



Prediction of Risk Behaviours among Turkish Adolescents *

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Abstract

This study aims to investigate to what extent the variables of social support, internalizing behaviours and academic achievement predict adolescent risk behaviours. The sample population consists of 491 high school students in grades 9, 10, 11 and 12 who were randomly selected out of 6 different high schools in Ankara. Our data collection instruments include the Risk Behaviours Scale (Gençtanırım & Ergene, 2014), the Youth Self Report for 11-18 Year-Old Adolescents (Erol & Şimşek, 1998), the Perceived Social Support Scale (Yıldırım, 2004), and a personal information form. We employed a structural equation model (SEM) to determine the strength of independent variables to predict the risk behaviours in question. Results indicated the significance of the model developed to predict adolescent risk behaviours. Accordingly, adolescent risk behaviours were significantly predicted by social support, rather than academic achievement and internalizing behaviours.

Keywords

Adolescent
Risk behaviours
Social support
Internalizing
Academic achievement

Article Info

Received: 03.29.2016
Accepted: 02.01.2017
Online Published: 02.21.2017

DOI: 10.15390/EB.2017.6354

Introduction

Adolescence is a milestone in human growth and development as a turbulent period of transition from childhood to adulthood characterized by coexistent changes. According to the World Health Organization, adolescence comprises a period of development between the ages of 10 and 19 years (The World Health Organization [WHO], 2009). It is stated that half of the world's population is under the age of 25 and about one billion of this population consists of young people between the ages of 10 and 19 years (United Nations Population Fund [UNFPA], 2007; United Nations World Youth Report [UNYR], 2007). The population of adolescents in Turkey is about 13 millions, in other words, adolescents make up 17 percent of the population of Turkey (Turkish Statistical Institute [TÜİK], 2013).

Adolescence is a critical period of life in which a great deal of biological, psychological, and social changes occur. These changes can affect the behaviours of adolescents in a positive or negative way in the subsequent development phases (Reininger et al., 2003). One of the negativities frequently encountered in adolescence is the increase in risk behaviours. Risk behaviours such as anti-social behaviours, drug use, suicide, are seen in adolescence as compared to the other developmental stages (Bonino, Cattelino, & Ciairano, 2005; Richter, 2010; Somayaji, 2003). Risk behaviours are defined as "health- and life-threatening behaviours that may result in disease, injury and casualties" (Smith, 2001). Jessor (1998) defines risk behaviours as "risk factors for undesirable personal, social or developmental outcomes". According to another definition, risk behaviours are "volitional involvement in established

* This study was generated from a doctoral thesis titled "Prediction of risk behaviours among Turkish adolescents".

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patterns of behaviour that threaten the well-being of teens and limit their potential for achieving responsible adulthood" (Lindberg, Boggess, Porter, & Williams, 2000). Risk behaviours can threaten the lives of adolescents seriously in physical, psychological, and psychosocial ways (Cleary, 2000). According to Sun (2001), risk behaviours may lead to school problems, failure and health-related risks among adolescents. Therefore, an increased awareness is essential for both adolescents and their parents, teachers, and school counsellors at their schools. Previous research on this topic generally focus on the definition of factors that cause and correlate with adolescent risk behaviours (Cleveland & Wiebe, 2003; Donovan, 2005; Jessor et al., 2003; Kokkevi, Richardson, Florescu, Kuzman, & Stergar, 2007; Kreiter et al., 1999; Sienbenbruner, Zimmer-Gembeck, & Egeland, 2007; Siyez, 2006).

According to the Problem-Behaviour Theory (PBT), which is a current conceptual framework to explain adolescent risk behaviours, the emergence of risk behaviours is closely linked to adolescents' interactions with individuals in their social environments. Donovan and Jessor (1985), Jessor (1998), Zamboanga, Carlo, and Raffaelli (2004) argue that this theory explains risk behaviours like drug use, anti-social behaviours, and risky sexual behaviours; therefore, it can be applied to tweens and adolescents. In PBT, adolescent risk behaviours are not explained with a single variable. It incorporates three interwoven systems made up of different interrelated social elements. These are the personality system, the perceived environment system, and the behaviour system. Adolescent risk behaviours are explained according to the interactions of these systems.

The personality system involves one's social thoughts, personal values, beliefs, and attitudes. The perceived environment system accounts for the effects of family and friends on adolescents. The behaviour system deals with appropriate behaviours and problem behaviours. Each system includes both protective factors against these behaviours and predisposing risk factors among adolescents (Jessor et al., 2003). According to this theory, the existence of appropriate models/patterns around adolescents, parental and peer control of risk behaviours, and social support from parents and friends not only protect them against risk behaviours but also reduce the effects of risk factors. Predisposing risk factors include the existence of models, namely the people with problem behaviours in the immediate environment of adolescents, their easy access to tobacco, alcohol or drugs, and proneness to these behaviours.

