Child Ind Res (2011) 4:515–528
DOI 10.1007/s12187-010-9095-x

The Perceived Parental Support (PPS) Scale: Validity and Reliability in the 2006 Youth in Europe Substance Use Prevention Survey

Alfgeir L. Kristjansson · Inga D. Sigfusdottir · Thorlakur Karlsson · John P. Allegrante

Accepted: 14 November 2010 / Published online: 18 January 2011

Abstract Parental support has been shown to reduce mental distress among adolescents; however, it is not known whether perceived parental support is a valid and reliable construct across culture. Using data from 23,605 14- to 15-year-olds across eight European cities we assessed the validity and reliability of the Perceived Parental Support (PPS) Scale. The distributional properties of the scale show a consistent pattern throughout the participating cities and Cronbach's Alpha varies from.77 to.87. Fit statistics for the factor structure of the PPS were analyzed in three models using confirmatory factor analysis with AMOS 5 implementation of structural equation modeling. All models show an adequate fit to the data with the third and final model revealing a close to perfect fit with a comparative fit index of.988 and a root mean square error of approximation of.030. We also compared the PPS Scale with the SCL-90 subscale on depressed mood and the Rosenberg Self-Esteem Scale. Correlations between the PPS and depressed mood (range −.24 to −.33) and Rosenberg Self-Esteem Scale (range.25 to.38) were reasonably consistent across the cities. More research on the PPS scale, including measurement invariance analyses between genders and across cultures, is recommended.

This work was partially supported by grants from the Icelandic Alcohol and Drug Prevention Committee, the Icelandic Red Cross, the City of Reykjavik, and the Sports and Recreational Committee of Reykjavik to the Icelandic Centre for Social Research and Analysis, and by the Iceland/U.S. Fulbright Commission.

A. L. Kristjansson (✉) · I. D. Sigfusdottir · T. Karlsson
Icelandic Centre for Social Research and Analysis, School of Health and Education,
Reykjavik University, 1 Menntavegur, 101 Reykjavík, Iceland
e-mail: alfgeir@ru.is

A. L. Kristjansson · I. D. Sigfusdottir · J. P. Allegrante
Department of Health and Behavior Studies, Teachers College, Columbia University,
New York, NY, USA

J. P. Allegrante
Department of Sociomedical Sciences, Mailman School of Public Health, Columbia University,
New York, NY, USA

Keywords Scale development · Social support · Parental support · Cross-cultural comparison

1 Introduction

A large number of studies have shown that social support experienced through communities, social networks, families and other interpersonal relations reduces the likelihood of mental distress among adults and adolescents (House 1981; Cohen and Wills 1985; Vaux 1988; Henderson 1992; Thorlindsson and Bjarnason 1998; Lin et al. 1999; Turner 1999). In general, studies have found that perceived support is more important for lowering distress than actual support (Cohen and Wills 1985; Wethington and Kessler 1986). Among adolescents, perceived support from parents has been the primary focus of research (Barrera and Li 1996; Wagner et al. 1996), with most studies showing that adolescents who perceive a lot of support from their parents are less likely to suffer from mental distress than adolescents who perceive less support.

The social-support paradigm is a well-developed perspective within the mental health literature. Much of the strong interest in the effect of social support on mental health has been associated with the hypotheses articulated by Cassell (1976) and Cobb (1976) that social support may act to buffer or moderate the effects of life stress. Advocates of the stress-buffering hypothesis believe that the effects of stress are stronger under conditions of low support (Cohen and Wills 1985). The main-effect model, on the other hand, assumes that social support has a generalized positive impact on mental health (House 1981), such that the effects of social support on mental health are expected to be consistent across levels of stress. Most studies find evidence for either main or buffering effects of social relationships on health (Henderson 1992). Thus, it now seems that the appropriate research question is not whether both effects exist, but the mechanism underlying the effects.

Less attention has been given to social support within criminology than within the mental health literature (Cullen 1994). Although studies have found a clear relation between social support and delinquent behavior, such as substance use and sexual risk behavior (Barrera and Li 1996; Field et al. 2002; Bjarnason et al. 2005; Springer et al. 2006), theories of social control have played a more central role in explanations of delinquent behavior (Hirschi 1969; Sampson and Laub 1994). Recently, it has been pointed out that more attention should be given to the role of social support and its provision in decreasing delinquency (Cullen 1994; Wright and Cullen 2001). It has furthermore been suggested that support may play an important role in conditioning the effects of stress on delinquency (Agnew and White 1992; Aseltine et al. 2000; Colvin et al. 2002). In general strain theory, Agnew (1992) acknowledges that not all adolescents respond to strain with delinquency and suggests that the ability to cope with criminogenic strains is contingent on access to conventional support. Adolescents with conventional social support should thus be better able to respond to and cope with objective strain in a non-delinquent manner.

