of the variables “headache” and “back pain” and the variables “communication with a friend of the other sex” and “communication with friends of the same sex” have conducted to a significant decrease in the value of qui-square. For this reason, these parameters were included in the model.

The achieved results in the Wald Test showed the necessity to remove the error of some variables, namely “headache” and “back pain”, and the error associated to the variables “communication with a friend of the other sex” and “communication with friends of the same sex”. We corrected the model (Chart 1- 2<sup>nd</sup> Stage).

**Table 1**  
**Indices fit of the structural model**

	$\chi^2 (g.l)^1$	$CFI^2$	$NNFI^2$	$RMSEA(90\% I.C)^2$	$SRMR$
Stage 1	1627.57*** (258)	.893	.878	.039(.037 - .041)	.041
Stage 2	1180.70*** (308)	.0915	.902	.036 (.034 -.038)	.037

1- *Scaled Chi-Square (Yuan-Bentler)* , 2- *Robus*, \*\*\*  $p \leq .001$

Stage 1-step model proposed, Stage 2-elimination of parameters / Final model

The procedures performed throughout the two stages have conducted to better rates in the structural adjustment. We verify that in the last stage (final model), the adjustment rates CFI (Comparative Fit Index) and NNFI (Bentler-Bonett Nonnormed Fit Index) are superior to .90 and that the adjustment rates RMSEA (Root Mean Square Error Approximation) and SRMR (Standardized Root Mean Square Residual) are inferior to .05, which indicates that the model presents a good adjustment<sup>17</sup>.

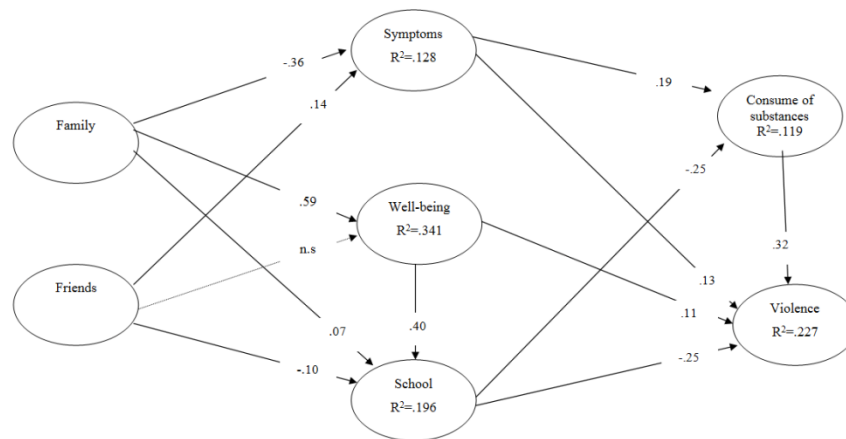
The standardized solution obtained (see *beta* coefficients presented in Figure 1) allow us to verify that the factors with the higher impact regarding substance consumption is school ( $\beta = -.25$ ) and health ( $\beta = .19$ ). The *beta* coefficient associated to this connection allows us to confirm that with a higher satisfaction with school, lower will be the substance consumption. The frequency of symptoms is higher, more frequent will be the substance consumption.

The factors with the highest impact in violence are the substance consumption ( $\beta = .32$ ), school ( $\beta = -.25$ ), health ( $\beta = .13$ ) and the well-being ( $\beta = .11$ ). The positive *beta* coefficients allow us to confirm that with a higher frequency of substance consumption and the symptoms, higher will be the signs of violence. The negative *beta* coefficient associated allows us to confirm that a lower satisfaction with school is associated to higher rates of violence.

It was verified that concerning health, the factor with the biggest impact is family ( $\beta = -.36$ ), followed by friends ( $\beta = .14$ ), what allow us to confirm that the difficulty of communicating with parents is associated to a highest frequency of symptoms. Regarding friends, a good communication with them appears to be associated to a higher incidence in symptoms. Concerning the well-being, the only factor that has impact is the family ( $\beta = .59$ ), which allow us to confirm that a good communication with the family is associated to a better well-being. Regarding school, the factors that have the biggest impact are the well-being ( $\beta = .40$ ), followed by friends ( $\beta = -.10$ ). A better well-being tolerates a better satisfaction with school. Regarding friends (negative *beta*), we can state that a good communication with friends implies a lower satisfaction with school.

---

<sup>17</sup> Bentler, P. M. (1995). *EQS Structural Equations Program Manual*. Encino, CA. Multivariate Software

**Image 1** – Model of consume of substances

The 2<sup>nd</sup> Chart presents the explained variance and the value of the disturbance. Regarding the explained variance, we can confirm that health and school constitute about 12% of the variance concerning the factor of substance consumption. Regarding the factor violence, the factors that have more impact (health, well-being, school and substance consumption) constitute about 22.7% of the variance. Concerning the mediator factors, it is verifiable that family and friends explain 13% of the health factor and 59% of the well-being variance is explained by family. The well-being, family and friends explain about 20% of the satisfaction with school variance.