Family members, peers and teachers significantly affect adolescent risk behaviours (Berk, 2002; Garnier & Stein, 2002; Guo, Hill, Hawkins, Catalano, & Abbott, 2002; Ruangkanchanasetr, Plitponkarnpim, Hetrakul, & Kongsakon, 2005; Spear & Kulbok, 2001). Among environmental variables, social support is a particularly significant factor predicting adolescent risk behaviours (Ingerski, Janicke, & Silverstein, 2007). Alikasıfoğlu and Ercan (2002) state that a supportive family structure and school success are among the main factors that protect adolescents from substance use. Likewise, close family ties are reported to protect adolescents from such a negative behaviour (Zeller & Modi, 2009). Parental support is an important barricade against anti-social behaviours. Having good relations with teachers causes a decrease in anti-social behaviours as well (Nicolson & Ayers, 2004).

In addition to these factors, certain personality traits can also cause a tendency towards risk behaviours. One such trait is internalizing. It includes problematic behaviors like depression, anxiety, and somatic complaints that are directed toward the self and happen in the absence of any medical reasons (Achenbach & Rescorla, 2007). According to another definition, internalizing behaviour includes one or more of the problems like anxiety, perfectionism, cognitive rigidity and depression (Coplan, 2013).

Previous studies put forward that adolescents with traits that are indicators of internalizing behaviours, namely social introversion, somatic complaints, high levels of anxiety/depression and suicidal tendencies display more risk behaviours than other adolescents do (Alikasıfoğlu & Ercan, 2002). Self-reported depression and stress indicators lead to an increase in adolescent risk behaviours such as

tobacco use, physical fights and unprotected sex (Brooks, Harris, Thrall, & Woods, 2002). Personal qualities such as gender, grade and academic achievement are also related to risk behaviours (Brown, Noland, Johns, & McDermott, 2002; Dolcini & Adler, 1994; Gullone & Moore, 2000; Kirk & Ward, 1999; Kreiter et al., 1999; Spear & Kulbok, 2001; Zamboanga et al., 2004). Adolescents with high academic achievement are reported to display fewer anti-social behaviours than those with low academic achievement do (Donald, 1986; Ma et al., 2000; Erdoğan, 2006 as cited in Keskin & Sezgin, 2009). Therefore, academic achievement has a protective effect against risk behaviours (Siyez & Aysan, 2007).

Risk behaviours may affect students' educational life negatively and make schools fall short of their goal to improve students in every respect. Several researchers have discussed the relationship between academic achievement and risk behaviours as well as the prevalence of substance use and anti-social behaviours such as violence and risky sexual behaviours among students with low academic achievement (Kirk & Ward, 1999). Increased risk behaviours among students pose a great obstacle to a better academic achievement. As argued by Brown et al., (2002), it seems important to identify the relationship between adolescent risk behaviours and academic achievement as well as to ascertain the direction of that relationship.

This study aims to define the adolescent risk behaviours grouped as alcohol use, tobacco use, anti-social behaviours, suicidal tendencies, eating habits, and dropping out of school. Previous studies in Turkey and other countries have pointed out a significant increase in adolescent violence, aggression, and criminal behaviours (Centers for Disease Control and Prevention [CDC], 2005; Clubb et al., 2001; Eaton et al., 2006; Korkut, 2004; Quinn, Bell-Ellison, Loomis, & Tucci, 2007; Türnüklü & Yıldız, 2002; US Department of Health and Human Services [USDHHS], 2005); suicidal tendencies (CDC, 2005; Diler, 2003; Güler, Güler, Ulusoy, & Bekar, 2009; WHO, 2002; McWhirter, McWhirter, McWhirter, & McWhirter, 2004; Ruangkanhasetr et al., 2005); school dropout (McWhirter et al., 2004), tobacco, alcohol and substance use (CDC, 2005; Connell, Gilreath, Aclin, & Brex, 2010; Güler et al., 2009; Karakaş, 2006; Kırcan, 2006; Rey, Sawyer, Raphael, Patton, & Lynskey, 2002; Ruangkanhasetr et al., 2005; Williams, Mundfrom, Dunn, & Kronauge, 2006); unhealthy and unbalanced eating habits and related diseases (CDC, 2005; Demirezen & Coşansu, 2005; Hasbay, 2004; Turan, Ceylan, Çetinkaya, & Altundağ, 2006). It is crucial, therefore, to explain the adolescent risk behaviours and what effects make adolescents incline to those behaviours.