It is important to note that studies have shown that perception of social support appears to be more salient in its effects on behavior than objective support (Vaux 1988). These two aspects of support are usually acknowledged in the literature (see, for example, Lin et al. 1999), where perceived support refers to the perceptions of the availability of

support when it is needed, the appraisal of its adequacy, and the quality of such support, and where objective support refers to the actual reception of tangible support. As Turner (1999) has pointed out, situations defined as real are real in their consequences. The strongest effect of social support and psychological distress has been found where measures of perceived social support have been used (Wethington and Kessler 1986).

A scale measuring *Perceived Parental Support* (PPS) was developed in the early 1990s at the Institute for Educational Research (IER) in Iceland (Thorlindsson et al. 1998). Designed for adolescents, this five-item scale captures how adolescents perceive their accessibility to general support from their parents. The scale has shown good internal consistency and test-retest reliability in the Icelandic setting (Thorlindsson et al. 1998; Kristjansson 2008) and has been repeatedly used in the annual *Youth in Iceland* surveys (Sigfusdóttir et al. 2008, 2009). These studies are now conducted annually by the Icelandic Centre for Social Research and Analysis (ICSRA) at Reykjavik University and are used to inform the development and implementation of a community-based health promotion and substance use prevention approach for adolescents known as "The Icelandic Model" (Sigfusdóttir et al. 2008). Moreover, this scale has been demonstrated in numerous publications on risk factors for substance use and delinquency based on Icelandic data where social support has been shown to contribute to protection against such behaviors (Thorlindsson and Vilhjalmsson 1991; Sigfusdottir et al. 2004; Bjarnason et al. 2005; Sigfusdottir et al. 2007a, b; Thorlindsson et al. 2007; Kristjansson et al. 2008; Thorlindsson and Bernburg 2006).

In the fall of 2006, the ICSRA at Reykjavik University, along with colleagues from the University of Iceland, the City of Reykjavik, the Icelandic Office of the President, and the European Cities Against Drugs (ECAD), became the leaders of a cross-national, pan-European prevention project now called "Youth in Europe" (see www.youthineurope.org). The aim of this project is to replicate the Icelandic success in reducing substance use among adolescents over the last decade (Sigfusdóttir et al. 2008). Now ongoing, the project is sponsored by the pharmaceutical company Acatavis and is championed by the President of Iceland.

The core questionnaire, prepared by the ICSRA at Reykjavik University and colleagues from the University of Iceland, is the same in all participating cities and includes the PPS Scale among several other local and international scales and individual questions (Kristjansson 2008). Apart from substance use, the major domains in the questionnaire are based on parental and family factors, peer group influences, social networks and social capital, the school setting, and sports and leisure time activities (Sigfusdottir et al. 2009).

This paper reports an assessment of the validity and reliability of the PPS Scale across eight European cities that are participating in the *2006 Youth in Europe* substance use prevention survey.

2 Methods

2.1 Sample

The *2006 Youth in Europe* data collection was carried out through cross-sectional surveys of representative 14- to 15-year-old adolescents in eight cities across Europe

in October 2006. The procedures used in these surveys were analogous to the *Youth in Iceland* surveys, previously described by Sigfusdóttir et al. (2008, 2009). They utilize a questionnaire developed by the ISCRA at Reykjavik University, and its predecessor, the IER. Classroom-based samples, clustered within the cities that participated in the study, were drawn and data collected in the classroom setting by supervising teachers, guided by a strictly uniform methodological protocol developed by the ICSRA. A prior study by Bjarnason (1995) revealed no teacher effects of this method of data collection on adolescent reports of alcohol, tobacco, and other substance use in Icelandic setting.

2.2 Participants

Participants were 14- to 15-year-old students across Europe attending the compulsory 9th and 10th grades of the local secondary school systems. The eight participating cities include Kaunas, Klaipeda and Vilnius in Lithuania; Oslo in Norway; Reykjavik in Iceland; Riga in Latvia; Sofia in Bulgaria; and St. Petersburg in Russia. An overwhelming majority of inhabitants in these cities are of Caucasian ethnic origin. The complete dataset for the *2006 Youth in Europe* survey contains responses from 23,605 participants. The number of responses given for each city and the response and gender-ratio are shown in Table 1.

2.3 Measures

The measures and constructs in the *2006 Youth in Europe* survey questionnaire have been documented by Kristjansson (2008). The core questionnaire was translated and then back-translated in the participating cities for accuracy of interpretation. For purposes of this study, we sought to analyse the validity and reliability of the Perceived Parental Support (PPS) Scale that was originally developed at the IER in the early 1990's and later advanced by the ICSRA, now affiliated with Reykjavik University's School of Health and Education. This is a five-item scale pertaining to adolescents' perceptions about parental general support. The scale has the stem, "How easy or hard is it for you to receive the following from your parents" followed

Table 1 Number of participants in each city, response rate, and gender ratio

City	N	Response rate (%)	% girls
Kaunas	2,748	93.3	52.6
Klaipeda	2,309	85.3	51.6
Oslo	3,825	88.0	49.7
Reykjavik	2,083	74.4	50.1
Riga	2,567	82.9	53.4
Sofia	2,744	87.2	49.8
St. Petersburg	4,959	95.0	54.9
Vilnius	2,370	85.0	49.6
Total	23,605	87.6	51.7

by the following five items: a) "caring and warmth", b) "discussions about personal affairs", c) "advice about the studies", d) "advice about other issues (projects) of yours", and e) "assistance with other things". The response categories are 1="Very difficult", 2="Rather difficult", 3="Rather easy", and 4="Very easy". To form the scale values, five questions were added, resulting in values ranging from 5 to 20.

