

# **Chronic Social Stress and Depressive Symptoms in Adolescents<sup>1</sup>**

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## **SUMMARY**

### **Background**

There has been an increased focus on psychological problems among children and adolescents over the past few decades. Research clearly indicates that psychological complaints among young people have increased over this time span. In particular, the high prevalence of depression and depressive symptoms have been highlighted as one of the major health problems of adolescence. Combined with empirical evidence which shows that psychological problems in adolescence have a high risk of continuing into adulthood, this has led to increased research efforts on psychological problems among adolescents.

Another consistent finding from the research literature is the gender differences in depression and depressive symptoms, with depression rates among women 2 to 3 times higher than among men. Research on depression among children and adolescents consistently shows that gender differences emerge between the age of 11 and 15 and continue into adulthood. A number of explanations have been advanced regarding the emergence of gender differences during adolescence. Among the factors that have been discussed are timing of pubertal onset, effects of stressful life events, social support (parents, friends), differences in vulnerability to various types of stress, and changes in social roles and expectations. Several of these factors are distinctly social in nature. Investigating the relationship between factors in the social environment and gender differences in depressive symptoms is thus an important task to improve the understanding of these issues.

This study employs a psychosocial perspective to investigate psychological complaints among adolescents. The study includes both stressors and resources in the psychosocial domain. Particular attention is given to the relationship between chronic social stress and depressive symptoms for this age group. Furthermore, the study seeks to analyse gender differences in the effects of the various psychosocial variables on depressive symptoms, again with particular emphasis on the effects of chronic social stress. Chronic social stress is viewed as threats to the fundamental human need to belong. This perspective strengthens the theoretical foundation for the claim that social stress potentially has important effects on mental health. The link to belongingness also provides access to a large and diverse theoretical and empirical literature which has bearings on the interpretation of the results of the present study.

### **Study hypotheses**

- H1: a) Girls will report a higher prevalence of depressive symptoms than boys.
- b) Girls will report higher levels of chronic social stress than boys
- c) The relationship between chronic social stress and depressive symptoms will be stronger for girls than for boys.
- H2: Chronic social stress will be significantly positively related to depressive symptoms for both boys and girls, and the relationship stays significant when controlling for the other predictors in the study.
- H3: Worry will be significantly positively related to depressive symptoms for both boys and girls, and the relationship stays significant when controlling for the other predictors in the study.

H4: Social support variables, general self-efficacy and social self-efficacy will be significantly negatively related to depressive symptoms for both boys and girls, and the relationships stay significant when controlling for the other predictors in the study.

### **Study design**

The participants in this cross-sectional study were Romanian students in secondary and high schools in Bucharest. The data were collected with the assistance of the Youth to Youth Foundation of Romania. The study was conducted during February/March 2002. The sample frame of the survey was all students in all secondary and high schools in Bucharest. In each of eight randomly selected schools, classes were randomly selected resulting in a study sample of 728 students. The questionnaires were filled out during a regular school hour, giving the students adequate time to answer the questions.

The questionnaire contained the Subjective Health Complaints Scale (SHCS) as a measure of psychological distress, the Bergen Social Relationships Scale (BSRS) and the (adapted) Bergen Worries Scale (BWS-C) as measures of stress, and the General Self-efficacy (GSES) and the Social Self-efficacy (SSES) scales as measures of individual coping resources. In addition, the questionnaire contained a number of single-items designed to measure social support.

## Results

All students in the selected classrooms at the time of the survey (N=630) were invited to fill out the pen and paper questionnaire and 627 of them accepted to participate in the survey, resulting in a response rate of 99.52%.

The results of the study showed that the prevalence of chronic social stress among adolescents in the sample was high; 66% of girls and 57% of boys reported three or more stressors. This is higher than similar figures reported for Norwegian adults, but largely in line with results found for Romanian adults in previous studies. The results supported hypothesis 1; girls reported higher levels of both depressive symptoms and social stress, and the effects from social stress on depressive symptoms were larger for girls than for boys. Hypothesis 2 was also largely supported, there was a significant relationship between chronic social stress and depressive symptoms. This result was particularly clear for girls, for boys the relationship between chronic social stress and depressive symptoms was weaker, and only significant in one of the regression models of the study. Hypothesis 3 found strong support in the study; personal worries were found to be significantly and strongly related to depressive symptoms for both girls and boys. Hypothesis 4 was only partially supported. Most of the social support items did not show a significant relationship to depressive symptoms, with the exception of 'perceived availability of a confidant', which was significantly related to depressive symptoms for boys. Social self-efficacy was significantly related to depressive symptoms for girls but not for boys. General self-efficacy was not significantly related to depressive symptoms for either gender.

The most potent predictor for depressive symptoms for girls was chronic social stress, while the most potent predictor for depressive symptoms for boys was personal worries.

### **Discussion and conclusion**

The results of this study confirm for adolescents the relationship between chronic social stress and psychological distress which has been demonstrated in previous research on adult samples. Furthermore, the results of the study suggest that it is helpful to employ a broad psychosocial perspective when investigating psychological distress among adolescents. Also, the results indicate that there are gender differences in the factors influencing psychological distress and potentially in the mechanisms relating the various factors in the psychosocial domain.

It is possible to point out several theoretical and methodological weaknesses in the present study. One general but important issue concerns the measures of the various psychosocial variables. The scales employed are not necessarily robust reflections of their underlying constructs, in the sense that the scales capture all or most of the relevant characteristics of the theoretical constructs. This is evidenced in the research literature, in which a wide variety of theoretical and empirical constructs have been devised for social stress, social support and personal coping resources. Further theoretical and empirical work is needed in this area to improve the measurement of these factors.

The cross-sectional study design could also be criticised as it makes it difficult to draw conclusions about cause and effect relationships. The hypotheses of the present study

did not concern causality, as the study is more of an exploration of possible relationships between psychosocial variables and depressive symptoms. Cross-sectional study designs are well-suited for this purpose. However, the understanding of the relationships found in cross-sectional studies would be improved and deepened by further investigations using longitudinal, prospective and/or retrospective techniques.

There are also some specific questions concerning the adaptation and use of some of the scales in this study with adolescents. Both the BSRS and the BWS have originally been constructed for use with adults. The BSRS was used in this study in its original form, while the BWS was adapted for use with adolescents through focus groups, resulting in a revised scale for use with adolescents (BWS-C). The psychometric characteristics of these scales when used with adolescents have not been explored, and more work is thus needed to gain further experience with the scales in this setting. It was observed in the study that some of the scales (BSRS, BWS-C) had a lower reliability (Cronbach's alpha) in the adolescent sample than in previous studies with adult samples. This raises the scope of revision and improvement of the scales for use with adolescents.

Over the past few decades there has been increasing focus on the relationship between psychological complaints and factors in individuals' psychosocial environment. There has also been a growing realisation that psychosocial factors can have both positive and negative effects on mental health. Another area of increasing interest has been gender differences both in the prevalence of psychological complaints and in the mechanisms which lead to the complaints. The results of this study underline the importance of employing a wide psychosocial perspective when analysing these questions.

Furthermore, the study highlights the very real possibility that there are gender differences both in the set of factors contributing to psychological complaints and in the relevant transmission mechanisms.

In a situation where psychological complaints are increasing among adolescents and life arguably has become more complicated for young people, new possibilities for prevention and health promotion intervention arise. Knowledge about specific factors influencing mental health positively and negatively is a very important first step in devising such interventions. Further efforts to establish cause and effect relationships and improved knowledge about interaction effects in this area would be most welcome.

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## **INTRODUCTION**

### **1.1 Study aims**

This study employs a psychosocial perspective to investigate psychological complaints among adolescents. The study includes both stressors and resources in the psychosocial domain. Particular attention is given to the relationship between chronic social stress and psychological complaints for this age group. To implement effective health promotion measures and to prevent psychological problems among adolescents it is important to improve our understanding of which factors constitute stressors and coping resources for this age group. Although there has been an increasing focus on psychological problems among adolescents over the past few decades there are relatively few studies that have employed this kind of wide psychosocial perspective.

In this study chronic social stress is viewed as threats to the fundamental human need to belong. This perspective strengthens the theoretical foundation for the claim that social stress potentially has important effects on mental health. The link to belongingness also provides access to a large and diverse theoretical and empirical literature which has bearings on the interpretation of the results of the present study.

The concept of social stress is defined within a transactional, cognitive framework where stress emanates from problematic social relationships and the subjective stress experience is measured through self-reporting. The definition of social stress employed in this study necessitates exploring the relationship between chronic social stress and depressive symptoms within a broad psychosocial setting. The reason for this is that a number of other factors in individuals' environments potentially will influence the relationship between social stress and depressive symptoms. Personal worries not related to social relationships per se could lead to

depressive symptoms. There are also a number of factors related to both individuals' social environment and to individuals' coping abilities and strategies that potentially could influence the relationship between social stress and depressive symptoms. Among these factors are social support and individuals' subjectively perceived coping abilities. This study seeks to analyse the relationship between chronic social stress and depressive symptoms when taking into account a number of factors in individuals' wider psychosocial setting.

### **1.2 Depressive symptoms**

Based on the intensity, severity and duration of psychological complaints it is possible to discriminate between pathological conditions and more or less normal conditions. Among adolescents it has been common to separate between depression, depressive syndromes, and depressive tendencies in order of decreasing severity and duration of symptoms (Mahon and Yarcheski, 2001). Depression refers to a pathological condition, in which individuals' level of functioning is negatively influenced. Depressive tendencies refer to self-reported symptoms in a non-clinical group or a milder form of depression. Depressive tendencies might also be part of the symptoms of a more serious depression. The definition and measurement of depressive symptoms in this thesis is in line with the definition of depressive tendencies.

### **1.3 Mental health among adolescents**

The empirical research literature shows that depressive symptoms among adolescents have increased over the last decades. Some researchers argue that cultural changes, such as increases in divorce rates and higher social mobility have led to more difficult living conditions for adolescents today than previously (Garber and Glynn, 2001). A strong increase in research efforts on psychological problems among adolescents has also led to better

understanding of these issues. Thus, psychological problems which used to be ascribed to the normal turbulence of adolescence are now recognized as genuine.

In light of modern research several researchers have described the high prevalence of depression and depressive symptoms as one of the major health problems of adolescence (Zahn-Waxler, 1996; Light, 2000; Weller and Weller, 2000; Boyd, Gullone, Kostanski, Ollendick, and Shek, 2000). The extent of depressive symptoms among adolescents in Eastern Europe in particular seems dramatic, compared with Western Europe and North America. Depression rates of about 10 percent have been reported for U.S., Canadian, Italian and British adolescents, compared to rates of up to 32 percent for Polish youth and 40 percent for Bulgarian teenagers (Boyd et al., 2000). Furthermore, evidence clearly indicates that depressive symptoms in adolescence have a high risk of continuing into adulthood (Weller and Weller, 2000).

#### **1.4 Depressive symptoms and the social environment of adolescents**

Although many published studies focus on depressive symptoms in adolescent years, there are relatively few studies in which negative factors in the social environment have been related to depression. When factors in the social environment have been brought in, the emphasis has typically been on the protective effects of strong social ties and the availability of social support, for which there is abundant evidence (Vandervoort, 1999; Seeman, 2000).

The relative lack of attention to the role that stress from an individuals' social environment might play in adolescent mental health is curious. Influential theoreticians including Lazarus and Folkman (1984) have long taken the stance that ongoing troubled relationships may be more important sources of stress than major life events, and supporting evidence is mounting. The few studies on the relationship between stress factors in adolescents' social environment

and depression are generally in accordance with this view. Sim (2000) observed that social stress emanating from parents and friends was correlated positively with depressive symptoms among young Korean adolescents, and that parental support, but not friend or teacher support, was correlated negatively with depressive symptoms. Similarly, Greenberger, et al. (2000) observed in Chinese and U.S. adolescents that perceived parental conflict and conflict with parents were associated with depressive symptoms in the expected directions. Lewinsohn, et al. (1994) observed depressive symptoms in U.S. adolescents to be related to the level of stress in their environments, and social support from friends in the expected directions. Wade and Cairney (2000) observed that social stress was related to depressive symptoms among the younger cohorts in their study. A feature common to the reports of these studies is that the conceptualisation of social stressors is typically not dwelled upon, and there is often no obvious theoretical foundation for the construct.

### **1.5 Gender differences in depressive symptoms among adolescents**

Another consistent result from the research on depression and depressive symptoms is the significant gender difference in depression among both adolescents and adults (Nolen-Hoeksma, 1991). Rates of depression are approximately 2 to 3 times higher among women than men (Culbertson, 1997; Angold, Costello and Worthman, 1998). Research on depression among children and adolescents consistently shows that gender differences emerge between the age of 11 and 15 and continue into adulthood (Weller and Weller, 2000; Angold et al., 1998; Ge, Conger and Elder, 2001; Nolen-Hoeksma and Girgus, 1994). A number of explanations have been advanced regarding the emergence of gender differences during adolescence. Among the factors that have been discussed are timing of pubertal onset, effects of stressful life events, social support (parents, friends), differences in vulnerability to various types of stress, and changes in social roles and expectations (Ge, Lorenz, Conger, Elder and Simons, 1994; Ge et al. 2001). Several of these factors are distinctly social in nature.