Starting from this goal, we have developed a theoretical model to explain the adolescent risk behaviours and set out to test the mentioned model in the present study. The model aims to demonstrate how adolescent risk behaviours are affected by of academic achievement, social support from family, peers and teachers, and internalizing behaviours including social introversion, somatic complaints, anxiety/depression and suicidal tendencies. The model postulates that social support influences academic achievement and treats the latter as a mediating variable. Besides, it tests the prediction power of social support on risk behaviours via academic achievement and internalizing. Previous studies in the relevant literature put forward social support as an important constant of academic achievement (Kızıldağ, 2009; Yıldırım, 1998; Ergene & Yıldırım, 2003; Yıldırım, 2006). In this context, the relationship between academic achievement and risk behaviours may be have a strong correlation due to the contribution of social support to academic achievement. Social support is also related to internalizing (Karevold, Roysamb, Ystrom, & Matheisen, 2009; Weiss et al., 2002). Lack of social support is a source of stress in the lives of children and adolescents and it leads to the emergence of symptoms of internalizing behaviours such as depression or anxiety (Çengel Kültür, Ünal, & Özusta, 2006). Therefore, internalizing is also taken as a mediating variable in this study, and the effects of social support on risk behaviours are intended to be tested with the mediation of internalizing behaviours. Academic achievement is taken as an indicator variable in the model. The risk behaviours constitute the dependent variable of the study and defined here as a latent variable explained through four indicators of anti-social behaviours, substance use, eating habits and school dropout. The non-inclusion of gender as a variable in the model is a limitation of the study. It is difficult to explicate the relationship between gender and each sub-dimension because the risk behaviors are treated as a latent variable in the study

and the relation of gender to each sub-dimension will be different. Furthermore, it is improper to include too much dummy variables in a study based on structural equation modelling.

Most adolescent risk behaviours that threaten health and safety are in fact preventable. However, owing to the prevalence of risk environments, adolescent risk behaviours are on the increase (Lindberg et al., 2000; Siyez, 2009). One characteristic feature of risk behaviours is that they can trigger one another (Reininger et al., 2003). The increase in risk behaviours necessitates the prevention studies into which we aim to offer an insight in the present study by explicating the variables that predict the risk behaviours. Risk behaviours can be intervened in if the risk factors and the protective factors are unclosed. By developing and increasing the protective factors and/or decreasing the risk factors, it is possible to prevent adolescent risk behaviours. The findings of the study are expected to guide future research and prevention studies in the field of psychological counselling and guidance.

Method

Participants

The sample consists of 491 students who were attending six different state high schools in the central districts of Ankara, the capital city of Turkey. They were selected with random sampling. The researchers got all the necessary permissions from the Ministry of National Education and cooperated with school administrators. Data collection instruments were administered with the voluntary participation of students. Of the participants, 57.4% were female and 42.4% were male. The remaining 0.2% did not specify their gender. With respect to the distribution of students across grades, 25.1% were ninth graders, 29.3% tenth graders, 31.8% eleventh graders, and 13.8% twelfth graders. The students were between the ages of 14 and 18.

Data Collection Instruments

Risk Behaviours Scale (RBS)

This scale was developed by Gençtanırım and Ergene (2014) in order to assess risk behaviours among high school students in Turkey. It includes 36 items in the following six dimensions: anti-social behaviours (AB), alcohol use (AU), tobacco use (TU), suicidal tendency (ST), eating habits (EH) and school dropout (SD). A high score on the RBS shows a high level of risk behaviours. The participants were asked to respond to the items using a 5-point Likert-type scale ranging from 1 (*no confidence at all*) to 5 (*complete confidence*).

The validity of RBS was analysed through descriptive factor analysis, confirmatory factor analysis and in terms of convergent validity. The descriptive factor analysis brought forth a form consisting of 36 items with factor loadings ranging from .49 and .83. The total variance the scale explained was 55,43 %. The proposed structure with six dimensions was confirmed and an acceptable model was developed as a result of the confirmatory factor analysis. As for the convergent validity, Pearson correlation coefficients were computed between -.10 and -.35 on the total RBS and the Family Support, Peer Support and Teacher Support sub-dimensions of the Perceived Social Support Scale (Yıldırım, 2004). This revealed an expected negative relationship between the scores on the two scales. In terms of reliability, the internal consistency coefficient (Cronbach α) was .79 for AB, .87 for AU and TU, .70 for ST and EH, and .83 for SD. The overall internal consistency coefficient of the RBS was .91. The test-retest reliability coefficients (r) obtained from the test-retest analysis of RBS were AB .79; AU .77; TU .90; ST .63; EH .56; SD .68 and total scale .85, respectively. Internal consistency coefficient of AB (Cronbach α) was .83; AU .88; TU .91; ST .58; EH .72, and SD .73. The overall internal consistency coefficient of the RBS was .90 (Gençtanırım & Ergene, 2014).