For discriminant validity, as part of construct validity, two other known scales were employed in comparison to the PPS Scale. These were the Derogatis et al. (1973) scale of depressive symptoms and the Rosenberg (1965) Self-Esteem Scale. Depressive symptoms are evaluated with a slightly modified version of the SCL-90 scale for adults (Derogatis et al. 1973). The scale has 13 items but this scale has been adjusted by the ICSRA to fit more appropriately for adolescents, for example, by omitting a question about decreasing sexual interest and adding an item about little appetite. The adjusted version has 10 items, yields strong internal consistency (Kristjansson 2008), and has previously been used in Icelandic studies (Sigfusdottir et al. 2004; Sigfusdottir et al. 2007a, b). The heading for the items is "How often did you feel any of the following mental or physical discomforts in the past week?" and the following responses are; a) "I was sad or had little interest in doing things", b) "I had little appetite", c) "I felt lonely", d) "I cried easily or wanted to cry", e) I had sleeping problems", f) "I felt sad or blue", g) "I was not excited in doing things", h) "I was slow or had little energy", i) "The future seemed hopeless", and j) "I thought of committing suicide". Response categories are: 1="Almost never", 2="Seldom", 3="Sometimes", 4="Often". Self-esteem is assessed with the Rosenberg Self-Esteem Scale (Rosenberg 1965). It includes 10 items about feelings of self-worth, capability, and beliefs, and has been widely used internationally since its foundation in 1965. The scale has the heading "How well do the following statements apply to you". Questions are: a) "I feel that I am worth at least as much as others", b) "I feel that I have a number of good qualities", c) "All in all I am inclined to feel that I am a failure", d) "I am able to do things as well as most other people", e) "I feel I do not have much to be proud of", f) "I take a positive attitude towards myself", g) "On the whole I am satisfied with myself", h) "I wish I had more respect for myself", i) "At times I think I am no good at all", and j) "I certainly feel useless at times". Response categories are: 1="Applies very well to me", 2="Applies rather well to me", 3="Applies rather poorly to me", and 4="Applies very poorly to me".

2.4 Analyses

First, we examined the distributional properties of the PPS Scale construct by showing the mean, SD, skew, and kurtosis for each city-based dataset. Second, we generated the inter-item correlations in the PPS Scale across the eight cities. Third, for general construct validity, we used principal component analysis (PCA) and report the eigenvalues and variance explained by the initial component to assess the underlying dimensions of the PPS construct within each city (Tabachnick and Fidell 2001). Eigenvalues are measures of the component's power to explain variation between subjects in each city-based dataset and are usually deemed important if exceeding the value of 1.0; however, sometimes the value of 1.5 is preferred (Streiner and Norman 1995). The validation of a measuring tool refers to the generalizability of produced results to the wider population of interest. This method

enabled us to outline the shared underlying dimensions for the items contributing to the PPS construct within each city (Kim and Mueller 1978). This method has proven useful when summarizing empirical data (Tabachnick and Fidell 2001). We also utilized the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy, which tests whether the partial correlations among variables are too small. This coefficient takes values between 0 and 1.0 and should be greater than 0.5 in order to demonstrate that PCA and factor analysis of these variables are solid (Kim and Mueller 1978; Tabachnick and Fidell 2001). We then calculated the Cronbach's alpha coefficient for internal consistency (Cronbach 1951) for all city-based datasets. This enabled us to demonstrate psychometric validity and reliability of the constructs presented between all the cities in the study. As a rule of thumb, an alpha coefficient of.70, is considered satisfactory (Bland and Altman 1997). Fourth, to further demonstrate the ecological reliability of the PPS Scale, we report the factor loadings of the component extracted within each city. Fifth, to assess the validity of the factorial structure across the eight city-based groups, we performed a confirmatory factor analysis (CFA) using AMOS 5 implementation of structural equation modelling (Arbuckle and Wothke 1999). Finally, to establish construct validity, or more specifically, discriminant validity, we examined the correlation between the PPS Scale and two well-established measuring tools (Carmines and Zeller 1979) within each city-based data: a subscale of the Symptom Distress Check-List-90 (SCL-90) outpatient psychiatric scale on depressive symptoms, developed by Derogatis et al. (1973); and the Rosenberg Self-Esteem Scale (Rosenberg 1965). The SCL-90 has, for example, been validated in a German population (Hessel et al. 2001), in Finland (Holi et al. 1998), in the U.S. (Derogatis and Cleary 1977), among Hispanic college students (Martinez et al. 2005), and in a Mexican population sample (Fuentes et al. 2005). The Rosenberg Self-Esteem Scale has, for example, been validated in Spain among university students (Martin-Albo et al. 2007), in a U.S. university sample (Robins et al. 2001), in France (Vallieres and Vallerand 1990), and in Germany (Ferring and Filipp 1996). Prior studies have shown parental support to be negatively related with depression in adolescents (Sigfusdottir et al. 2004; Bean et al. 2006; Needham 2008) and positively related with self-esteem (Felson and Zielinski 1989; Bean et al. 2003; Martinez-Ferrer et al. 2008). Thus, we hypothesized that the PPS Scale should show a moderate to strong negative relationship with depressive symptoms and a positive relationship with self-esteem across all eight city-based datasets.