Investigating the relationship between factors in the social environment and gender differences in depressive symptoms is thus an important task to improve the understanding of these issues.

## **THEORY**

### **2.1 Social support: Positive effects of social relationships**

There is an abundance of evidence that the social environment in which human beings exist has profound effects on health and functioning. The evidence quite clearly demonstrates that strong social ties are associated with enhanced physical and mental functioning, and that a lack of meaningful social ties is a risk for poorer health (Stroebe and Stroebe, 1995; Schwartz and Leppin, 1992; Vandervoort, 1999; Seeman, 2000). Similar findings are reported for adolescents specifically in relation to peer relationships and family (Petersen, Compas, Brooks-Gunn, Stemmler, Ey and Grant, 1993; Ge et al., 1994). The unequivocal nature of this evidence has prompted the conclusion that “A key strategy for community mental health promotion is the strengthening of positive social ties, the anticipated benefits of which are better functioning individuals, families, neighbourhoods and work groups, and improved mental and physical health” (Mittelmark, 1999).

Research on the relationship between the social environment and the health and functioning of individuals initially focused on the positive effects of social ties. Social support research has since the early 70s consistently demonstrated that there is a beneficial effect on functioning in general and mental health in particular from social support (Berkman, 1985; Schwartz and Leppin, 1992; Cohen et al., 1994). This is true whether social support is conceptualized and measured in terms of network relations, perceived availability of social support, or received social support. For adolescents specifically, similar results have been obtained (Vandervoort, 1999; Seeman, 2000).

## **2.2 Social stress: Detrimental effects of stressful social relationships**

There has been a growing realization over the last years that social relationships are not necessarily positive for mental health and functioning. It is not that the potential benefits of strong social ties have been questioned, but rather that the potential detrimental effects of problematic social relationships are becoming better appreciated (Kessler, 1997; Mazure, 1998; Finch et al., 1999; Wiseman and Bruce, 1999; Seeman, 2000). The bulk of the research on the negative effects of problematic social relationships has been undertaken with vulnerable people in focus. Examples include the psychological effects of social undermining for unemployed persons (Vinokur and van Ryn, 1993), bullying problems in school (Olweus, 1997), older adults' coping with arduous care giving responsibility (Schulz et al., 1997), students struggling with the pressures of study and examinations (Supe, 1998), patients coping with posttraumatic stress after serious injury (Ehde et al., 2000) and chronically ill persons' coping with medical treatments (Tell et al., 1995). These and related studies have produced convincing evidence that stressful personal relationships are not merely uncomfortable, they can be seriously damaging to functioning and health (Bolger et al., 1989; Finch et al., 1989; Allison et al., 1997).

Beside the relatively large literature on vulnerable sub-groups just referred to, a few population-based studies are now available in the literature. A recent review (Mittelmark, et al., 2004) identified a handful of studies of this type: Statistics Canada's 1994 National Population Health Survey showed that among younger cohorts, social stress was related to depression (Wade and Cairney, 2000). The US National Co-morbidity Study observed that people with depressive disorder reported not only significantly fewer positive interactions, but also more negative interactions, compared with others in the study (Zlotnick et al., 2000). The

New Haven (USA) Epidemiologic Catchment Area Program has observed that people who expressed marital dissatisfaction experienced major depressive episodes at a rate three times greater than others, and moreover that marital dissatisfaction was a risk for new occurrences of major depressive disorder (Whisman and Bruce, 1999). Researchers in Germany observed that depressive symptoms were related to social stressors at work under low social support conditions, while paradoxically, social stress at work was associated prospectively with fewer depressive symptoms among those with good social support (Dormann and Zapf, 1999).

Perhaps the most elaborate population-based data yet available on social stress and health are those of the Midlife in the United States Survey, or MIDUS (Walen and Lachman, 2000). From MIDUS' national probability sample, data from all married and cohabitating participants (n=2348) were examined to study the relationship between self-reported well-being and physical health, and self-reported social support and social stress to family, friends and partner. Among both women and men, partner support and stress was related inversely to well-being, and partner stress was positively related with health problems. Among women, family stress was associated with both lower levels of well-being and physical health.

### **2.3 Social relationships and the need to belong**

The need to belong, i.e., the need to form and maintain strong, stable interpersonal relationships, has been discussed in recent years as a fundamental human motivation. In the psychological literature, the hypothesis that the need to belong guides a significant part of human thought and behaviour has been named the belongingness hypothesis (Baumeister and Leary, 1995). According to this view a prerequisite for belongingness is the existence of meaningful, mutual social relationships or ties where social interaction is relatively frequent. More precisely, two criteria must be met to satisfy the drive to belong. First, there must be

frequent, affectively pleasant interactions with a few other people, and second, these interactions must take place within the context of stable, ongoing relationships of mutual caring for each other's welfare (Baumeister and Leary, 1995). Social interactions with a long-term intimate will provide some satisfactions, including a sense of belonging which will not be available through the interactions with strangers or new acquaintances. Thus, to satisfy the need to belong, neither the mere number of social relationships, nor the frequency of social interactions is sufficient. Rather it is the combination of mutually caring relationships and frequent interaction that is necessary and sufficient.

### **2.3.1 The fundamental nature of the need to belong**

Proponents of the belongingness hypothesis argue that the need to belong is an inborn human characteristic. From this viewpoint, belongingness has an evolutionary basis. Neuroscientists argue that the human brain and the human society and culture have developed in tandem (Buss, 2001, Fiske, 2000). Brewer (2004) states that; "As a species, our social interdependence is, quite literally, written in our DNA". From an evolutionary perspective there are many arguments for forming social bonds between members of a group (Ainsworth, 1989; Bowlby, 1969, Moreland, 1987). Groups can share work and food, provide mates and help care for offspring. Many tasks, such as hunting large animals or providing defence against predators and other groups and individuals are more easily performed in groups. When groups start to form it is critically important to be a member of a group oneself. Otherwise one would lose out in a competition for scarce resources. Experimental research testifies to the tendency to form group cohesion and social relationships even in minimal settings (Brewer, 1979).

If belongingness is really a fundamental human need it follows that the number and quality of social relationships will have effects on the well-being and quality of life of individuals. A satisfactory number of meaningful, ongoing social ties will increase well-being and the quality of life, while an unsatisfied need to belong will reduce the quality of life. Further, if belongingness is a fundamental human need, rather than something we merely desire, it would be expected that the lack of belonging would have potentially serious detrimental effects to physical or mental health. There is, in fact, an abundance of evidence for such detrimental effects in the research literature (Baumeister and Tice, 1990; Baumeister, 1991; Myers, 1992).

### **2.3.2 Satiation and substitution in belongingness**

As is the case for other fundamental needs, belongingness exhibits the characteristics of satiation and substitution. Satiation implies that once a minimal level of belonging is reached, further social relationships will exhibit diminishing returns. An individual can only maintain a limited number of stable, deep, meaningful relationships, as keeping up these relationships demands the investment of substantial amounts of time and effort. Research shows that people typically prefer having a few close social relationships over having a large number of more distant relationships (Wheeler and Nezlek, 1977; Reis, 1990; Caldwell and Peplau, 1982). Given the importance of these salient relationships and the large investments that go into maintaining them, it comes as no surprise that people dread losing their closest social companions. People react to the loss of meaningful social relationships with grief and anxiety (Baumeister and Tice, 1990; Leary, 1990; Tambor and Leary, 1993). Hazan and Shaver (1994a, 1994b) conclude that the tendency for human beings to respond with distress and protest to the end of a relationship is nearly universal, even across different cultures and across the age span. When people meet in groups that naturally have a limited time span, such as training groups or in college, the members of the group most often will resist the

dissolution of the social bonds that have formed within the group. Often group members will individually and sometimes collectively promise to stay in touch, or they will plan reunions (Baumeister and Leary, 1995). Lacoursiere (1980) argue that the widespread exercise of making such promises and plans, even though only a small minority of the promised contacts will be made, can be regarded as a symptom of resistance to the threatened dissolution. Baumeister and Leary (1995), argue that threats to social attachments, especially the dissolution of social bonds, are a primary source of negative affect. Leary (1990) found that people feel anxious at the prospect of losing important relationships, and Tambor and Leary (1993) found that individuals feel depressed and grief stricken when important social bonds are severed.

Substitution implies that the need to belong can be satisfied in a number of ways (Baumeister and Leary, 1995). For many individuals relationships involving romantic love are particularly salient. Bonds to family members will also be important for most people. Close friendships involving the sharing of confidences and mutual experiences similarly will increase belongingness. On the belongingness hypothesis, the need to belong could also be satisfied through the engagement and involvement in groups, such as a work organisation or an ideological movement. In this, the belongingness hypothesis differs from the early, Freudian attachment theory of Bowlby (1969) where attachments are directed solely towards individuals and basically derived from the child's tie to his or her mother. To some extent social relationships are interchangeable, or substitutable in satisfying the need to belong (Brewer, 2004). Typically, when entering a relationship based on romantic love, individuals will spend less time with family and friends. This is clearly related to satiation, but also to substitution. The new salient relationship to some extent substitutes for other relationships in satisfying the need to belong. In this sense, satiation and substitution is linked in

belongingness, as is the case for all fundamental human motivations. New friendships can replace old ones; new workplaces can replace earlier workplaces. Substitutability does not imply that all important social relationships can easily be replaced. Some relationships are difficult or impossible to replace, e.g. it is impossible to replace close family members. And as Baumeister and Leary points out a 20-year spouse or friend can not be replaced with a new acquaintance (in the long run, however, a new spouse or friend should do as well as the previous one). Also, forming new salient social relationships involves a substantial investment of time and effort in providing the intimacy and the shared experiences necessary to satisfy the need to belong. Substitutability does imply, however, that a lack of belongingness caused by the loss of salient relationships over time can be satisfied through new and potentially different relationships.

### **2.3.3 Gender differences in the need to belong: relational vs. collective self-representations**

Some authors have argued that belonging is governed not by a single psychological regulatory system, but by two separate systems. Brewer and Gardner (1996) argue that the social self is differentiated into two separate self-representations – the relational self, which is based on personalised relationships with significant others, and the collective self, which is the depersonalised representation of the self as a member of a social group or large collective. Interestingly, a number of authors have found gender differences in the relative importance of the relational self and the collective self in social interactions. Brewer (2004), reports that women respond more intensely to threats of interpersonal rejection or loss, whereas men are more responsive to loss of social status, peer group rejection and/or public rejection. Baumeister and Sommer (1997) suggest that men and women differ in the relative importance placed on meeting relational versus collective forms of social attachment, with women being

more relationally oriented and men more collectively oriented. Supporting this hypothesis, Gabriel and Gardner (1999) found that women were more likely to set their personal desires aside for a friend, while men were more likely to sacrifice for a group. Seeley et al (2003) observed that among women, group importance was mainly determined by the degree to which the group fulfilled relational needs, while men placed a greater importance on the collective identity that groups offer.

#### **2.4 Stressful social relationships as threats to belongingness**

The notion that problematic social relationships have negative impacts on individuals' health and functioning has been investigated by a number of authors. For the most part the question of what constitutes the stressful aspects of problematic social relationships has been taken for granted and thus been left unanswered. Social stress created by problematic social relationships should be fundamentally related to the threat to belongingness that is inherent in a stressful social relationship. The argument that negative social interactions in salient social relationships constitute a direct form of threat and not merely the absence or withdrawal of coping resources is made by Vinokur and van Ryn (1993). This point is also made by Shinn, Lehmann and Wong (1984) and is the reason they suggest the conceptualization of negative interpersonal interactions as stressors. Allen and Badcock (2003) argue that the stress reactions related to the loss of important interpersonal relationships are adaptive and based on evolutionary processes, the same kind of processes that have produced the need to belong. They further argue that it is important to distinguish between the evolutionary origins of a psychological mechanism and the nature of the mechanism. Although they argue that the loss of critical beneficial relationships was the contingency that determined the evolution of the mental stress reactions, the stress reactions are not necessarily related to the loss of interpersonal relationships per se. In other words, stress reactions will not appear only when

individuals are actually excluded or under actual threat of exclusion from critical social relationships, but rather whenever the social signals that are reliably associated with exclusion from critical relationships are present. In troubled social relationships such signals will be the rule rather than the exception.