**Table 2**

**Variance explained (R<sup>2</sup>) and residual error (Disturbance) of dependent factors.**

Factor	R <sup>2</sup>	Disturbance
Symptoms	.128	.934
Well-being	.341	.812
School	.196	.897
Consume of substances	.119	.939
Violence	.227	.879

It is verifiable a positive and significant correlation, yet weak, between family and friends ( $r=.211^*$ ).

## DISCUSSION

The results of this study appear to demonstrate that family and friends are associated to factors that might inhibit or induce the involvement in risk behaviours.

The substance consumption is the most important regarding violence. They are many studies that demonstrate that substance consumption appears to be associated to violent behaviours, such as provocation, involvement in fights and the use of guns<sup>18</sup>.

Symptoms arose as a positive impact in both risk behaviours, what denotes that the existence of physical and psychological symptoms emerges as a factor of risk in substance consumption<sup>19</sup>. Some studies refer that substance consumption constitutes a way to release stress and other symptoms of uneasiness<sup>20</sup>. Regarding the well-being, it is showed surprising positive impact in violence; since literatures refers that a better well-being emerges as a protective factor in behaviour problems among youngsters<sup>21</sup>.

---

<sup>18</sup> Fetro, J., Coyle, K., & Pham, P. (2001). Health-risk behaviors among middle school students in a large majority-minority school district. *The Journal of School Health*, 71(1), 30-37.

<sup>19</sup> Simões, C., Matos, M., & Batista-Foguet, J. (2008). Consumo de Substâncias na adolescência: revisão de um modelo explicativo. In M. Matos (Eds) *Consumo de Substâncias: Estilo de Vida? À Procura de um estilo?*. Pp 303- 318. Lisboa: IDT [Consumption of substances in adolescence: a review of an explanatory model. Substance Consumption: Lifestyle? Looking for style?]

<sup>20</sup> Matos, M., & Social Adventure Team (2003). *A Saúde dos Adolescentes Portugueses (Quatro anos depois)*. Lisboa:Edições FMH.[The Adolescent Health Portugueses (four years later)]

<sup>21</sup> Suldo, S., & Huebner, E. S. (2006). Is extremely high life satisfaction during adolescence advantageous? *Social Indicators Research* , 78, 179-203.

The satisfaction with school has presented a negative impact in the risk behaviours. These results show, as seen in other studies, that school constitutes a protective factor in risk behaviours<sup>22,23</sup>

It is important to point out the existence of a positive impact of the well-being concerning school, a result seen in another study developed by Suldo and Huebner, in 2006<sup>24</sup> that refers that adolescents with higher levels of satisfaction towards life keep more positive relationships with peers and with their parents.

Family is highlighted by its negative impact regarding symptoms (the easier the ability to communicate with their parents, the lower will be the frequency of physical and psychological symptoms), what suggests that this context constitutes an important protective factor towards physical and psychological symptoms. Family presents a strong impact in the well-being, but also in school. These results have been seen in other studies, which refer that a good relationship with family is a major factor of the global adjustment of adolescents<sup>25</sup>.

Friends demonstrate to have a positive impact in symptoms (a better communication with friends, a higher frequency in the symptoms) and a negative impact in school. Some studies refer that a good relationship with friends is negatively associated to symptoms of uneasiness<sup>26</sup>. A good relationship with

---

<sup>22</sup> Piko, F., & Kovács, E. (2010). Do parent and school matter?. Protective factors for adolescent substance use. *Addictive Behaviors*, 35, 53-56.

<sup>23</sup> Chapman, R., Buckley, L., Sheehan, M., Shochet, I., & Romaniuk, M. (2011). The impact of school connectedness on violent behavior, transport risk-taking behavior, and associated injuries in adolescence. *Journal of School Psychology*, 3, 156-165.

<sup>24</sup> Suldo, S., & Huebner, E. S. (2006). Is extremely high life satisfaction during adolescence advantageous? *Social Indicators Research*, 78, 179-203.

<sup>25</sup> Branje, S., Van Aken, M., & Van Lieshout, C. (2002). Relational support in families with adolescents. *Journal of Family Psychology*, 16 (3), 351-362.

<sup>26</sup> Woods, S., Done, J., & Kalsi, H. (2009). Peer victimisation and internalising difficulties: The moderating role of friendship quality. *Journal of Adolescence*, 32, 293-308.

friends has a negative impact in the satisfaction with school. The same was verified in a study developed in 2008<sup>27</sup>. Subsequent studies will be necessary to evaluate the type of friends and the quality of friendship to understand in detail these relationships.

It is essential to perform interventions in the area of prevention with younger adolescents with the aim of preventing risk behaviours, but, also, with older adolescents to prevent the increase of substance consumption rates. An intervention that involves all the participants (adolescent, family, friends and school), that promotes protective factors of the risk behaviours, such as the relationship with family and school become essential to an adjusted development of the adolescent, with higher rates of well-being and satisfaction with life.

---

<sup>27</sup> Simões, C., Matos, M., & Batista-Foguet, J. (2008). Consumo de Substâncias na adolescência: revisão de um modelo explicativo. In M. Matos (Eds) Consumo de Substâncias: Estilo de Vida? À Procura de um estilo? . Pp 303- 318. Lisboa: IDT [Consumption of substances in adolescence: a review of an explanatory model. Substance Consumption: Lifestyle? Looking for style?]