3 Results

Table 2 shows the distributional properties of the PPS Scale across the eight European cities that participated in the *2006 Youth in Europe* study. The range of the whole scale was from 5–20 and the grand mean varied within cities from 11.08 (Vilnius) to 12.50 (Reykjavik). Sofia in Bulgaria and Reykjavik in Iceland were the only cities with a grand mean greater than 12.0 and these were also the only cities with an SD below 3.0, reflecting a more narrow distribution of scores than the other cities. This is mirrored in the skewness and kurtosis parameters as these were above the universal criterion value of +/−1.0 for these two cities only. The PPS Scale for the remaining six cities met all necessary assumptions for normality.

Table 2 Distributional properties of the PPS scale for each city

City	Mean	SD	Skew	Kurtosis
Kaunas	11.49	3.09	−.96	.68
Klaipeda	11.18	3.16	−.87	.55
Oslo	11.40	3.29	−1.01	.86
Reykjavik	12.50	2.86	−1.40	2.08
Riga	11.24	3.09	−.81	.48
Sofia	12.25	2.94	−1.32	1.67
St. Petersburg	11.31	3.10	−.90	.70
Vilnius	11.08	3.24	−.84	.38

Table 3 shows the inter-item correlations for the five PPS questions within all cities. Most of the associations between individual variables were consistent and robust across the eight cities. The correlation for "caring and warmth" and "discussions about personal affairs" ranges from .44 to .59. The correlation between "caring and warmth" and "advice about the studies" ranged from .35 to .51. The same variable correlated with "advice about other issues of yours" from .41 to 57 and its relationship with "assistance with other things" ranged from .37 to .60. "Discussions about personal affairs" had a more narrow span in its correlation with "advice about the studies", a range from .40 to .47. The same variable is correlated with "advice about other issues of yours" from .46 to .59. On the other hand, the correlation between "discussion about personal affairs" and "assistance with other things" ranged from .33 to .58. "Advice about the studies correlated with "advice about other issues of yours" from .48 to .64. "Advice about the studies" and "assistance with other things" were somewhat lesser related, with correlations from .26 to .58. Lastly, "advice about other issues of yours" related with "assistance with other things" from .35 to .70 across the eight cities.

Table 4 reveals the results from the PCA, the Kaiser-Meyer-Olkin test for sampling adequacy, and the alpha coefficient for internal consistency. First, the PCA yielded only one factor according to all major standards, for each of the eight city datasets, accounting for a large segment of the variance of the PPS Scale variables; rotations were therefore not needed. The eigenvalues for the one factor produced in all city datasets ranged from 2.65 (Sofia) to 3.31 (Oslo), which means that about 53% to 66% of the underlying variance of the five variables was explained by the factor. The KMO test produced a coefficient well above the .50 criteria for all city data. In fact scores were in the .80 range across all eight datasets. Finally, the alpha coefficient had a value well above the .70 rule of thumb for all city data with Sofia in the lowest ranks (alpha=.77) and Oslo in the highest (alpha=.87). There was no occurrence across all cities where the alpha coefficient scaled up if certain items were deleted (data not shown).

Table 5 shows the factor loadings within the one component extracted from the data for each city. For "caring and warmth" the loadings range from .72 (St. Petersburg) to .80 (Oslo and Reykajvik). For "discussions about personal affairs" the loadings have a range of .75 (St. Petersburg) to .81 (Riga), and for "advice about the studies" the factor