#### **2.4.1 The separate dimensions of social stress and social support**

The view that problematic social relationships intrinsically represent threats to belongingness also sets social stress apart from social support and provides a theoretical foundation for treating them as separate factors. There has been a discussion in the literature about whether social stress and social support represent two different poles of the same spectrum, i.e. whether social stress represents negative social support. There are some proponents of this view (Coyne and Downey, 1991). However, while social support mainly represents coping resources for individuals, i.e. indirect means to cope with stressful situations, problematic or stressful social relationships represent stress factors in themselves. It is therefore likely that while social support and social stress might be correlated, they do not share the same dimensionality, and should be treated as separate factors in analyses. There is considerable empirical support for this separation in the literature from studies that include demographically diverse samples of respondents including unemployed people (Vinokur and van Ryn, 1993), college graduates (Ruehlman and Wolchik, 1988), recently bereaved or disabled older adults with matched control groups (Finch, Okun, Barrera, Zautra and Reich, 1989), and a representative community sample (Schuster, Kessler and Aseltine, 1990). In addition, similar results have been found for the factor-separateness of social support and social stress in analyses undertaken at the HEMIL Centre in Bergen for representative samples of Norwegian and Romanian adults (Mittelmark, et al, 2004; Bancila and Mittelmark, 2004).

## **2.5 The social nature of depressive symptoms**

Research on the effects of social stress (or threats to belongingness) has consistently found negative impacts on physical and mental health and functioning. The results are particularly compelling for effects on mental health. Based on the existing empirical results there is little doubt that chronic social stress increases anxiety and depression (Leary, 1990; Tambor and Leary, 1993). In the belongingness literature the widespread acceptance that depressive symptoms are related to social exclusion or the threat of social exclusion, has led a number of authors to argue that depression is an evolutionary based, inbred response to threats in the social environment (Allen and Badcock, 2003) and that depression is usually distinctly social or interpersonal in nature (Monroe, Rohde, Seeley and Lewinsohn, 1999; Rudolph et al., 2000). Thus, investigators have shown that depressive symptoms often result from interpersonal stressors in non-clinical populations (Hammen et al., 1985; Robins and Block, 1988) and that depression and depressive symptoms are commonly related to social losses (Bowlby, 1980; Brown and Harris, 1978; Monroe et al., 1999).

The social nature of depressive symptoms is also underlined by research on cognitive biases in people suffering from mild-to-moderate depression and anxiety. The results indicate that whereas people suffering from anxiety have an intentional bias and heightened sensitivity toward connotations of physical threat; depressed people have an increased attention and sensitivity to words or pictures indicating socially threatening situations (Mathews, Ridgeway and Williamson, 1996; Allen et al., 2001; Mogg, Bradley and Williams, 1995; Weary and Edwards, 1993). Furthermore, results indicate that depression influences individuals' reasoning about social risk (Badcock and Allen, 2003).

## **2.6 Chronic social stress**

As mentioned, the notion that stressors in the social environment can have detrimental effect on health and functioning has received quite a lot of attention. In the literature this notion has been conceptualized and measured in a number of different ways and given as many names; social undermining, social conflict, social hindrance and negative social support among others. In the present study the concept of stressors in the social environment follows Mittelmark et al. (2000) in their description of chronic social stress. This approach has the advantage that it is theoretically well-founded and that a specific instrument has been developed to measure chronic social stress; the Bergen Social Relationships Scale (BSRS).

### **2.6.1 The theoretical foundation of the chronic social stress construct**

The theoretical foundation of the chronic social stress approach employed here has the following main points (from Mittelmark (1999)):

First, the broad conceptualisation of social stress follows Rook (1990), and refers to processes through which actions by people in one's social network, intended and unintended, cause a person to experience adverse psychological or physiological reactions. Examples of these actions include making excessive demands, criticism, invading privacy, provoking conflict, meddling, social conflict, giving trite, ineffective or inappropriate support, and aversive contact and social control (Rook, 1990).

Second, the implicit view in Rook's definition that it is one's perceptions of others' actions, not their objective actions per se, that are critical in defining social stressors, is made explicit. This is consistent with a transactional perspective on stress in which environment-person interactions are mediated by psychological processes, most notably appraisal and coping processes (Lazarus and Folkman, 1984; Billings and Moos, 1985). This emphasis does not

dismiss the classical stimulus-response understanding of stress in which objective stressors are linked to distress through basic physiological processes. Psychological and physiological processes clearly are inextricably inter-twined. The widely held notion that objective measures of stress are preferred over subjective measures is therefore rejected here. Quite the contrary, social stress cannot be measured objectively. It follows from a transactional perspective, in which the mediating processes are psychological, that the social stress construct is accessible to the researcher only via a person's reflection over, and report of, their own experiences.

The third reference point for the present work is theory and associated literature on the social psychology of cognition referring both to (a) the mental process of knowing, including aspects such as awareness, perception, reasoning, judgement and intuition, and (b) that which comes to be known. It has already been noted that social stress influences cognitive processes. Within this arena, there is a very large body of work on the problem of cognitive dissonance (Festinger, 1957), which has been defined succinctly by Jones (1985): Two cognitions can either be relevant or irrelevant. If they are relevant then they must be consistent or dissonant. To say that two cognitions are dissonant is to say that one does not follow from the other or that one follows from the converse of the other. Dissonant cognitions produce an aversive state, which the individual will try to reduce by changing one or both of the cognitions. Critical to the conceptualisation of social stress, not all attempts to reduce dissonance succeed, and people may have to live with dissonance over extended periods, in other words they must exist in an aversive state. This describes a special case of the transactional model of stress: chronic dissonance and the attendant living in a chronic aversive state. When the dissonance is about others with which one has meaningful (relevant) social relationships, chronic social stress is defined. When viewing chronic social stress as threats to an individual's belongingness status it is clear that dissonance might ensue when the actions, intended or

unintended, from a person with whom the individual engages in what he believes to be a mutually caring relationship, do not conform to this belief. It is interesting to note that research on information gathering and processing clearly indicate that people process information about significant others differently from information about strangers. Pryor and Ostrom (1981) and Ostrom, Carpenter, Sekidikes and Li (1993) have shown that people tend to use the individual person as a cognitive unit of analysis for significant others, while we tend to use attribute categories (such as traits, preferences, and duties) for less familiar people. Research also indicates that there is a positive bias in the processing of information about significant others. We tend to expect more favourable and less objectionable actions by people we share a close social relationship with, and these expectations incline us to forget the bad things (relative to the good things) that our significant others do (Howard and Rothbart, 1980; Fincham, Beach and Baucom, 1987). As a coping strategy, this positive information processing bias will tend to produce less dissonance from discordant actions from and beliefs about significant others. But, as noted, not all such coping attempts succeed.

Summarising, chronic social stress is defined as a transactional, cognitive process involving appraisal and relatively unsuccessful coping attempts, to resolve dissonance among cognitions about a significant other(s) (see Mittelmark, et al, 2004).

### **2.6.2 The Bergen Social Relationship Scale (BSRS)**

To measure social stress emanating from near relationships, a research group in Bergen has worked for the past seven years to establish a theory-based programme of research on chronic social stress and psychological health (Mittelmark et al. 2000). In developing the brief instrument assessing social stress, it was desired to develop indicators that would be broadly representative of the universe of indicators, and that would be meaningful for people of all

backgrounds and situations. The work produced six classes of indicators thought on theoretical grounds to describe situations that could be seriously distressful to average people, not otherwise especially vulnerable because of frailty, acute stress, serious physical illness and the like. These situations are labelled 'helpless bystander', 'inept support', 'performance demand', 'role conflict', 'social conflict' and 'criticism'. These are explicated below (from Mittelmark, 1999).

The *Helpless Bystander* situation describes the plight of a person (P) that is aware of a serious problem in the life of a significant other (O). P desires to assist O but is unable to do so, does not know how to assist or feels unwelcome to assist. In other words, P wishes to engage in prosocial (helping) behaviour, but cannot. There are divergent views on why people are motivated to help others that are in trouble. Social exchange theory (Thibaut and Kelley, 1959; Homans, 1961) reasons that helping others is rewarding because it relieves the personal distress of an observer, a view that rejects explicitly altruism (Dovidio *et al.*, 1991; Eisenberg and Fabes, 1991). Altruism is, never the-less, also advanced as an explanation for prosocial behaviour, based on the idea that the human emotion of empathy causes observers to feel others' suffering and thus motivates the observer to help even at cost to themselves, i.e. no reward (Batson, 1991). Yet a third viewpoint, that of socio-biology, holds that helping behaviours among members of a group is adaptive to group survival and thus is favoured by natural selection (Rushton, 1989). Common to all three understandings of prosocial behaviour is this: for most people, it is stressful to be in the presence of suffering and not be able to assist, all the more so when there is a significant bond between the observer and the sufferer.

In the *Inept Support* situation, O makes genuine support attempts that fail P, as can happen, for example, when friends or family of a seriously ill person minimize the seriousness of the medical situation (Wortman and Lehman, 1985). At the other extreme, supporters are sometimes over-protective (Lehman and Hemphill, 1990). Inept support can also result out of good-willed support attempts that unintentionally create a stressful obligation for reciprocity, or expose people to disappointments, conflicts, tensions or unpleasant-ness (Rook, 1984; Sandler and Berrera, 1984). The social psychological foundations of many such situations are addressed in theories of social exchange and of equity (Thibaut and Kelley, 1959; Homans, 1961; Molm and Cook, 1995). Social exchange models emphasize that how people feel about a relationship depends on the costs and rewards involved, while equity models add that people strive for fairness in the distribution of costs and rewards. It is consistent with these models that people expect support attempts to be appropriate to the situations they find themselves in and react negatively when they perceive that they receive too much help, too little help or the wrong help, even when O's motivations are the best.

The *Performance Demand* situation has its focus on the strain of achievement striving experienced by P when O sets seemingly too-high demands. Lazarus and Folkman's (Lazarus and Folkman, 1984) theory of stress emphasizes that social demands are stressful when they overload P's (perceived) resources. Karasek and Theorall's (Karasek and Theorall, 1990) theory emphasizes that when psychological demands are high and decision latitude is low, accumulated strain is to be expected.

The *Role Conflict* situation is that in which multiple roles (daughter, sibling, peer and student) are perceived to demand too much time and attention from P. This corresponds to the social demands construct in Lazarus and Folkman's (1984) stress and coping model, but

differs from the performance demand dimension, above, in its emphasis on multiple roles as the stress factor, not on too low capacity to perform as expected (although P may nevertheless take blame for not being able to manage somehow). Other common terms that has approximately the same meaning are 'role overload' and 'role strain' (Lee, 1998). Although role conflict can affect anyone, it has been noted as one of the issues of central importance to women's health, as women tend to be caregivers at the same time they juggle paid and unpaid employment among other obligations.

The *Social Conflict* situation is suggested by balance theory (Heider, 1958) and theories of social exchange (Thibaut and Kelley, 1959; Homans, 1961; Alessio, 1990; Molm and Cook, 1995). Relationships in which personal regard between P and O's is not balanced, and relationships in which giving and taking is perceived as too uneven and favouring O's over P, may produce psychological strain when change in the base relationship is not a realistic option. An example of imbalance in personal regard is the situation of P, a teenage son whose parents are in marital conflict or who lives together with his remarried mother/father and can not get along with her new husband/wife.

The *Criticism* situation includes a class of problematic social interactions in which specific actions of O's are perceived as misdeeds that cause P psychological distress such as resentment, shame or sadness (Rook, 1992). This can range from the extreme of physical violence to actions and words that induce degradation, double binding, exploitation, isolation and punishment (Marshall, 1994). These acts are often performed by people in very close relationships, but such negative feelings and actions can be found also at school, in the neighbourhood and so on (Wiseman and Duck, 1995).

Research by the group in Bergen has resulted in a six-item scale measuring self-reported chronic social stress, the Bergen Social Relationships Scales (BSRS), which has a Cronbach's alpha of 0.76, a test-retest reliability coefficient of 0.75, a factor structure that is invariant across gender, and that correlates positively with various measures of psychological distress, after controlling statistically for age, gender and social support.

The prevalence of chronic social stress in an adult population has been estimated by the six BSRS items to range from 12 to 34 percent among women and from 11 to 35 percent among men, based on data from Norwegian epidemiological studies carried out by the Bergen team (Mittelmark et al, 2001). Further, in assessing the level of chronic social stress, half the men and sixty percent of the women in the Norwegian study reported at least one stressor. Among women, 24 percent reported three or more stressors; while among men the corresponding prevalence was 16 percent.

### **2.7 Personal coping resources: General and social self-efficacy**

It has not been feasible in the Norwegian studies conducted so far to include the study of personality factors, entirely due to practical limitations. This is unfortunate, since it is highly likely that various personality characteristics influence stress appraisal and coping, and thus potentially have moderating or mediating effects on the relationship between chronic social stress and psychological distress (Zautra, et al, 1997; Kovacs, 1997).