Risk behaviours constituting the dependent variable of this study were defined as using drugs, eating habits, and dropping out of school, which were calculated with the mean scores for anti-social behaviours and alcohol and tobacco use on the RBS. The sub-dimension of suicidal tendency is an indicator of the latent variable of internalizing. Internal consistency coefficients (Cronbach α) of the sub-dimensions on the RBS were found as AB .83, AU .88, TUK .91 and SD .73 (Gençtanırım & Ergene, 2014).

Perceived Social Support Scale (PSSS-R)

This scale was developed by Yıldırım in 1997 in order to assess perceived social support from families, peers and teachers. In 2004, it was revised for different groups including high school students. The revised version of the scale was used (PSSS-R) in this study. It has 50 items and has the sub-dimensions of Family Support (FS), Peer Support (PS) and Teacher Support (TS). The construct validity of the subscales were analysed with descriptive factor analysis and the factor structure of each subscale was identified. The relationship between the PSSS-R Beck Depression Inventory (BDI) and the Daily Hassles Scale (DWS) was found significant. For the reliability analyses of PSSS-R, internal consistency (Cronbach α) coefficient and test-retest reliability (r) were used. These coefficients were .91 and .93 respectively for the total scale; .83 and .81 for FS; .77 and .81 for PS, and .83 and .86 for TS (Yıldırım, 2004). In the present study, internal consistency (Cronbach α) reliability coefficients were .91 for FS, .89 for PS, and .93 for TS.

Self Evaluation Scale for 11-18 Year-Old Adolescents (YSR)

Developed by Achenbach (1991), the scale was adapted to Turkish by Erol and Şimşek (1998). The present study employs the Turkish version of YSR. It has two sections: 17 competence and 112 problem items. Competence items comprise activities such as sports that adolescents are interested and actively participate in, their relevant competences, and the quantity and quality of tasks they undertake inside or outside the home and items concerning school success. The sum of activity and sociability subscale scores yield the total competence score. The second section of the scale includes 112 problem items. Problem behaviours are graded as 0, 1, and 2 according to their frequency in the last 6 months and grouped under various subscales. The scale gives two different behaviour indication scores: internalizing and externalizing behaviours. The internalizing behaviours group is made up of the sum of social introversion, somatic complaints and anxiety-depression subtests, and the externalizing behaviours group comprises the sum of criminal behaviours and aggressive behaviours subtests. The subtests of social problems, cognitive problems and attention problems are also included in the scale although they are not included in either group. With respect to the content and criterion validity, normal and clinical groups were compared and the scale was found to distinguish the two groups significantly ($p < 0.001$). The reliability studies of the original scale showed that its test retest reliability coefficient r was .89 for the Total Competence dimension and .87 for the Total Problem dimension. The internal consistency reliability coefficient (Cronbach α) of the Competence subtests ranged between .55 and .75 for Problem Behaviour items, the internal consistency reliability coefficient (Cronbach α) varied between .71 and .95. As for subtests in agreement with DSM, the internal consistency reliability coefficient (Cronbach α) ranged between .67 and .94 (Erol & Şimşek, 2010).

Personal Information Form

A personal information form was designed by the researcher to get demographic information about the participants. The form included questions about students' gender, grade, and academic achievement levels.

Procedures

Before collecting data, we determined the schools in regions with different levels of socio-economic development and selected two schools for each regions having low, middle and high levels of socio-economic development. We got in contact with the school administrations and psychological counselling and guidance services of those six randomly-selected schools in order to determine the best dates and times for the implementation of the research. It took 40 minutes on average to complete data collection instruments. Prior to the implementation, necessary explanations were made about the scales and the personal information form, and the students were informed about the aims of the research.

Data Analysis

Structural equation modelling (SEM) was used to identify the variables that predict risk behaviours. The alpha was .05. The variables in the data set were tested to see if they meet SEM assumptions or not. Missing values were examined and as they did not exceed 5% in any of the variables in the data set, data loss was prevented by using the expectation-maximization (E-M) method to assign data for missing values. Values were observed to have a normal distribution. Although samples of 200

individuals are generally considered sufficient at least for medium sized SEM models, the expected impact size and variable distributions are affected by the strength of analysis. Therefore, it is suggested that a sample size not smaller than ten individuals should be identified for each parameter ($n = 20$) (Kline, 2000). There are 28 parameters in the model suggested in this study ($N/\text{Parameter} = 491/28 = 17.53$). This shows that the sample size was big enough to test the suggested model.