Table 3 Inter-item correlations for the PPS indicators across all cities

Indicators	Cities	Caring and warmth	Discuss. about personal affairs	Advice with the studies	Advice about other issues (projects) of yours	Assist. with things
Caring and warmth	Kaunas	1.0				
	Klaipeda					
	Oslo					
	Reykjavík					
	Riga					
	Sofia					
	St.Petersburg					
	Vilnius					
Discuss. about personal affairs	Kaunas	.59***	1.0			
	Klaipeda	.58***				
	Oslo	.59***				
	Reykjavík	.54***				
	Riga	.51***				
	Sofia	.49***				
	St.Petersburg	.44***				
	Vilnius	.59***				
Advice about the studies	Kaunas	.43***	.41***	1.0		
	Klaipeda	.42***	.42***			
	Oslo	.51***	.44***			
	Reykjavík	.43***	.43***			
	Riga	.38***	.47***			
	Sofia	.37***	.40***			
	St.Petersburg	.35***	.42***			
	Vilnius	.45***	.44***			
Advice about other issues (projects) of yours	Kaunas	.47***	.50***	.56***	1.0	
	Klaipeda	.46***	.46***	.57***		
	Oslo	.57***	.59***	.64***		
	Reykjavík	.49***	.56***	.64***		
	Riga	.48***	.59***	.53***		
	Sofia	.44***	.57***	.48***		
	St.Petersburg	.41***	.52***	.49***		
	Vilnius	.48***	.50***	.55***		
Assistance with other things	Kaunas	.56***	.53***	.44***	.55***	1.0
	Klaipeda	.57***	.50***	.42***	.54***	
	Oslo	.60***	.58***	.54***	.70***	
	Reykjavík	.51***	.49***	.58***	.63***	
	Riga	.47***	.50***	.36***	.59***	
	Sofia	.37***	.33***	.26***	.35***	

Table 3 (continued)

Indicators	Cities	Caring and warmth	Discuss. about personal affairs	Advice with the studies	Advice about other issues (projects) of yours	Assist. with things
	St.Petersburg	.51***	.43***	.41***	.54***	
	Vilnius	.60***	.52***	.46***	.55***	

***$p<.001$

loadings range from .69 (Sofia) to .78 (Reykjavik). "Advice about the studies" loads from .79 (Kaunas, Klaipeda, and Vilnius) to .87 (Oslo) but "assistance with other things" loads from .60 (Sofia) to .84 (Oslo).

Table 6 reveals the model fit statistics from the CFA across the eight city databases. We began our investigation by analyzing the factor loadings and associated residuals terms (errors) separately for each city (data not shown). This analysis revealed a substantial correlation between the residuals of items 3 and 4 for most of the city datasets, as well as between items 1 and 2 for some of them. We therefore carry out three analyses; first, a "null" model with no additional constraints to the default model imposed by AMOS, a second model accounting for the correlation of residual parameters for the variables "advice about the studies" and "advice about other issues (projects) of yours" (items 3 and 4 respectively), and a third model where we have also specified the residuals for items 1 and 2 as free standing parameters ("caring and warmth" and "discussion about personal affairs"). We followed Hu and Bentler's (1999)) cut-off criteria for adequate-fit indices with a comparative fit index (CFI) of .950 and above and the root mean square error of approximation (RMSEA) of below .050. All the models have an adequate fit to the data. The third and final models reveal a close to perfect fit to the data with a CFI of .988 and RMSEA of .030. Given the large sample size in these analyses, the chi-square statistic is significant in all the models (Gerbing and Anderson 1993).

Table 4 Scale reliability coefficients across all cities; eigenvalues, variance explained, the Kaiser-Meyer-Olkin test, and Cronbach's alpha

City	Eigenvalues	Variance explained (%)	KMO	Alpha
Kaunas	3.02	60.47	.83	.83
Klaipeda	2.98	59.68	.82	.83
Oslo	3.31	66.19	.85	.87
Reykjavik	3.13	62.55	.84	.85
Riga	2.97	59.37	.83	.82
Sofia	2.65	53.00	.80	.77
St. Petersburg	2.81	56.16	.82	.80
Vilnius	3.07	61.43	.84	.84

Table 5 Factor loadings for the PPS questions within cities

City	Caring and warmth	Disc. about personal affairs	Advice about the studies	Advice about other issues	Assistance with other things
Kaunas	.79	.78	.72	.79	.80
Klaipeda	.79	.77	.72	.79	.79
Oslo	.80	.79	.77	.87	.84
Reykjavik	.74	.76	.78	.85	.82
Riga	.74	.81	70	.84	.76
Sofia	.74	.79	.69	.80	.60
St. Petersburg	.72	.75	.70	.80	.78
Vilnius	.80	.78	.73	.79	.81

Finally, we report the correlation for the PPS Scale with a modified version for adolescents of the SCL-90 scale on depressive symptoms, and the Rosenberg self-esteem scale. As shown in Table 7, these relationships were very similar across all eight cities. The correlation between the PPS Scale and the scale on depressive symptoms was negative across all eight city datasets, ranging from −.24 (St. Petersburg) to −.33 (Reykjavik). Conversely, the correlation between the PPS Scale and self-esteem was positive across all cities, with a range from .25 (St. Petersburg) to .38 (Oslo).