Especially important in this regard is the construct of self-efficacy as a personal resource for stress appraisal and coping in social-cognitive theory (Bandura, 1977). A low sense of self-efficacy is associated with depression, anxiety and helplessness (Schwarzer 1996). Situation-specific self-efficacy (Bandura, 1977) and general self-efficacy (Sherer, et al, 1982) have been distinguished, the former referring usually to specific behavioural situations, and the latter to a

global confidence in one's coping ability across a wide range of demanding or novel situations. Sherer et al. (1982) found empirical support for the construction of two subscales: A General self-efficacy subscale (GSES), and a Social self-efficacy subscale (SSES). A specific construction of the global self-efficacy construct, relevant to coping with chronic stress, is general coping efficacy (GCE). This refers to an individual's appraisal of the outcomes of their efforts to cope with chronic stress and their beliefs in their ability to cope in the future (Zautra, et al, 1997). In some studies at least, GCE has been observed to be a strong predictor of preservation of psychological well being in the face of chronic stress (Zautra, et al, 1997), through a classical buffering effect. Bandura et al. (1999) found that low perceived self-efficacy beliefs contributed to concurrent and later depression in children.

## **2.8 Worry**

When the Penn State program began its experimental research on worry, a tentative definition was offered (Borkovec, Robinson, Pruzinsky and Depree, 1983): Worry is a chain of thoughts and images, negatively affect-laden and relatively uncontrollable; it represents an attempt to engage in mental problem-solving on an issue whose outcome is uncertain but contains the possibility of one or more negative outcomes; consequently worry relates to the fear process.

Worry can be conceptualised as an outcome of an appraisal process (in the sense of Lazarus and Folkman (1984), in which the threat is confirmed, coping responses are perceived to be inadequate, and mastery is doubtful. Thus, worries in this sense are potentially related to depressive symptoms.

## 2.9 Hypotheses

Previous research has documented that social stress is related to reporting of depressive symptoms in adult populations, and that women report a higher prevalence of both chronic social stress and depressive symptoms than men. Furthermore, the research literature on belongingness indicates that women are more sensitive to social stress emanating from close personal relationships than men. Research on social support and personal coping resources has shown that these factors can contribute to positive mental health, while the research on worry indicates that this factor is negatively related to mental health. The hypotheses tested in this study are:

- H1: a) Girls will report a higher prevalence of depressive symptoms than boys.  
b) Girls will report higher levels of chronic social stress than boys  
c) The relationship between chronic social stress and depressive symptoms will be stronger for girls than for boys.
- H2: Chronic social stress will be significantly positively related to depressive symptoms for both boys and girls, and the relationship stays significant when controlling for the other predictors in the study.
- H3: Worry will be significantly positively related to depressive symptoms for both boys and girls, and the relationship stays significant when controlling for the other predictors in the study.
- H4: Social support variables, general self-efficacy and social self-efficacy will be significantly negatively related to depressive symptoms for both boys and girls, and the relationships stay significant when controlling for the other predictors in the study.

## **METHODS**

### **3.1 Participants**

The participants in this study were Romanian students in secondary and high schools in Bucharest, the capital of the country. The data were collected with the assistance of the Youth to Youth Foundation of Romania. The study was conducted during February/March 2002. The sample frame of the survey was all students in all secondary and high schools in Bucharest (206 secondary schools with 95.559 students and 101 high schools with 101.387 students). In each of eight randomly selected schools, classes were randomly selected (3 in the secondary schools and 5 in the high schools), resulting in a study sample of 728 students.

### **3.2 Data collection**

#### **3.2.1 Instrument translation work**

The scales used in the survey were translated from English to Romanian. To ensure the appropriateness of the scales to a different culture, the dual-focus approach was adopted. This approach is concept-driven rather than word-driven. The approach targets the conceptual and cultural adjustment of a research tool to the relevant population (Erkut et al., 1999). An interactive process was employed. In practice this means a number of rounds of refinement until all collaborators are satisfied that the theoretical fundamentals of the original scales are captured. A pilot study with 4 focus groups was conducted with four focus groups to adjust the scales' wording to the adolescent conceptual and cultural background in a Romanian context. Finally the scales were refined and extended with new items based on the feedback from the focus groups. As a result of this translation work the list of depressive symptoms were extended from eight to ten items with the following new items: 'Feeling of bursting into tears' and 'Feeling that it would be better not to be born'. Also the Bergen Worry Scale

Children revised was adapted for use with adolescents from a scale used for adults. During the pilot study items were removed, replaced and added, resulting in 18 items in the scale.

### **3.2.2 Study elements - measures**

The questionnaire included these items:

#### **1. Demographics assessment**

Adolescents were asked to report gender, birth year, number of siblings (none, one, two or more), parental status (both parent, one parent, no natural parents).

#### **2. The Bergen Social Relationships Scale (BSRS)**

The BSRS is a self-report scale designed to measure chronic social stress. The six items of the scale are prefaced by the written instruction 'think about everyone (parents, siblings, neighbours, friends, classmates or significant others you know) while you answer the following: there are people in my life that I care about, but who dislike one another; there is a person in my life that needs my help, but whom I don't know how to help; there is an important person in my life that wants to support me, but who often hurts my feelings instead; there is a person I have to be around almost daily that often henpecks me; there are people that make my life difficult because they expect too much care and support from me; there is someone I care about that expects more of me than I can manage. The scale administers four response categories: 'describes me very well', 'describes me quite well', 'does not describe me very well', and 'does not describe me at all'.

The BSRS has a Cronbach's alpha of 0.76, a test-retest reliability coefficient of 0.75, a factor structure that is invariant across gender, and correlates positively with various measures of psychological distress, after controlling statistically for age, gender and social support (Mittelmark et al., 2004).

### 3. Subjective Health Complaints Scale (SHCS)

This scale stems from a cross-national study supported by WHO: 'Health behaviour among school-aged children' (HBSC) (Currie, 1988). The original scale consists of 8 items with five response categories: 0-about every day, 1-more than once a week, 2-about every week, 3-about every month, 4-rarely or never. During the pilot study conducted among adolescents in Romania for the research tool's conceptual and cultural adjustment two more items were added. The scale used in this study thus includes the following ten items:

- 1) Feeling low, 2) Irritability or bad temper, 3) Feeling nervous, 4) Difficulties in getting to sleep, 5) Feeling of bursting into tears, 6) Feeling that it would be better not to be born, 7) Headache, 8) Stomach-ache, 9) Back-ache, 10) Feeling dizzy.

### 4. Social Support

Social support was subjectively measured by the following:

The availability of a confidant: 'I have someone I care about, with whom I can talk about my personal problems'. The respondents used four response options: 0-describes me very well, 1-describes me quite well, 2-does not describe me very well, 3-does not describe me at all.

Perceived instrumental support: 'There is at least one person who would loan me money for a short period'. The respondents used four response options: 0-describes me very well, 1-describes me quite well, 2-does not describe me very well, 3-does not describe me at all.

The satisfaction with the number of good friends: 'Do you feel you have enough good friends' with dichotomous response alternatives (0-no, 1-yes).

The frequency of interactions with friends: 'How many days a week do you usually spend time with friends after school' with six response alternatives (from none to 5),

and 'How many evenings per week do you usually spend time with friends' with 8 response alternatives (from none to 7).

Frequency of communication with friends: 'How often do you talk to your friend(s) on phone or send them text or e-mail messages' with 5 response alternatives: 0-rarely or never, 1-1 or 2 days a week, 2-3 or 4 days a week, 3-5 or 6 days a week, 4-every day.

Quality of communication with family and friends: 'How easy is it for you to talk to the following persons about things that really bother you: father, mother, brother, sister, friends of the same sex, friends of the opposite sex' with 5 response alternatives: 0-very easy, 1-easy, 2-difficult, 3-very difficult, 4-don't have or see this person.

Participation in social activities: 'How often do you usually participate in social groups such as sport teams, political activities, religious groups, or other group activities' with four response alternatives: 0-never or only a few times a year, 1-one to three times a month, 2-about once a week, 3- more than once a week.

## **5. School environment**

The adolescents' perception of the of their school performance were measured by the following:

Perceived teacher's evaluation of school performance: 'In your opinion what does your class teacher(s) think about your school performance compared to your classmates' with four response alternatives: 0-very good, 1-good, 2-average, 3-below average.

Perceived teacher's objectivity in performance assessment: 'In your opinion the teachers' marks assess your performance' with three response alternatives: 0-in the right way, 1-underestimate, and 2-overvalue.

## **6. Bergen Worries Scale (BWS-C)**

The scale has been designed to measure worries about daily life stressors in three different dimensions: 1) personal worries, 2) educational worries, and 3) community worries. The scale was originally developed for use in the companion study of Romanian adults and adapted for use with adolescents. In the study of Romanian adults personal worries showed a Cronbach's alpha of 0.83 (Bancila et al, 2004). The scale adapted for adolescents consisted of 18 items. Each item had 5 response options: 0-not worried, 1-a little worried, 2-somewhat worried, 3-quite worried, 4-extremely worried. The items of the worry scale were: a) my school marks, b) a member of my family, c) my future career, d) wars throughout the world, e) my use of alcohol or drugs, f) my financial situation, g) exams, h) my time pressure, I) my physical health, j) drugs in school, k) my responsibilities at school, l) my personal safety, m) my mental health, n) my debts, o) my responsibilities to my family, p) my love life, q) my looks/image, r) others' opinion about me.

## **7. General Self-efficacy Scale (GSES)**

The Generalised Self-Efficacy Scale of Schwarzer and Jerusalem (Schwarzer, 1993; Scholz et al., 2002) is a ten item scale which has been used in numerous research projects, where it typically yielded internal consistencies between (Cronbach's alpha) .75 and .90. In a composite analysis using data from 25 countries Scholz et al. (2002) found a Cronbach's alpha of 0.86. The scale is not only parsimonious and reliable; it has also proven valid in terms of convergent and discriminant validity. For example it correlates positively with self-esteem and optimism and negatively with anxiety, depression and physical symptoms. The scale is designed to measure the participant's perceived ability to deal with new or challenging situations. The respondents were given four response options: 0-not at all true, 1-hardly true, 2-moderately true, and 3-exactly true. The items of the scale are: a) I always manage to solve

difficult problems if I try hard enough. b) If someone opposes me I can find means and ways to get what I want. c) It is easy for me to stick to aims and accomplish my goals. d) I am confident that I could deal efficiently with unexpected events. e) Thanks to my resourcefulness, I know how to handle unforeseen situations. f) I can solve most problems if I invest the necessary effort. g) I can remain calm when facing difficulties because I can rely on my coping abilities. h) When I am confronted with a problem, I can usually find several solutions. I) If I am in trouble, I can usually think of a solution. j) I can usually handle whatever comes my way.

### **8. Social self-efficacy scale (SSES)**

Following Sherer et al. (1982) subjectively perceived skills in interpersonal situations were measured using the six-item social self-efficacy scale. The items of the scale are: a) it is difficult for me to make new friends, b) if I see someone I would like to meet, I go to that person instead of waiting for him or her to come to me, c) if I meet someone interesting who is hard to make friends with, I'll soon stop trying to make friends with that person, d) when I'm trying to become friends with someone who seems uninterested at first, I don't give up easily, e) I do not handle myself well in social gatherings, f) I have acquired my friends through my personal abilities at making friends.

### **3.3 Administration of the questionnaire**

The data were collected in schools, where the questionnaires were filled out during a regular school hour, giving the students adequate time to answer the questions. All students in the selected classrooms at the time of the survey (N=630) were invited to fill out the pen and paper questionnaire and 627 of them accepted to participate in the survey, resulting in a response rate of 99.52 %. The survey was administered by representatives from Youth to

Youth Foundation who first gave an oral presentation of the survey including the survey's purpose, details around the procedure, freedom of participation, and the confidentiality insurance of answering the questionnaire.

### **3.4 Ethical issues**

In order to have access to students in schools an application was submitted to the local education authority (Inspectoral Scolar General al Capitlei), which provided the necessary data for sampling and approval for running the survey in schools. The schools' principals were asked to allow the students' involvement in the study and running the survey in the classes selected. Participants were explained the nature of the survey and were assured that the data would be used for research purposes only, and that nobody except the researchers would have access to the data. Anonymity was also guaranteed by avoiding the collection of personal identification information. Students in the classroom at the time participated voluntarily in the survey and were free to end their participation at any time.

### **3.6 Data management and statistical analysis**

The statistical analyses were performed using SPSS for Windows, version 12.0. Data were reverse coded for some variables to ensure correct directionality in all scores. The data set was screened for outliers and missing data. Missing data were recoded to average values. The statistical analyses were undertaken for each gender separately according to the following plan:

- 1) One-way frequency analysis to investigate distributions of single variables.
- 2) Screening for outliers and missing data. Missing data were recoded to the largest group.