Results

Measurement Model

The model has 3 latent and 12 indicator variables. Latent variables include perceived social support (SS) [1. Family support (FS), 2. Peer support (PS), 3. Teacher support (TS)], internalizing (IN) [1. Anxiety (A) – Depression (D), 2. Suicidal tendency (ST), 3. Social introversion (SI), 4. Somatic complaints (SC)] and risk behaviours (RB) [1. Antisocial behaviours (AS) 2. Substance use (SU) (obtained by combining the alcohol and tobacco use dimensions on the RBS; the mean scores of these sub-dimensions were taken and their sum yielded the substance use variable), 3. Eating habits (EH), and 4. School Dropout (SD)]. Academic achievement (AA) was treated as a mediating variable. The relationship between risk behaviours and internalizing and between perceived social support and academic achievement were defined in the hypothetical model. Academic achievement and internalizing were accepted as a mediator between perceived social support and risk behaviours. Table 1 demonstrates the Pearson's correlation coefficients for the relationship between indicator variables on the measurement model.

Table 1. Pearson's Correlation Coefficients between Variables in the Model, Arithmetic Mean and Standard Deviation Values of Variables ($n = 491$)

Variables	\bar{x}	Ss	Pearson's Correlation Coefficients														
			AD	AKD	ÖD	AS	MK	BA	OT	K	İE	SİD	SY	AB			
FS	51,88	7,05															
PS	35,16	4,48	.31														
TS	38,41	8,69	.32	.28													
AS	14,08	5,47	-.13	-.11	-.30												
SU	3,19	1,64	-.21	-.04	-.23	.49											
EH	14,74	4,80	.00	.12	-.17	.33	.28										
SD	9,23	3,61	-.27	-.15	-.25	.32	.35	.16									
A	7,68	4,39	-.37	-.13	-.19	.18	.21	.11	.26								
ST	10,04	3,51	-.34	-.19	-.31	.16	.17	.13	.27	.53							
SI	4,94	2,91	-.32	-.24	-.25	.15	.15	.03	.22	.62	.40						
SC	4,99	3,95	-.32	-.07	-.17	.19	.24	.14	.22	.67	.40	.48					
AA	63,39	14,02	.11	.05	-.04	-.06	-.14	-.05	-.07	-.04	-.05	-.08	-.10				

Pearson's correlation coefficients between the indicator variables comprising the latent variable of social support vary between .28 and .32; those comprising the latent variable of risk behaviours vary between .11 and .49, and those comprising the latent variable of internalizing problem behaviours vary between .40 and .67. The measurement model was tested to find out the extent to which it represents the relevant latent variables and the relationships between these latent variables. According to the analysis, the independence model that assumed the variables in the model as non-relevant was statistically significant ($\chi^2_{66} = 1429.92$; $p = .000$). High values of concordance coefficient regarding the independence model indicate that the variance-covariance matrix of the data set was testable and there was a sufficient relationship between dependent and independent variables. Concordance coefficients of the hypothetical model were Satorra-Bentler $\chi^2_{50} = 151.87$; $p < .000$; CFI = 0.92; GFI = 0.94; AGFI = 0.91 and RMSEA = 0.07 (0.06-0.08). As compared to the independent model, the suggested model had significantly higher concordance coefficients ($\chi^2_{10} = 1278.05$; $p < .000$).