4 Discussion

Our findings demonstrate the construct validity and reliability of a perceived parental support scale that was designed for use with children and adolescents. The scale has been validated with datasets from eight European cities, all with high response rates. From an ecological perspective, we have shown the PPS Scale to be consistent and reliable across each of the European cities in which forms of the scale are being used in a study of substance use prevention. Such cross-cultural reports have become more common in measurement validations in recent years (Byrne 2004; Dandy et al. 2008).

The distributional properties of the scale do not indicate any particular problems with assumptions of normality across the eight cities even though some indicators for a minor skewness and a kurtosis figure slightly above the usually required

Table 6 Fit statistics for the factor structure of the PPS across the eight city groups

Model	χ^2	df	p	CFI	RMSEA
Null	1477.81	40	>.000	.965	.040
Modified 1	785.20	32	>.000	.981	.032
Modified 2	516.5	24	>.000	.988	.030

Table 7 Correlations between the PPS scale and the SCL-90 subscale on depressive symptoms and the Rosenberg self-esteem scale across all cities

City	Depressive symptoms	Self-esteem
Kaunas	−.32***	.32***
Klaipeda	−.26***	.31***
Oslo	−.32***	.38***
Reykjavik	−.33***	.36***
Riga	−.28***	.33***
Sofia	−.27***	.28***
St. Petersburg	−.24***	.25***
Vilnius	−.28***	.29***

***$p<.001$

referent. The inter-item correlations across the eight datasets also demonstrated a similar output across the cities and were in an acceptable range. The scale reliability measures revealed eigenvalues from 2.65 to 3.31 across the eight cities, with variance explained ranging from 53% to about 66%, which is deemed acceptable. Furthermore, the Kaiser-Meyer-Olkin test was in the.80 range for all city data and the alpha measure of internal consistency was well above the criterion.70 within all cities. The factor loadings are similar in volume and range across the eight cities, which strengthen the generalizability of the scale across different cultures. Also, the loadings for the Lithuanian cities (Kaunas, Klaipeda and Vilnius) reveal even greater similarity than the overall range, being almost completely identical across these three cities. This should further strengthen the generalizbility of the study findings. Furthermore, the CFA reveals a consistent factor structure with solid fit indices across the eight study groups. Finally, for discriminant validity, the correlation of the PPS Scale and two previously validated and widely applied scales is very similar across all eight cities.

There are several limitations that warrant mention. First, this is an evaluation based on cross-sectional data collected in eight European cities; we cannot rule out the possibility that data collected in rural settings or indeed in other regions of the world, would have produced different results. Second, the participants in all of the cities were predominantly of Caucasian ethnic origin, which may influence the study findings. Third, measurement invariance is not accounted for in our confirmatory factor analyses (Byrne et al. 1989; Millsap 1997); we are therefore unable to assume its existence across the eight groups under study or between genders. This means that even though this study reveals solid findings it may well be that the PPS Scale is understood differently by adolescents across cultures. If so, it will mean that factor loadings within cities are not based on the same underlying theoretical construct (Byrne 2004). However, testing for measurement invariance requires multiple tests with and without imposing equality constraints on regression weights, variances and covariances, for all possible combinations of groups (Byrne et al. 1989; Byrne 2004); such a task is outside the scope of the present study. We therefore recommend more research on the PPS Scale where the specific aim is to test for measurement invariance across cultures and between genders. Fourth, a more reliable assessment

of construct validity of the PPS Scale would have been to carry out an analysis of convergent validity by correlating the scale with a validated and standardized construct of perceived parental social support. This was not done since the Youth in Europe survey was not specifically designed to test the consistency of the PPS Scale and lacks a validated social support tool to compare it with.

Finally, the PPS Scale may capture a somewhat different field within the social support domain than perceived social support or direct social support since the data it collects are based on the respondents' perceptions about access to social support as indicated by the question wording. We recommend that further studies and evaluations on the PPS Scale to be conducted, emphasizing the importance of distinguishing its impact from the more general parental social support domain, include validated constructs on both perceived and observed social support in the data collection process, and to test for measurement invariance across groups.

Acknowledgments This work was supported, in part, by grants from the Icelandic Alcohol and Drug Prevention Committee, the Icelandic Red Cross, the City of Reykjavik, and the Sports and Recreational Committee of Reykjavik to the Icelandic Centre for Social Research and Analysis, and by the Iceland/U.S. Fulbright Commission.

References

Agnew, R. (1992). Foundation for a general strain theory of crime and delinquency. *Criminology, 30*, 47–87.

Agnew, R., & White, H. R. (1992). An empirical test of general strain theory. *Criminology, 30*, 475–499.

Arbuckle, J. L., & Wothke, W. (1999). *AMOS 4.0 User´s Guide*. Chicago: Small Waters Corporation.

Aseltine, R., Gore, S., & Gordon, J. (2000). Life stress, anger and anxiety, and delinquency: An empirical test of general strain theory. *Journal of Health and Social Behavior, 41*, 256–275.