- 3) Compute inter-item correlations between the scale items in the various scales to assess the properties of the scales.
- 4) Analyse factor structures of the scales using Principal components analysis (Eigenvalue exceeding 1) and compute reliability coefficients (Cronbach's alpha).
- 5) Construct sum scores based on the resulting factors from the Principal components and reliability analysis.
- 6) Present descriptive statistics (mean, standard deviation and range) for the scales by gender.
- 7) Analyse the relationships between the factors by gender using Hierarchical Multiple Regression to predict separately the outcome for boys and girls.

## **RESULTS**

### **4.1 Single item prevalence of chronic social stress by gender**

Table 1 (Appendix B) shows the prevalence of the single items in the BSRS by gender, where the response options 'describes me very well', and 'describes me quite well' are considered to indicate the presence of the relevant item. The prevalence of social stressors in this sample ranges between 35.2% and 67.5% for the various items for girls and between 34.6% and 65.1% for boys. With the exception of the item 'there is someone I care about that expects more of me than I can manage', girls report higher levels than boys for all items. There are significant differences in the single-item prevalences for three of the six stressors. The assessed levels of chronic social stress in this Romanian sample are shown in figure 1 (Appendix B).

## **4.2 Inter-item correlations, factor structures and reliability for the scales**

### **4.2.1 Inter-item correlations, factor structure and reliability for the BSRS**

Tables 2a and 2b show the inter-item and item-total Pearson correlations for the single items in the BSRS for girls and boys respectively. Generally the inter-item correlations were significant, with some exceptions. There were some differences in the inter-item correlations for boys and girls. For girls the ‘social conflict’ item did not correlate significantly with the ‘helpless bystander’ and the ‘performance demand’ item. For boys the ‘social conflict’ item did not correlate significantly with the ‘criticism’ and the ‘performance demand’ item. For both genders the ‘helpless bystander’ item did not correlate significantly with the ‘criticism’ item. Principal components analysis with Eigenvalue exceeding 1 showed that all items loaded on one factor for both boys and girls. Cronbach’s alpha with all items included was 0.55 for girls and 0.56 for boys. In accordance with the results on inter-item correlations it was found that the ‘social conflict’ and the ‘helpless bystander’ items have the lowest factor loadings for both genders. As the reliability of the scale was not improved by removing one or both of these items, it was decided to keep them in the analysis.

### **4.2.2 Inter-item correlations, factor structure and reliability for the SHCS**

Tables 3a and 3b show the inter-item and total-item Pearson correlations for the Subjective Health Complaints Scale (SHCS) for girls and boys respectively. Inter-item correlations were all significant. The correlation matrix was inspected for patterns indicating that the scale was better represented through two factors; depressive symptoms and somatic health complaints. There seemed to be a tendency that inter-item correlations among the first four items were somewhat higher than between these items and the last six items. The reverse was true for the last six items. Bartlett’s test of sphericity rejected the hypothesis that the correlation matrix

was an identity matrix, and the Kaiser-Meyer-Olkin test clearly indicated that the SCHS was suitable for factor analysis. Table 4 shows the rotated factor loadings for the items in the scale using principal component analysis (varimax rotation) with an eigenvalue exceeding 1. It was not completely clear from the results whether the SHCS should be represented by one or two factors. The first factor explained 42% of the variance and the second explained 10% of variance. The second factor had an eigenvalue of 1.04. Particularly the items ‘feeling of bursting into tears’ and ‘feeling that it would better not to be born’ had unclear factor loadings. Table 5 shows the rotated factor loadings for boys and girls separately. The factor loadings for boys and girls were different. The results for girls showed a more distinct separation into two factors than the results for boys. Based on these results it was decided to represent the SHCS by two factors; depressive symptoms and somatic health complaints.

Table 6a and 6b shows inter-item and total-item correlations for Depressive symptoms for girls and boys respectively. Cronbach’s alpha for depressive symptoms was 78.5 for girls and 78.1 for boys. Cronbach’s alpha for somatic complaints was 69.8 for girls and 67.1 for boys.

#### **4.2.3 Inter-item correlations, factor structure and reliability for the BWS-C**

Tables 7a and 7b show inter-item Pearson correlations for the BWS-C for girls and boys respectively. Correlations for this scale were quite mixed, with many non-significant correlations. Bartlett’s test of sphericity and the Kaiser-Meyer-Olkin test (0.82 for girls and 0.87 for boys) showed that the BWS-C was suitable for factor analysis. Principal components analysis with varimax rotation and with eigenvalue exceeding 1, showed that the BWS-C was best represented through three factors; a personal worries scale (PWS-C), an educational worries scale (EWS-C), and a community worries scale (CWS-C). Eigenvalues were between 4.61 for PWS-C to 1.38 for CWS-C for girls and between 5.73 for PWS-C and 1.28 for CWS-

C for boys. Table 8 shows factor loadings for the BWS-C for boys and girls after rotation. The inter-item and item-total Pearson correlations for these scales are shown in table 9a through 9f for girls and boys respectively. For the three subscales all inter-item correlations were significant ( $p < 0.01$ ). Cronbach's alphas range from 0.85 for the PWS-C for boys to 0.60 for the CWS-C for boys. Generally, inter-item correlations were higher for boys than for girls, something which was reflected in a higher Cronbach's alpha for boys.

#### **4.2.4 Inter-item correlations, factor structure and reliability for the GSES**

Tables 10a and 10b show inter-item and item-total Pearson correlations for girls and boys respectively for GSES. All inter-item correlations were significant ( $p \leq 0.01$ ). Cronbach's alpha for girls was 0.79 and for boys 0.83. Inter-item correlations were generally a bit higher for boys but there were no items that showed large differences between girls and boys.

#### **4.2.5 Inter-item correlations, factor structure and reliability for the SSES**

Tables 11a and 11b show inter-item and item-total correlations for the SSES for girls and boys respectively. Correlations were generally much lower than for the GSES for both girls and boys and there were a number of non-significant correlations. This resulted in much lower Cronbach's alphas for this scale; 0.54 for girls and 0.51 for boys. Generally Cronbach's alphas at these levels indicate that the internal consistency in the scale is clearly on the low side. Inter-item correlations were particularly low and non-significant between the items 3 and 4 and the other items in the scale. The scale was still kept for the regression analysis as it was felt that it was particularly interesting to investigate whether social self-efficacy had an effect for specifically social stressors.

### **4.3 Descriptive statistics for the scales**

Table 12 shows descriptive statistics for the various scales going into the regression analysis. Girls had higher means for social stress, and personal, educational and community worries than boys. They also showed higher levels of depressive symptoms. Boys on average reported higher levels of general and social self-efficacy. Most of the gender differences were statistically significant. The skewness in the distribution of the different scales was in the expected directions, with positive skewness in the worry, and depressive symptoms variables, and negative skewness in the general and social self-efficacy variables. Skewness was larger in the boys' scores. Positive skewness was relatively large in the boys' distributions for personal worries, community worries and depressive symptoms. Positive skewness is in general a problem for the statistical analysis, but the relatively large number of observations in this sample alleviates the problem. For this reason, and because the distribution of the scores for girls were less skewed, no transformations of the distributions were undertaken. Interestingly, in this adolescent sample the BSRS distribution was close to symmetrical. On the other hand, the kurtosis of the BSRS shows that the distribution was relatively flat, particularly for boys. Overall, the descriptive statistics of these scales made them suitable for statistical analysis, given the rather large number of observations in the sample.

### **4.4 Regression analysis**

Hierarchical multiple regression analysis was undertaken to assess the power of the different variables in predicting depressive symptoms. Regression was undertaken by gender in two distinct hierarchical multiple regression models; in the first all variables were employed, in the second the variables with significant or near significant explanatory power in the first

model were entered to investigate whether it was possible to construct a more economical and compact regression model without losing too much explanatory power.

#### **4.4.1 Hierarchical regression model 1**

The regression analysis was undertaken for girls and boys separately. In Block 1 of this model age was entered as the only explanatory variable. In Block 2 all the social support single items were entered. In block 3 the chronic social stress (BSRS) and all three worry variables (PWS-C, EWS-C, and CWS-C) were entered. In the fourth and final block the general (GSES) and social self-efficacy (SSES) variables were entered. The results of this hierarchical regression model are shown in table 13. Age did not have significant explanatory power, neither alone, nor in conjunction with other variables, but was close to significant for girls. Entering the social support items significantly increased the explanatory power of the model, both for girls and boys.  $R^2$  increased from close to zero for both genders to 0.07 for both girls ( $F(16, 196)=2.083, p<.01$ ) and boys ( $F(16,168)=1.766, p<.005$ ). When it came to the significance of single items of social support there were clear differences between boys and girls in this model. For girls, ‘mother support’ ( $p<.01$ ) and ‘fairness of teacher evaluation’ ( $p<.05$ ) were significant, while for boys ‘availability of a confidant’ ( $p<.01$ ) and ‘fairness of teacher evaluation’ ( $p<.05$ ) were significant. When entering the chronic social stress variable and the three worry variables in the third block, the explanatory power of the model increased significantly.  $R^2$  increased from 0.07 to 0.24 for girls ( $F(20,192)=4,270, p<.001$ ) and from 0.07 to 0.19 for boys ( $F(20,164)=3.143, p<.001$ ). In this block the significance of most of the social support variables disappeared with the exception of ‘availability of a confidant’, which was still strongly significant for boys ( $p<.005$ ). Chronic social stress was strongly significant for girls ( $p<.001$ ), but not significant for boys although it was ‘almost significant’ ( $p=.08$ ). The personal worries variable (PWS-C) was strongly significant for both sexes ( $p<.005$  for

girls,  $p < .001$  for boys). For girls chronic social stress was the most potent explanatory variable in this block (standardised  $\beta = .28$ ) followed by personal worries (standardised  $\beta = .25$ ), while for boys personal worries explained most of the variance (standardised  $\beta = .35$ ). Entering general and social self-efficacy in the fourth block did not significantly increase the predictive power of the model.  $R^2$  increased marginally for both girls and boys, but the increase was not significant. General self-efficacy was clearly non-significant for both sexes, while social self-efficacy was very close to significant for girls ( $p = .056$ ) but not for boys. Entering the self-efficacy variables did not materially change the explanatory power of the other variables; ‘availability of a confidant’ became slightly less significant for boys, while there are only minor changes for the other significant variables from the third block. Chronic social stress increased marginally in explanatory power for girls (standardised  $\beta = .30$ ) while personal worries decreased somewhat for boys (standardised  $\beta = .31$ ).

#### **4.2.2 Hierarchical regression model 2**

In Model 2 (Table 14) the most significant or nearly significant predictors from model 1 were entered in blocks following the same logic as for Model 1. As there were differences between the explanatory powers of the predictors for boys and girls in model 1, model 2 ended up with 5 explanatory variables; age (nearly significant for girls), perceived availability of a confidant (nearly significant for boys), chronic social stress, personal worries and social self-efficacy (nearly significant for girls). In block 1 age was entered as the single explanatory variable. In the second block the variables ‘perceived availability of a confidant’ and ‘support from friends of the same sex’ were entered. In the third block chronic social stress and personal worries were entered. In the fourth and final step social self-efficacy was entered. The first block was in effect the same as in the first hierarchical model, but as the degrees of freedom increased with fewer variables in the model, age alone now produced a model with significant

explanatory power for boys ( $F(1,266)=3.887$ ,  $p<.05$ ). Variance explained was not high, however, with  $R^2$  at 0.01. Entering availability of a confidant in the second block improved the model significantly for boys but not for girls. For boys  $R^2$  increased to 0.04 ( $F(2,265)=7.417$ ,  $p<.005$ ). The model improved considerably with the introduction of the chronic stress and personal worries variables in block 3.  $R^2$  increased to 0.23 for girls ( $F(4,284)=21.847$ ,  $p<.001$ ) and 0.19 for boys ( $F(4,263)=16.506$ ,  $p<.001$ ). In this model both personal worries and chronic social stress are highly significant for both girls and boys. Including social self-efficacy in the fourth block significantly improved the model for girls but not for boys. For girls  $R^2$  increased from 0.23 to 0.26 ( $F(5,283)=20.258$ ,  $p<.001$ ), while  $R^2$  was almost unchanged for boys. In model 2 social-self efficacy added significant explanatory power to the model for girls. As in model 1 chronic social stress was the most potent predictor for girls (standardised beta=.33), while personal worries explained most variance for boys (standardised beta=.31).

## **DISCUSSION**

### **5.1 Prevalence of chronic social stress among adolescents**

66% of girls and 57% of boys report three or more stressors in this sample. These figures are considerably higher than similar figures reported for Norwegian adults in Mittelmark et al (2001), but largely consistent with (although slightly higher than) figures reported for Romanian adults in Bancila, Mittelmark and Hetland (2004). One should not overemphasize the differences in prevalence rates in social stress between different geographic regions or age groups, as the results are based on reports of subjectively experienced social stress. Clearly, there could be differences in the interpretation of the various items in the BSRS, even with the care taken in the translation work. Also, the sampling schemes of the studies were dissimilar

and no weighting has been attempted to correct for this. Still a few comments on possible reasons for these differences are in order.