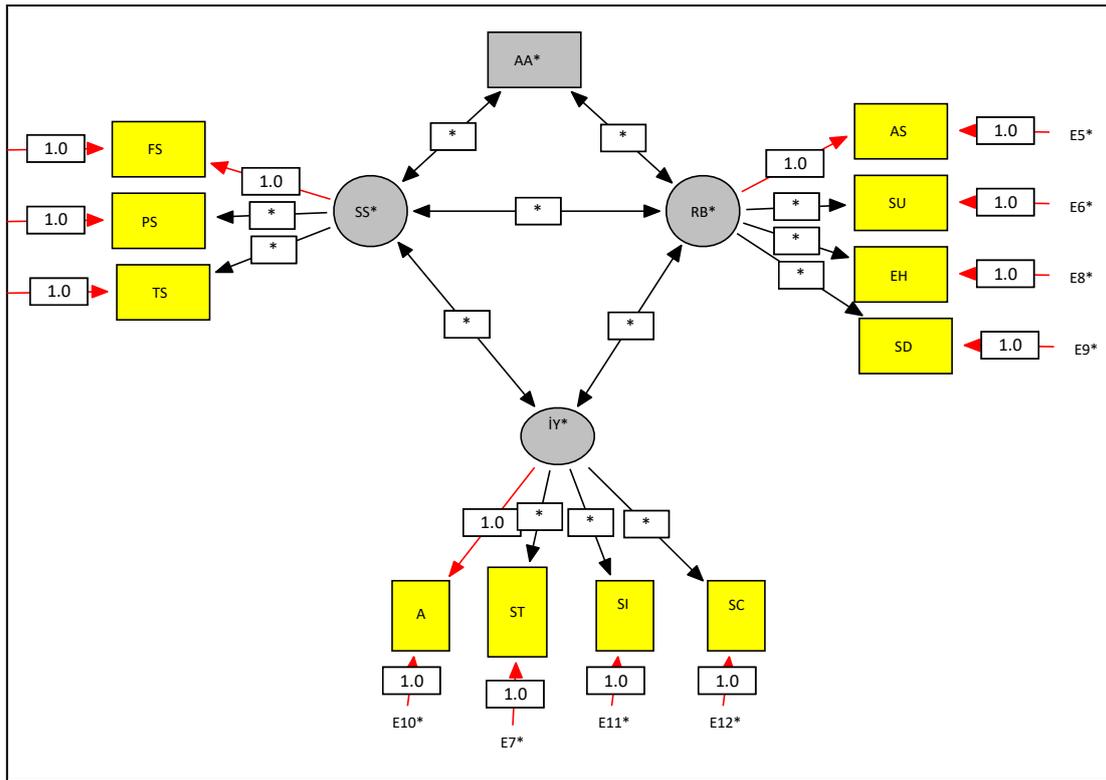


Figure 1. Measurement Model

Hair, Black, Babin, and Anderson (2007) state that χ^2 will be statistically significant when N is >250 and the index number (m) ranges from 12 to 30, however values of CFI>0.92 and RMSEA<0.07 indicate the concordance of the model. These results show that the measurement model sufficiently explained the change between variables in the data set. After ensuring that the measurement model had acceptable levels of general concordance coefficients, we tested the structural model as seen in Figure 1 in which the direction of relationships between the latent variables was theoretically identified; the results are shown in Figure 2.

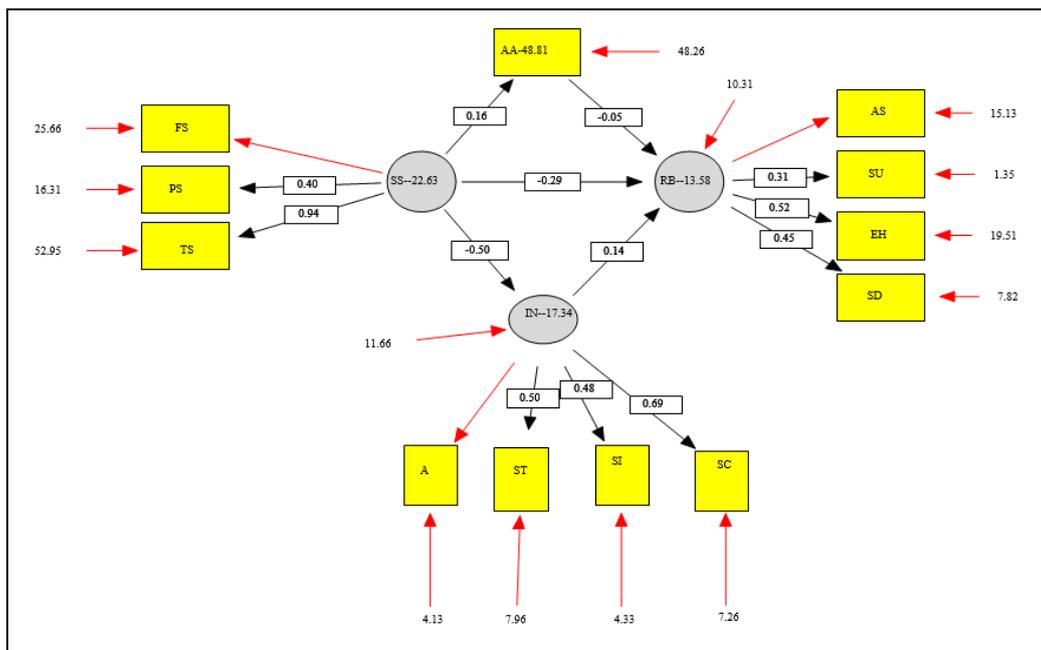


Figure 2. Structural Model (Standardized Coefficients)