Barrera, M., Jr., & Li, S. A. (1996). The relation of family support to adolescents´ psychological distress and behavior problems. In G. R. Pierce, B. R. Sarason, & I. G. Sarason (Eds.), *Handbook of Social Support and the Family* (pp. 313–343). New York: Plenum Press.

Bean, R. A., Barber, B. K., & Crane, D. R. (2006). Parental support, behavioral control, and psychological control among African American youth—The relationships to academic grades, delinquency, and depression. *Journal of Family Issues, 27*, 1335–1355.

Bean, R. A., et al. (2003). The impact of parental support, behavioral control, and psychological control on the academic achievement and self-esteem of African American and European American adolescents. *Journal of Adolescent Research, 18*, 523–541.

Bjarnason, T. (1995). Administration mode bias in a school survey on alcohol, tobacco, and illicit drug use. *Addiction, 90*, 550–559.

Bjarnason, T., et al. (2005). Familial and religious influences on adolescent alcohol use: A multi-level study of students and school communities. *Social Forces, 84*, 375–390.

Bland, J. M., & Altman, G. D. (1997). Cronbach's alpha. *British Medical Journal, 314*(7080), 572.

Byrne, B. M. (2004). Testing for Multigroup Invariance Using AMOS Graphics. A Road Less Traveled. *Structural Equation Modeling, 11*, 272–300.

Byrne, B. M., Muthén, B., & Shavelson, R. J. (1989). Testing for the Equivalence of Factor Covariance and Mean Structures: The Issue of Partial Measurement Invariance. *Psychological Bulletin, 105*, 456–466.

Carmines, E. G., & Zeller, R. A. (1979). *Reliability and Validity Assessment*. London: Sage Publications.

Cassell, J. (1976). The contribution of the social environment to host resistance. *American Journal of Epidemiology, 104*, 107–123.

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine, 38*, 300–314.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310–357.

Colvin, M., Cullen, F. T., & Ven, T. V. (2002). Coercion, social support, and crime: An emerging theoretical consensus. *Criminology, 40*, 19–42.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 22*, 293–296.

Cullen, F. T. (1994). Social support as an organizing concept for criminology: Presidential address to the Academy of Criminal Justice Sciences. *Justice Quarterly, 11*, 527–559.

Dandy, J., et al. (2008). Psychometric properties of multigroup ethnic identity measure (MEIM) scores with Australian adolescents from diverse ethnocultural groups. *Journal of Adolescence, 31*, 323–335.

Derogatis, L. R., & Cleary, P. A. (1977). Confirmation of dimensional structure of SCL-90: Study in construct-validation. *Journal of Clinical Psychology, 33*, 981–989.

Derogatis, L. R., Lipman, R. S., & Covi, L. (1973). SCL-90: An outpatient psychiatric rating scale—Preliminary report. *Psychopharmacology, 9*, 13–28.

Felson, R. B., & Zielinski, M. A. (1989). Children's self-esteem and parental support. *Journal of Marriage and the Family, 51*, 727–735.

Ferring, D., & Filipp, S. H. (1996). Measurement of self-esteem: Findings on reliability, validity, and stability of the Rosenberg scale. *Diagnostica, 42*, 284–292.

Field, T., Diego, M., & Sanders, C. (2002). Adolescents´parent and peer relationships. *Adolescence, 37*, 121–130.

Fuentes, C. S. C., et al. (2005). Data about validity and reliability of the Symptom Check List 90 (SCL 90) in a Mexican population sample. *Salud Mental, 28*, 72–81.

Gerbing, D. W., & Anderson, J. C. (1993). Monte Carlo evaluations of goodness-of-fit indices for structural equation models. In K. A. Bollen & J. S. Long (Eds.), *Testing Structural Equation Models* (pp. 40–66). Newbury Park: Sage.

Henderson, A. S. (1992). Social support and depression. In H. O. F. Veiel & U. Baumann (Eds.), *The Meaning and Measurement of Social Support* (pp. 85–92). New York: Hemisphere.

Hessel, A., et al. (2001). Symptom-Checklist SCL-90-R: Validation and standardization based on a representative sample of the German population. *Diagnostica, 47*, 27–39.

Hirschi, T. (1969). *Causes of Delinquency.* Berkeley: University of California Press.

Holi, M. M., Sammallahti, P. R., & Aalberg, V. A. (1998). A Finnish validation study of the SCL-90. *Acta Psychiatrica Scandinavica, 97*, 42–46.

House, J. S. (1981). *Work, Stress and Social Support.* Reading: Addison-Wesley.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis. Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55.

Kim, J., & Mueller, C. W. (1978). *Factor Analysis: Statistical Methods and Practical Issues*. Newbury Park: Sage Publications.

Kristjansson, A. L. (2008). *Concepts and Measures in the 2006 and 2008 Youth in Europe Survey.* Reykjavik: Icelandic Centre for Social Research and Analysis.