One possible explanation for the geographical differences observed could be the major cultural and political changes countries in Eastern Europe have gone through over the past few years. These changes have been offered as one explanation for the higher prevalence of depressive symptoms among Eastern European adolescents compared to their western European counterparts (Boyd et al, 2000). There have been few comparative studies on the prevalence of social stress, but it is not unlikely that the uncertainty pertaining to the massive changes in Eastern Europe could have an effect also on the quality of close personal relationships.

In the age dimension, research on adolescents indicate that they typically live in circumstances with high levels of social stress, but also with high levels of social support (Sim, 2000; Greenberger et al, 2000). Adolescence is a time in most individuals' lives during which they are in the process of increasing their autonomy by separating themselves from their parents and family. There are important changes in their social relationships; the importance of friends increase, and the influence of parents decrease (Furman and Buhrmester, 1992). This process will often create tensions with parents (and sometimes with teachers and schools) and could lead to increased levels of social stress, compared to other age groups.

## **5.2 Hypothesis 1: Gender differences in depressive symptoms and chronic social stress**

The results of the analysis support hypothesis 3a. The results show that girls report higher levels of depressive symptoms than boys. This result is in line with the extensive research

literature on gender differences in depressive symptoms (Nolan-Hoeksma and Girgus, 1994; Angold et al, 1998).

The results support hypothesis 3b. Girls report higher levels of chronic social stress. This result is in line with previous research on adult populations in Norway and Russia using the BSRS (Mittelmark et al, 2001; Bancila, 1994).

The results support hypothesis 3c. Chronic social stress is a significant predictor for depressive symptoms for girls, but less so for boys. Chronic social stress also explains more of the variance (significantly higher standardised beta) for girls than for boys. This result is in accordance with previous empirical research in the belongingness literature which shows that women respond more strongly than do men to threats of interpersonal loss or rejection (Brewer, 2004; Gabriel and Gardner, 1999).

### **5.2.1 Gender differences in the prevalence of depressive symptoms**

There is an extensive literature documenting gender differences in the prevalence of depressive symptoms and how these differences emerge in adolescence. There are three main theoretical explanations for this observation. The gender intensification hypothesis (Hill and Lynch, 1983) describes how expectations related to feminine gender roles emerge during adolescence, and acts as a stressor. Another theoretical explanation focuses on gender-related differences in coping strategies. Nolen-Hoeksma (1994) argues that women often exacerbate depressive symptoms by exploring the condition and internalising possible explanations. Men more often explain problems by referring to external factors, and employ distracting coping strategies. A third theoretical explanation explain gender differences in depressive symptoms

by arguing that women react more negatively to stress, in addition to experiencing more stress than men (Compas, 1987).

### **5.2.2 Gender differences in the prevalence of chronic social stress**

Several theoretical and empirical strands in the research literature argue that women are more susceptible to social stress. The cost of caring hypothesis (Kessler and McLeod, 1984) argues that the feminine gender-role is exposed to more stressful events than the masculine, particularly related to problems in close interpersonal relationships. In the belongingness literature there has been focus on the differences in the formation of social relationships between women and men, where women are more relationally oriented, while men are more collectively oriented (Brewer and Gardner, 1996). Baumeister and Sommer (1997) argue that men and women differ in the relative importance placed on meeting relational vs. collective forms of social attachments, and Brewer (1994) reports that women respond more strongly than men to the threat of interpersonal loss or rejection.

In the present setting it is possible that the chosen instrument to measure chronic social stress is actually better suited to measure chronic social stress among girls than among boys. The BSRS is specifically designed to measure stress emanating from close personal relationships. Given the evidence in favour of differences in attachment styles among girls and boys, it is possible that the prevalence of social stress among boys is underreported.

### **5.2.3 Gender differences in the relationship between chronic social stress and depressive symptoms**

Research clearly indicates that women respond more strongly to threats of interpersonal loss (Brewer, 2004). Rudolph (2002) argues that girls are more sensitive and emphatic in their

relations to significant others than boys, and thereby more vulnerable to conflicts and threats of interpersonal loss. In addition (in line with the cost of caring hypothesis), this pattern of relations can lead to higher experienced levels of social stress for girls. Gender differences can thereby be related both to how girls and boys react to stress and to the experienced stress level.

### **5.3 Hypothesis 2: Chronic social stress and depressive symptoms**

The results of the analysis show that chronic social stress is related to depressive symptoms. For girls this is clearly true, while the picture is more mixed for boys. In model 1 chronic social stress is not a significant predictor of depressive symptoms, while in model 2 (the reduced model) the relationship is also significant for boys. Unlike previous studies investigating this relationship in adult populations (Mittelmark et al, 2001; Bancila et al, 2004) a clear gender difference emerges among adolescents.

As explained in the preceding paragraphs there are several theoretical explanations for the observation that reported levels of social stress and depressive symptoms are higher for girls than for boys, and that the relationship between social stress and depressive symptoms is stronger for girls. Previous empirical findings also support these results. However, in previous analysis on adult populations using the BSRS to measure chronic social stress, the relationship between social stress and depressive symptoms has been significant for men.

### **5.4 Hypothesis 3: Worries and depressive symptoms**

The results of the analysis support hypothesis 3 partially. The Bergen Worries Scale adapted from its adult version for adolescents/children (BWS-C) was best represented by three factors in this study; a Personal Worries Scale (PWS-C), an Educational Worries Scale (EWS-C), and

a Community Worries Scale (CWS-C). This scale was adapted from the Bergen Worries Scale (BWS) for use in this study. The BWS has so far not been widely used, and in earlier studies on adult samples the scale has been represented by two factors. The factor split in the present study might be due either to the adaptation of the scale for adolescents, or to adolescents responding differently from adults. The relationship between Personal worries (PWS-C) and depressive symptoms is significant for both genders even when controlling for all other predictors. On the other hand neither Educational worries, nor Community worries have significant predictive power in the models. One potential explanation for this result could be that this study only focuses on depressive symptoms and not a wider set of psychological problems; such as fear and anxiety. According to the literature on worry, this variable is highly related to fear and anxiety (Borkovec et al, 1983).

Worries that are not of a specific social nature are clearly important factors to include when investigating psychological problems, as the significant effect of the PWS-C on depressive symptoms in this study demonstrates. Personal worries as represented by the PWS-C, is a potent and significant explanatory variable for depressive symptoms for both boys and girls in the present investigation. Still, the BWS-C is a weak point in this study because the characteristics of the scale are not well tested and understood. Given the importance of this variable, more work is clearly needed to further our understanding of the effects of personal worries on psychological problems, and the interactions between worries and social stress. There is also a need to improve the measurement instruments of worries. In the present study, the poor face validity of the CWS-C is clearly a problem. The scale consisted of only three items, mixing divergent constructs. It could be argued that CWS-C should have been dropped from the regression analysis. Still it was kept in because it was thought important to represent adolescents' worries about the larger community in some way in the analysis. Adolescence is

a life phase in which many individuals form and voice strong opinions about political and ideological ideas and events. Worries about what is happening in the larger community could thus be important for the well-being of adolescents.

#### **5.5 Hypothesis 4: Social support and coping resources**

The results do generally not support hypothesis 4 in Model 1, but do provide support in Model 2. Direct effects from social support items are generally insignificant. General self-efficacy has no predictive power in the models. The only (partial) exceptions are ‘availability of a confidant’ which is significant for boys and Social self-efficacy which is significant for girls in model 2.

Girls report lower levels of social self-efficacy than boys. In this sense it is perhaps surprising that social self-efficacy turns out to have predictive power for depressive symptoms for girls but not for boys. There are few studies on gender differences in the relationship between social self-efficacy and depressive symptoms. Some ideas about reasons for this apparent paradox can be found in the literature on social support. Several empirical studies have found that social support predicts depressive symptoms among girls but not among boys (Slavin and Rainer, 1990; Schraedley, Gotlib and Hayward, 1999). A similar effect could be working for social self-efficacy in the present study. Given the stronger effects of chronic social stress on depressive symptoms among girls, it is quite possible that specific social coping resources also show a stronger relationship to depressive symptoms for girls, even though they report lower levels of social self-efficacy than boys.

The observation that social-self-efficacy has (some) predictive power for girls and ‘availability of a confidant’ has (some) predictive power for boys for depressive symptoms also raises some questions about gender differences in the interpretation specific items in the questionnaire. In light of the earlier discussion on differences in ways of forming social attachments between women and men it is possible that social self-efficacy (as measured by the social self-efficacy scale) measures different aspects of the social nature of girls and boys. For boys the questions in the social self-efficacy scale could be seen as questions about how easy it is for them to get new acquaintances (which is completely different from the availability of a confidant), whereas for girls the questions in the social self-efficacy scale could be seen as how easy it is to acquire new close friends (or confidants). In this case, the apparent discrepancy disappears. At present these are just speculations, what is interesting is that there seems to be quite large differences in the coping strategies with chronic social stress for girls and boys. A conjecture could be that the same kind of differences would be observed in samples of men and women. This is an area in which more work is needed to understand the processes and mechanisms underlying these differences.

### **5.6 Model scope and characteristics**

The models employed in this study explain 24% of variance in depressive symptoms for girls and around 20% of variance in depressive symptoms for boys. Some comments are in order in this respect. First, it is quite unlikely that the scales employed are a robust reflection of their underlying constructs. Thus, it is likely that the effects of social support, social stress, personal worries and self-efficacy are underestimated. Second, several forms of chronic stress are not included in the study. There are a host of stressors that could potentially contribute to depressive symptoms. These stressors could be related to health (illness, handicaps), socioeconomic situation (low income, poor housing, poor schools) or other factors (ethnicity,

sexual orientation). In addition, the study does not include major life events. It has been shown by Thoits (1995) that stressful life events, such as abuse, death of a loved one, or divorce are related to the mental health of adolescents.

The results of this study do not provide a basis to draw conclusions about cause and effect. The cross-sectional design of the study makes such inferences difficult. Longitudinal, prospective or retrospective studies might provide important insights in cause-effect relationships. This is particularly true in some controlled experiments, where longitudinal observation can disentangle causes and effects within relatively simple settings. When relationships between variables are reciprocal, knowing the cause-effect sequence might be less important. If two variables are linked in a negative, reciprocal relationship, preventing either precipitant might contribute to breaking the cycle and alleviating the problem. For instance it is quite possible that depressive symptoms increase social stress. Experimental research on cognitive biases in people suffering from mild-to-moderate depression have shown that these individuals show a heightened attention and sensitivity to words or pictures indicating socially threatening situations (Mathews et al, 1996; Allen et al, 2001; Weary and Edwards, 1993). Research also indicates that depression influence individuals' reasoning about social risk (Badcock and Allen, 2003). Thus, depressive symptoms and chronic social stress could be linked in a negative spiral. Cross-sectional studies are well suited to investigate and establish relationships between study variables, relationships which can be investigated further using more sophisticated study designs.

In relation to implementing efficient prevention and treatment it is important to improve our understanding of the causality of the relationships found in this and similar studies. Knowledge gleaned from longitudinal, prospective and retrospective studies will be important

tools in this respect. A better understanding of the interaction of various psychosocial factors in predicting psychological problems will also be important.

## **5.7 Methodological considerations**

### **5.7.1 Design**

Cross-sectional studies do not provide a basis for drawing conclusions about causality. However, the hypotheses of this study did not concern causality, so this limitation is not a serious flaw of the design. This study is more of an exploration of possible relationships between psychosocial variables and depressive symptoms. The study design has not provided the opportunity to investigate more complex relationships such as moderation and mediation within the scope of a master thesis.

### **5.7.2 Data sampling and data collection**

Data were collected from randomly selected school classes rather than randomly selected individuals. This could potentially lead to biases in the data as the school and class environment is a quite important part of adolescents' social environment. If some of the classes in the data material for instance had a particularly bad social environment this could influence the results. If this is the case, standard errors would increase, making it easier to achieve significant results. This could be an argument for employing a stricter level of significance. Alternatively, multilevel analyses could have been performed, which would have accounted for the nesting of individuals in classes and of classes in schools.

### 5.7.3 Scales and measures

When using self-reporting there are several criteria that should be fulfilled to be reasonably certain that the data provide a correct representation of the chosen variables. Respondents must understand the relevant questions and the related answer options. Respondents must also have conscious knowledge about or awareness of the issues the questions refer to. Finally the respondents must be interested in and willing to provide truthful answers. At each level there might be problems without these problems necessarily showing up in the data material.

One particular point concerning the instruments used is that some of the items included in the PWS-C might be related to items in the BSRS. The answers to questions about worries about 'a member of my family', 'my responsibilities to my family', or 'my love life' could easily be linked to answers to questions in the BSRS leading to complicated interaction effects. This suggests that when employing both of these scales factor analysis with both scales included, should be performed.