As shown in Figure 2, a one-unit increase in the latent variable of social support leads to a decrease by .29 in risk behaviour scores ($Z=3.29$; $p<0.05$). Similarly, a one-unit increase in academic achievement leads to a decrease by - 0.05 in risk behaviour scores ($Z=1.91$; $p>0.05$) and a one-unit increase in the latent variable of internalizing leads to a decrease by 0.14 in risk behaviour scores ($Z=1.92$; $p>.05$). The effect of social support on academic achievement ($B= .16$) was statistically insignificant ($Z=1.67$; $p>.05$). It was concluded that social support significantly predicts internalizing behaviours and a one-unit increase in social support leads to a decrease by .50 in internalizing behaviour scores ($Z=7.30$; $p>.05$). As mentioned before, we examined the extent to which risk behaviours are predicted by social support via academic achievement and internalizing behaviours. The Sobel test was used to discover whether these indirect effects were significant. As a result, the effects of social support on risk behaviours with the mediation of academic achievement ($Z=1.86$; $p>.05$) and internalizing behaviours ($Z=1.33$; $p>.05$) were found statistically insignificant. Predictor variables of this study – social support, internalizing behaviour and academic achievement – concomitantly account for 24 % of the total variance in adolescent risk behaviours. According to these results, neither academic achievement nor internalizing behaviour predict risk behaviours significantly. Social support appears to be the only significant predictor of risk behaviours. In the hypothetical model, the paths drawn from the variables that did not significantly predict risk behaviours to the latent variable of risk behaviours were made equal to zero and alternative models were formed. By removing the variables with insignificant relationships, it was therefore possible to examine the modifications in general concordance levels of the model and in the relationships between the remaining variables and the latent variable of risk behaviours. Overall concordance coefficients of hypothetical and alternative models are seen in Table 2.

Table 2. Overall Concordance Coefficients Regarding the Post Hoc Model Modifications

Model	Stora-Bentler	sd	CFI	GFI	AGFI	RMSEA	$\Delta\chi^2$
Hypothetical Model	171.23	50	.91	.94	.91	.07	
Model 2: AA → Risk = 0	174.76	51	.91	.94	.91	.07	3,53(1).
Model 3: IN → Risk = 0	442.60	52	.71	.84	.76	.13	267.84(1).***
Model 4: SS → AA = 0	179.58	52	.90	.94	.91	.07	4,82(1).*

According to Table 2, the concordance of the model did not deteriorate significantly when the relationship between risk behaviours and academic achievement and between risk behaviours and perceived social support were made equal to zero.

Discussion, Conclusion and Suggestions

Social support from family, friends and teachers is an important protective factor against risk behaviours. Social support has a significant direct effect on risk behaviours such as anti-social behaviours, substance use, eating habits, and school drop out. However, its indirect effects mediated by academic achievement and internalizing behaviour are insignificant on risk behaviours. Whereas the latent variable of social support contributed significantly to the model developed for the prediction of adolescent risk behaviours, the variables of academic achievement and internalizing behaviour did not predict adolescent risk behaviours to a significant degree. As mentioned before, the latent variable of perceived social support includes the sub-dimensions of family support, peer support and teacher support.

The model examined the prediction power of perceived social support on risk behaviours both directly and indirectly, and results indicated that it directly predicts risk behaviours. The adolescents who had higher levels of perceived family, peer and teacher social support displayed fewer risk behaviours, namely anti-social behaviours, substance (alcohol and tobacco) use, eating habits and school dropout. In other words, while a low-level of perceived social support led to an increase in risk behaviours, a high-level of perceived social support led to a decrease in them. This was an expected result and is parallel to the findings of previous studies in the relevant literature (Barnes & Farrell, 1992; Repinski, Kucharczak, Laing, & Boyce, 1999; Piko, 2000; Rosenfeld, Richman, & Bowen, 2000; Simantov, Schoen, & Klein, 2000; Demaray & Malecki, 2002; Lagana, 2004; McNeely & Falci, 2004; Springer, Parcel, Baumler, & Ross, 2005; Siyez & Aysan, 2007; İnandı et al., 2009; Walsh, Harel-Fisch, & Fogel-Grinvald, 2010).

When social support is considered to be any kind of personal, social, psychological and economical help, i.e., an honest and empathic response, interest, love, trust, respect, appreciation, knowledge acquisition, and financial support that an individual receives from his/her environment (Yıldırım, 2006), its positive effects on the lives of adolescents can be better understood. Adolescents may gravitate towards risk behaviours on occasion in order to satisfy a need or solve a problem. Those adolescents supported by people who they have direct contact and spend time with take a brighter view of life, feel less lonely in times of trouble, solve their problems more effectively and display fewer risk behaviours. In short, the higher social support they perceive, the less risk behaviours they display. In this way, our study corroborates the protective effect of social support against adolescent risk behaviours.