Kristjansson, A. L., et al. (2008). Social correlates of cigarette smoking among Icelandic adolescents: A population-based cross-sectional study. *BMC Public Health, 8*, 86.

Lin, N., Ye, X., & Ensel, W. M. (1999). Social support and depressed mood: A structural analysis. *Journal of Health and Social Behavior, 40*, 344–359.

Martin-Albo, J., et al. (2007). The Rosenberg Self-Esteem Scale: Translation and validation in university students. *The Spanish Journal of Psychology, 10*, 458–467.

Martinez, S., Stillerman, L., & Waldo, M. (2005). Reliability and validity of the SCL-90-R with Hispanic college students. *Hispanic Journal of Behavioral Sciences, 27*, 254–264.

Martinez-Ferrer, B., et al. (2008). The role of parental support, attitues to school, and self-esteem on school-based violence among adolescents. *International Journal of Clinical and Health Psychology, 8*, 679–692.

Millsap, R. E. (1997). Invariance in measurement and prediction: Their relationship in the single factor case. *Psychological Methods, 2*, 248–260.

Needham, B. L. (2008). Reciprocal relationships between symptoms of depression and parental support during the transition from adolescence to young adulthood. *Journal of Youth and Adolescence, 37*, 893–905.

Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg Self-Esteem Scale. *Personality and Social Psychology Bulletin, 27*, 151–161.

Rosenberg, M. (1965). *Society and the Adolescent Self-Image.* Princeton: Princeton University Press.

Sampson, R. J., & Laub, J. H. (1994). Urban poverty and the family context of delinquency: A new look at structure and process in a classic study. *Child Development, 65*, 523–540.

Sigfusdottir, I. D., Farkas, G., & Silver, E. (2004). The role of depressed mood and anger in the relationship between family conflict and delinquent behavior. *Journal of Youth and Adolescence, 33*, 509–522.

Sigfusdottir, I. D., Kristjansson, A. L., & Allegrante, J. P. (2007). Health behaviour and academic achievement in Icelandic school children. *Health Education Research, 22*, 70–80.

Sigfusdottir, I. D., Thorlindsson, T., & Bjarnason, T. (2007). Religion: Divine support and psychological tension. *Social Compass, 54*, 473–392.

Sigfusdottir, I. D., et al. (2009). Substance use prevention for adolescents: The Icelandic Model. *Health Promotion International, 24*, 16–25.

Sigfusdóttir, I. D., et al. (2008). Trends in prevalence of substance use among Icelandic adolescents, 1995–2006. *Substance Use Treatment, Prevention, and Policy, 3*, 12.

Springer, A., et al. (2006). Supportive social relationships and adolescent health risk behavior among secondary school students in El Salvador. *Social Science & Medicine, 62*, 1628–1640.

Streiner, G. L., & Norman, D. R. (1995). *Health Measurement Scales: A Guide to Their Development and Use* (2nd ed.). Oxford: Oxford University Press.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using Multivariate Statistics* (4th ed.). New York: Harper-Collins.

Thorlindsson, T., & Bernburg, J. G. (2006). Peer groups and substance use: Examining the direct and interactive effect of leisure activity. *Adolescence, 41*, 321–339.

Thorlindsson, T., & Bjarnason, T. (1998). Modeling Durkheim on the micro level: A study of youth suicidality. *American Sociological Review, 63*, 94–110.

Thorlindsson, T., Bjarnason, T., & Sigfusdottir, I. D. (2007). Individual and community processes of social closure: A study of adolescent academic achievement and alcohol use. *Acta Sociologica, 50*, 161–178.

Thorlindsson, T., & Vilhjalmsson, R. (1991). Factors related to cigarette smoking and alcohol use among adolescents. *Adolescence, 26*, 399–418.

Thorlindsson, T., et al. (1998). *Substance Use Among Young People [Vímuefnaneysla ungs folks: Umhverfi og aðstæður]*. Reykjavik: Institute for Educational Research.

Turner, R. J. (1999). Social support and coping. In A. V. Horwitz & T. L. Scheid (Eds.), *A Handbook for the Study of Mental Health. Social Contexts, Theories, and Systems* (pp. 198–210). Cambridge: Cambridge University Press.

Vallieres, E. F., & Vallerand, R. J. (1990). French translation and validation of the Rosenberg Self-Esteem Scale. *International Journal of Psychology, 25*, 305–316.

Vaux, A. (1988). *Social Support: Theory, Research, and Intervention*. New York: Praeger.

Wagner, B. M., Cohen, P., & Brook, J. S. (1996). Parent/adolescent relationships: Moderators of the effects of stressful life events. *Journal of Adolescent Research, 11*, 347–374.

Wethington, E., & Kessler, R. C. (1986). Perceived support, received support, and adjustment to stressful life events. *Journal of Health and Social Behavior, 27*, 78–89.

Wright, J. P., & Cullen, F. T. (2001). Parental efficacy and delinquent behavior: Do control and support matter? *Criminology, 39*, 677–701.