There are also questions concerning the adaptation of instruments previously used for adults, for use with adolescents. The reliability of the BSRS as measured by Cronbach's alpha is quite a lot lower in this adolescent sample than in previously undertaken studies on adult samples. One reason could be that the BSRS in its present form is not particularly well suited for use with adolescents. For instance the question intended to capture the 'role conflict situation' might not be ideally suited for adolescents. If future analyses of adolescent samples produce comparably low reliability scores this could be an indication that a revision of the scale for use among adolescents is needed. The scale's relatively low Cronbach's alpha is also a weakness of this study. Chronic social stress as measured by BSRS turns out to be a

significant predictor of depressive symptoms in the analysis, but the relatively low reliability of the measure in this sample reduces the validity of the result somewhat.

### **5.8 Implications and conclusion**

Over the past few decades there has been increasing focus on the relationship between psychological complaints and factors in individuals' psychosocial environment. There has also been a growing realisation that psychosocial factors can have both positive and negative effects on mental health. Another area of increasing interest has been gender differences both in the prevalence of psychological complaints and in the mechanisms which lead to the complaints. The results of this study underline the importance of employing a wide psychosocial perspective when analysing these questions. Furthermore, the study highlights the very real possibility that there are gender differences both in the set of factors contributing to psychological complaints and in the relevant transmission mechanisms.

In a situation where psychological complaints are increasing among adolescents and life arguably has become more complicated for young people, new possibilities for prevention and health promotion intervention arise. Knowledge about specific factors influencing mental health positively and negatively is a very important first step in devising such interventions. Further efforts to establish cause and effect relationships and improved knowledge about interaction effects in this area would be most welcome.



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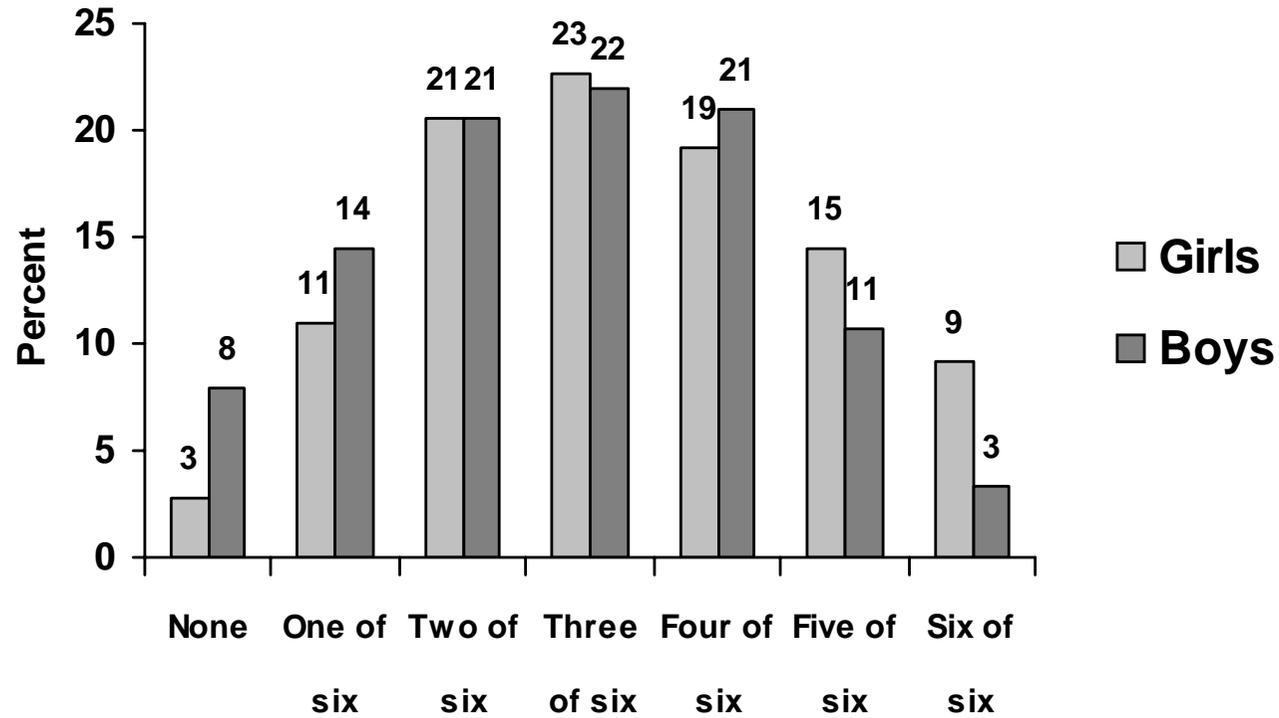
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**Tables****Table 1. Chronic social stress items, comparing girls and boys.**

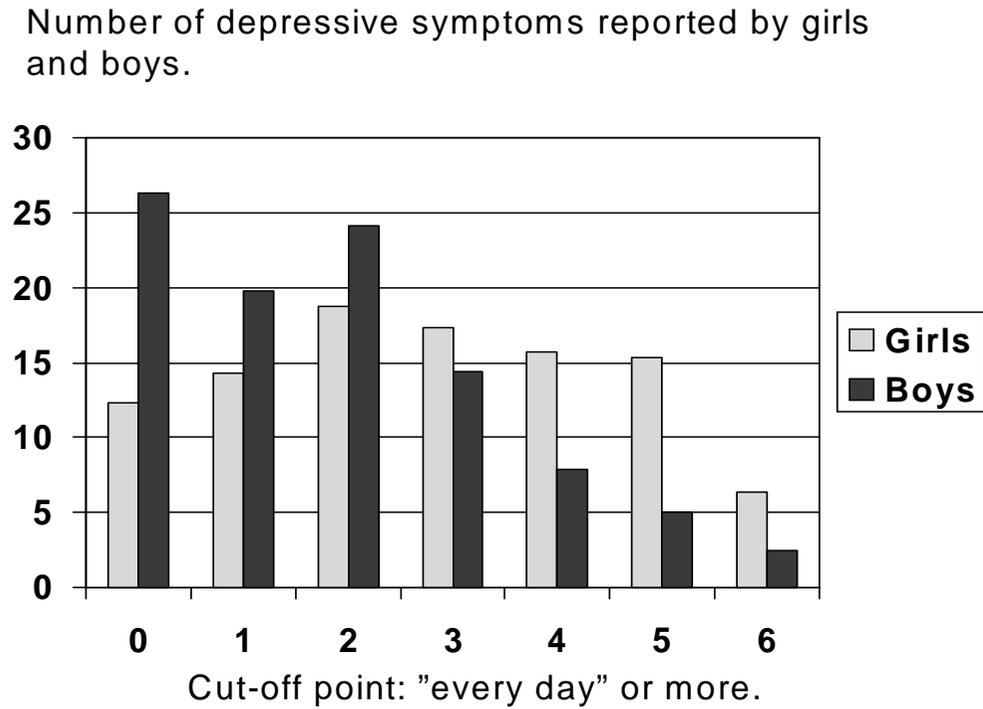
Chronic social stress item	Girls (%)	Boys (%)
There are people in my life that I care about, but who dislike one another	55.0*	44.4*
There is a person in my life that needs my help, but whom I don't know how to help.	55.9*	39.0*
There is an important person in my life that wants to support me, but who often hurts my feeling instead.	47.2*	36.2*
There is a person I have to be around almost daily that often henpecks me.	67.5	61.5
There are people that make my life difficult because they expect too much care and support from me.	35.2	34.6
There is someone I care about that expects more of me than I can manage.	64.1	65.1

\* significant ( $p < 0.01$ ) difference between girls and boys.  
 'describes me quite well' or 'describes me very well'

Figure 1. Number of chronic social stressors reported by girls and boys



**Figure 2. Number of depressive symptoms reported by girls and boys separately.**



**Table 2a.****Inter-item correlations, Cronbach's alphas, and factor loadings for Bergen Social Relationships Scale for Girls.**

Items in the scale	2	3	4	5	6	Item-total correlation	Cronbach's alpha if item is deleted	Factor loadings <sup>1</sup>
1. There are people in my life that I care about, but who dislike one another.	-.00	.15**	.16**	.20**	.02	.19	.55	.38
2. There is a person in my life that needs my help, but I do not know how to help.		.11*	-.03	.12*	.12*	.11	.59	.23
3. There is an important person in my life that wants to support me, but who often hurts my feeling instead.			.27**	.32**	.29**	.41	.44	.69
4. There is a person I have to be around almost daily that often henpecks me.				.28**	.24**	.33	.49	.62
5. There are people that make my life difficult because they expect too much care and support from me.					.26**	.42	.44	.70
6. There is someone I care about that expects more of me than I can manage.						.32	.49	.61

Cronbach's alpha for Bergen Social Relationships Scale = 0.55.

<sup>1</sup>Extraction Method: Principle Component Analysis. 1 component extracted.\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).\*Correlation is significant at the  $p \leq 0.05$  levels (2-tailed)

**Table 2b.****Inter-item correlations, Cronbach's alphas, and factor loadings for Bergen Social Relationships Scale for Boys.**

Items in the scale	2	3	4	5	6	Item-total correlation	Cronbach's alpha if item is deleted	Factor loadings <sup>1</sup>
1. There are people in my life that I care about, but who dislike one another.	.24**	.23**	-.05	.13*	.03	.22	.55	.44
2. There is a person in my life that needs my help, but I do not know how to help.		.17**	-.09	.13*	.28**	.29	.52	.56
3. There is an important person in my life that wants to support me, but who often hurts my feeling instead.			.25**	.16**	.19**	.35	.49	.61
4. There is a person I have to be around almost daily that often henpecks me.				.22**	.19**	.27	.53	.63
5. There are people that make my life difficult because they expect too much care and support from me.					.30**	.34	.50	.59
6. There is someone I care about that expects more of me than I can manage.						.33	.50	.62

Cronbach's alpha for Bergen Social Relationships Scale = 0.56.

<sup>1</sup>Extraction Method: Principle Component Analysis. 1 component extracted.

\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

\* Correlation is significant at the  $p \leq 0.05$  levels (2-tailed).

**Table 3a.****Inter-item and item-total correlations for SHCS for girls.**

Items in the scale	2	3	4	5	6	7	8	9	10	Item Total correlation
1. Headache	.40**	.42**	.37**	.33**	.34**	.36**	.23**	.28**	.23**	.51
2. Stomach-ache		.37**	.35**	.31**	.27**	.26**	.26**	.26**	.22*	.47
3. Bach-ache			.32**	.31**	.32**	.27**	.24**	.21**	.21**	.45
4. Feeling dizzy				.38**	.28**	.27**	.29**	.35**	.33**	.51
5. Feeling low					.52**	.38**	.37**	.40**	.30**	.62
6. Irritability or bad temper						.63**	.37**	.40**	.30**	.59
7. Feeling nervous							.32**	.32**	.22**	.54
8. Difficulties in getting to sleep								.33**	.25**	.47
9. Feeling of bursting into tears									.47**	.54
10. Feeling that it would be better not to be born										.46

\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 3b.****Inter-item and item-total correlations for SHCS for boys.**

Items in the scale	2	3	4	5	6	7	8	9	10	Item Total correlation
1. Headache	.45**	.33**	.35**	.45**	.33**	.29**	.28**	.28**	.27**	.52
2. Stomach-ache		.36**	.40**	.37**	.27**	.20**	.21**	.28**	.24**	.47
3. Bach-ache			.27**	.30**	.32**	.33**	.20**	.21**	.18**	.43
4. Feeling dizzy				.36**	.29**	.25**	.33**	.43**	.22**	.49
5. Feeling low					.54**	.42**	.34**	.37**	.47**	.65
6. Irritability or bad temper						.71**	.35**	.30**	.34**	.64
7. Feeling nervous							.30**	.28**	.27**	.56
8. Difficulties in getting to sleep								.35**	.20**	.44
9. Feeling of bursting into tears									.39**	.49
10. Feeling that it would be better not to be born										.44

\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 4.****Factor loadings for the SCHS after rotation**

Items in the scale	Component 1	Component 2
Headache	.29	.68
Stomach-ache	.12	.77
Back-ache	.17	.63
Feeling dizzy	.26	.66
Feeling low	.65	.41
Irritability or bad temper	.86	.12
Feeling nervous	.80	.12
Difficulties getting to sleep	.53	.28
Feeling of bursting into tears	.49	.48
Feeling that it would be better not to be born	.46	.33

Extraction Method: Principal Component Analysis. 2 components extracted.  
 Varimax rotation with Kaiser Normalization

**Table 5.****Factor loadings for the SCHS after rotation**

Items in the scale	Depressive symptoms		Somatic complaints	
	Girls	Boys	Girls	Boys
Headache			.69	.66
Stomach-ache			.74	.74
Back-ache			.75	.47
Feeling dizzy			.54	.70
Feeling low	.72	.57		
Irritability or bad temper	.79	.88		
Feeling nervous	.63	.87		
Difficulties getting to sleep	.58	.38		
Feeling of bursting into tears	.70	.27		
Feeling that it would be better not to be born	.57	.44		

Extraction Method: Principal Component Analysis. 2 components extracted.  
Varimax rotation with Kaiser Normalization

**Table 6a.****Inter-item correlations, Cronbach's alphas, and factor loadings for Depressive symptoms for Girls.**

Items in the scale	2	3	4	5	6	Item-total correlation	Cronbach's alpha if item is deleted	Factor loadings <sup>1</sup>
1. Feeling low	.53**	.36**	.37**	.46**	.42**	.61	.73	.77
2. Irritability or bad tempered		.61**	.37**	.40**	.28**	.64	.73	.79
3. Feeling nervous			.30**	.32**	.20**	.53	.75	.67
4. Difficult in getting to sleep				.33**	.25**	.46	.78	.61
5. Feeling of crying					.46**	.55	.75	.71
6. Feeling do not want to live						.44	.77	.61

<sup>1</sup> Extraction Method: Principal Component Analysis. 1 component extracted.