Academic achievement is another variable whose capacity to predict risk behaviours was examined in this study. The model tested the mediating effect of academic achievement between social support and risk behaviours. Results showed that social support did not predict academic achievement and the latter did not predict risk behaviours significantly in statistical terms.

There are a number of studies suggesting a link between risk behaviours and academic achievement (Hinshaw, 1992; Resnick, Harris, & Blum, 1993; Hawkins et al., 1999; Kirk & Ward, 1999; Franke, 2000; Kiran Esen, 2003; Mancini & Huebner, 2004; Ansary & Luthar, 2009). These studies also suggest a relationship between academic achievement and risk behaviours as well as a protective effect of academic achievement against risk behaviours. The present study concludes, on the other hand, that academic achievement does not predict risk behaviours significantly, which is an unexpected result explicable in different ways.

As mentioned in the Method section, academic achievement was treated as an indicator variable and assessed by a single measurement. It might be more appropriate to take academic achievement as a latent variable and measure it with more than one indicator. Since academic achievement comprises many dimensions, such a result may be attributed to this limitation. Taking academic achievement as an independent variable may be another explanation for this result. The literature states that risk behaviours adversely affect adolescents' lives in many different areas (Jessor, 1998; Lindberg et al., 2000; Smith, 2001), one of which is their school life (Sun, 2001). In this context, lack of academic achievement may be taken as a consequence of adolescent risk behaviours rather than a factor for them. Considering that the present study took academic achievement as an independent variable, other results may have been obtained if it had been treated as a dependent variable of risk behaviours.

Academic achievement was used in this study as a mediating variable between social support and risk behaviours. The findings show that social support did not significantly predict academic achievement. This finding is not parallel to some other studies in the relevant literature (Yıldırım, 1998; Ergene & Yıldırım, 2003; Yıldırım, 2006; Kızıldağ, 2009). The finding that social support does not significantly predict academic achievement is an unexpected result which may ensue from the sample group or the way we measure academic achievement.

Another variable examined in the model proposed here was internalizing behaviours, which also did not predict risk behaviours to a significant extent. A study by Hallfors, Waller, Bauer, Ford, and Halpern (2005) concludes that depression as an indicator of internalizing did not predict substance use and risky sexual behaviours among adolescents. Similarly, Ritakallio et al. (2008), found that depression among men did not have a protective effect against anti-social behaviours. These are similar to the findings of our study that internalizing did not significantly predict risk behaviours.

At the same time, the same finding is contrary to the results of many studies cited in the literature. Previous studies (Brooks et al., 2002; Campos, 1999; Curry & Youngblade, 2006; Ferriter, Eberhart, & Hammer, 2010; Glied & Pine, 2002; Hallfors et al., 2005; Kandel, Raveis, & Davies, 1991; Kim, 2001; Sheidow et al., 2008; Von & Margaret, 2008) found that the indicators of internalizing behaviours – depression, anxiety, suicidal thoughts and somatic complaints – significantly predict risk behaviours among adolescents. In other words, these variables increased risk behaviours. In this respect, the findings of the present study are not parallel to the studies mentioned above.

This study treated internalizing behaviours as a mediating variable. It tested the relationship of social support to risk behaviours via internalizing problem behaviours. Analyses showed that social support significantly predicted internalizing behaviours. Accordingly, increased levels of perceived social support mean reduced internalizing behaviours in adolescents. It can be said that social support has a protective effect against depression, anxiety, suicidal tendencies and somatic complaints, which are indicators of internalizing. This finding is similar to those of several studies in the literature (Çengel Kültür et al., 2006; Karevold et al., 2009; Weiss et al., 2002). As a result, the protective effect of social support on the indicators of internalizing behaviours was corroborated once again by this study.

Based on the results of this study, the following recommendations may be made to school counsellors and psychologists working with adolescents at schools or other institutions: This study has shown that social support was an important variable in predicting adolescent risk behaviours. Practicing school counsellors and psychologists may undertake protective and preventive work to increase the social support that students receive from family, teachers and peers. Group guidance programs for peers and psychoeducational programs to develop relationships between counsellors, students, families, and teachers may be useful. Results of this study also indicated that social support has a protective effect against the indicators of internalizing behaviours. Thus, school counsellors and psychologists working with adolescents may ensure that adolescents have higher perceived social support so that the indicators of internalizing behaviours such as depression, anxiety and suicidal thoughts are minimized.

We focused on perceived social support, internalizing behaviours and academic achievement as variables that predict adolescent risk behaviours. Future studies may investigate the effects of other environmental and personal variables on risk behaviours. Our model can be tested for male and female students separately. In this study, academic achievement did not predict risk behaviours significantly. Their relationship may be retested with a different model (a non-recursive one, for instance).

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