\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 6b.****Inter-item correlations, Cronbach's alphas, and factor loadings for Depressive symptoms for Boys.**

Items in the scale	2	3	4	5	6	Item-total correlation	Cronbach's alpha if item is deleted	Factor loadings <sup>1</sup>
1. Feeling low	.54**	.43**	.32**	.38**	.47**	.61	.73	.76
2. Irritability or bad tempered		.71**	.36**	.29**	.35**	.67	.71	.81
3. Feeling nervous			.31**	.28**	.28**	.59	.73	.74
4. Difficult in getting to sleep				.36**	.24**	.43	.78	.59
5. Feeling of crying					.41**	.46	.77	.62
6. Feeling do not want to live						.46	.77	.64

<sup>1</sup> Extraction Method: Principal Component Analysis. 1 component extracted.\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 7a. Inter-item correlations BWS-C for girls**

Items in the scale	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
My school marks	.14**	.33**	-.05	.05	.20**	.32**	.22**	.23**	-.04	.41**	.15**	.23**	.06	.20**	.16**	.15**	.18**	
A member of my family		.23**	.04	-.05	.24**	.23**	.15**	.24**	.04	.31**	.24**	.29**	.21**	.45**	.24**	.30**	.18**	
My future career			.01	-.06	.26**	.37**	.33**	.16**	-.05	.18**	.25**	.25**	.11*	.20**	.17**	.19**	.13**	
Wars Throughout the world				.27**	-.05	.07	-.06	.01	.50	.02	.14**	-.04	.08	.11*	-.08	-.01	-.05	
My use of alcohol or drugs					.11*	.02	.03	.16**	.42**	.09	.12*	.05	.23**	.07	-.05	-.02	-.12*	
My financial situation						.21**	.19**	.25**	.01	.17**	.24	.27**	.42**	.22**	.29**	.24**	.23**	
Exams							.37**	.25**	.11*	.28**	.26**	.22**	.22**	.24**	.08	.20**	.09	
My time pressures								.25**	-.01	.21**	.20**	.33**	.12*	.18**	.25**	.20**	.19**	
My physical health									.13*	.31**	.35**	.38**	.29**	.31**	.19**	.32**	.22**	
Drugs in school										.11*	.18**	.01	.15**	.09	-.02	-.03	.01	
My responsibilities at school											.34**	.28**	.23**	.41**	.32**	.27**	.22**	
My personal safety												.41**	.28**	.35**	.29**	.39**	.25**	
My mental health													.34**	.36**	.30**	.33**	.28**	
My debts														.39**	.17**	.19**	.19**	
My responsibilities to my family															.22**	.26**	.22**	
My love life																	.49**	.36**
My look/image																		.36**
The others' opinion about me																		

\* Correlation is significant at the  $p \leq 0.05$  levels (2-tailed).

\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 7b. Inter-item correlations BWS-C for boys**

Items in the scale	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
My school marks	.29**	.31**	.08	.04	.15**	.35*	.20**	.25**	.07	.41**	.15**	.24**	.21**	.18**	.18**	.25**	.22**
A member of my family		.31**	.07	.12*	.23**	.24**	.14**	.37**	.12*	.35**	.24**	.22**	.27**	.36**	.27*	.33**	.24**
My future career			.14**	.04	.32**	.46**	.28**	.34**	-.01	.31**	.26**	.35**	.33**	.36**	.37**	.35*	.36**
Wars Throughout the world				.18**	.16**	.31**	.14**	.22**	.35**	.18**	.16**	.07	.15**	.16**	.06	.00	.12*
My use of alcohol or drugs					.09	.10*	.04	.21**	.35**	.18**	.16**	.19**	.07	.11*	.13*	.12*	.21**
My financial situation							.30**	.23**	.30**	.14**	.14**	.30**	.29**	.48**	.31**	.38**	.31**
Exams								.32**	.30**	.24**	.36**	.28**	.25**	.26**	.32**	.26**	.27**
My time pressures									.33**	-.03	.24*	.28**	.40**	.30**	.29**	.23**	.26**
My physical health										.14**	.29**	.37**	.48**	.45**	.38**	.31**	.42**
Drugs in school											.25**	.24**	.06	.11*	.11*	.05	.06
My responsibilities at school												.41**	.28**	.27**	.40**	.17**	.27**
My personal safety													.39**	.40**	.34**	.34**	.36**
My mental health														.41**	.34**	.36**	.45**
My debts															.40**	.33**	.42**
My responsibilities to my family																.32**	.41**
My love life																	.57**
My look/image																	
The others' opinion about me																	

\* Correlation is significant at the  $p \leq 0.05$  levels (2-tailed).\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 8. Factor loadings for the BWS-C after rotation**

Items in the scale	PWS-C		EWS-C		CWS-C	
	Girls	Boys	Girls	Boys	Girls	Boys
A member of my family	.50	.30				
My financial situation	.48	.55				
My physical health	.49	.60				
My personal safety	.58	.50				
My mental health	.59	.65				
My debt	.52	.66				
My responsibilities to my family	.55	.49				
My love life	.68	.72				
My look/image	.70	.77				
The others' opinion about me	.60	.75				
My school marks			.67	.72		
My future career			.69	.56		
Exams			.73	.65		
My time pressures			.58	.38		
My responsibilities at school			.40	.67		
Wars throughout the war					.71	.56
My use of alcohol or drugs					.70	.73
Drugs in schools					.80	.86

Extraction Method: Principal Component Analysis. 3 components extracted.  
 Varimax rotation with Kaiser Normalization.

**Table 9a.****Inter-item correlations, Cronbach's alphas, and factor loadings for Bergen Personal Worries Scale for Girls.**

Items in the scale	2	3	4	5	6	7	8	9	10	Item-total correlation	Cronbach's alpha if item is deleted	Factor loadings <sup>1</sup>
1. A member of my family	.24**	.23**	.24**	.29**	.21**	.45**	.25**	.30**	.18**	.43	.79	.56
2. My financial situation		.25**	.24**	.27**	.42**	.22**	.29**	.24**	.23**	.43	.79	.57
3. My physical health			.35**	.38**	.29**	.31**	.19**	.32**	.22**	.45	.79	.69
4. My personal safety				.41**	.28**	.35**	.29**	.39**	.25**	.51	.78	.65
5. My mental health					.35**	.36**	.30**	.33**	.28**	.55	.77	.67
6. My Debt						.39**	.17**	.19**	.19**	.45	.79	.57
7. My responsibilities to my family							.22**	.26**	.22**	.50	.78	.63
8. My love life								.49**	.36**	.48	.78	.65
9. My look/image									.36**	.55	.77	.65
10. The other's opinion about me										.40	.79	.58

Cronbach's alpha for Bergen Social Relationships Scale = 0.80

<sup>1</sup> Extraction Method: Principal Component Analysis. 1 component extracted.\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 9b.****Inter-item correlations, Cronbach's alphas, and factor loadings for Bergen Personal Worries Scale for Boys.**

Items in the scale	2	3	4	5	6	7	8	9	10	Item-total correlation	Cronbach's alpha if item is deleted	Factor loadings <sup>1</sup>
1. A member of my family	.23**	.37**	.24**	.22**	.27**	.36**	.27**	.33**	.25**	.49	.85	.51
2. My financial situation		.30**	.30**	.29**	.48**	.31**	.38**	.31**	.31**	.49	.84	.58
3. My physical health			.37**	.49**	.45**	.38**	.31**	.42**	.49**	.60	.83	.70
4. My personal safety				.39**	.40**	.34**	.34**	.34**	.31**	.50	.84	.60
5. My mental health					.41**	.32**	.36**	.45**	.41**	.55	.84	.67
6. My Debt						.40**	.33**	.42**	.46**	.61	.83	.71
7. My responsibilities to my family							.32**	.41**	.39**	.55	.84	.64
8. My love life								.57**	.51**	.59	.83	.67
9. My look/image									.63**	.66	.83	.76
10. The other's opinion about me										.62	.83	.74

Cronbach's alpha for Bergen Social Relationships Scale = 0.85

<sup>1</sup> Extraction Method: Principal Component Analysis. 1 component extracted.\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 9c.**  
**Inter-item correlations, Cronbach's alphas, and factor loadings for Bergen Educational Worries Scale for Girls.**

Items in the scale	2	3	4	5	Item-total correlation	Cronbach's alpha if item is deleted	Factor loadings <sup>1</sup>
1. My school marks	.33**	.32**	.22**	.41**	.47	.63	.69
2. My future career		.37**	.33**	.19**	.45	.64	.67
3. Exams			.37**	.28**	.50	.61	.72
4. My time pressure				.21**	.42	.65	.63
5. My responsibilities at school					.38	.66	.61

Cronbach's alpha for Bergen Social Relationships Scale =0.69

<sup>1</sup> Extraction Method: Principal Component Analysis. 1 component extracted.

\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 9d.**  
**Inter-item correlations, Cronbach's alphas, and factor loadings for Bergen Educational Worries Scale for Boys.**

Items in the scale	2	3	4	5	Item-total correlation	Cronbach's alpha if item is deleted	Factor loadings <sup>1</sup>
1. My school marks	.31**	.35**	.20**	.41**	.45	.63	.67
2. My future career		.46**	.28**	.31**	.49	.64	.71
3. Exams			.32**	.36**	.55	.61	.75
4. My time pressure				.24**	.37	.65	.57
5. My responsibilities at school					.47	.66	.69

Cronbach's alpha for Bergen Social Relationships Scale = 0.71

<sup>1</sup> Extraction Method: Principal Component Analysis. 1 component extracted.

\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 9e.**  
**Inter-item correlations, Cronbach's alphas, and factor loadings for Bergen Community Worries Scale for Girls.**

Items in the scale	2	3	Item-total correlation	Cronbach's alpha if item is deleted	Factor loadings <sup>1</sup>
1. Wars throughout the world	.27**	.50**	.47	.58	.77
2. My use of alcohol or drugs		.42**	.40	.66	.70
3. Drugs in school			.58	.42	.85

Cronbach's alpha for Bergen Social Relationships Scale = 0.67

<sup>1</sup> Extraction Method: Principal Component Analysis. 1 component extracted.

\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 9f.****Inter-item correlations, Cronbach's alphas, and factor loadings for Bergen Community Worries Scale for Boys.**

Items in the scale	2	3	Item-total correlation	Cronbach's alpha if item is deleted	Factor loadings <sup>1</sup>
1. Wars throughout the world	.18**	.35**	.31	.64	.63
2. My use of alcohol or drugs		.48**	.41	.50	.76
3. Drugs in school			.52	.30	.85

Cronbach's alpha for Bergen Social Relationships Scale = 0.60

<sup>1</sup> Extraction Method: Principal Component Analysis. 1 component extracted.

\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 10a.****Inter-item correlations, Cronbach's alphas, and factor loadings for Generalised Self-efficacy Scale for Girls.**

Items in the scale	2	3	4	5	6	7	8	9	10	Item-total correlation	Cronbach's alpha if item is deleted	Factor loadings <sup>1</sup>
1. I always manage to solve difficult problems if I try hard enough.	.32**	.23**	.24**	.34**	.39**	.28**	.18**	.25**	.27**	.47	.77	.59
2. If someone opposes me, I can find means and ways to get what I want.		.39**	.26**	.29**	.17**	.16**	.16**	.23**	.25**	.41	.78	.53
3. It is easy for me to stick to my aims and accomplish my goals.			.37**	.42**	.24**	.24**	.19**	.19**	.25**	.47	.77	.60
4. I am confident that I could deal efficiently with unexpected events.				.47**	.13*	.23**	.18**	.23**	.34**	.46	.77	.60
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.					.35**	.38**	.25**	.33**	.37**	.61	.75	.74
6. I can solve most problems if I invest the necessary effort.						.33**	.23**	.24**	.21**	.42	.78	.55
7. I can remain calm when facing difficulties because I can rely on my coping abilities.							.25**	.27**	.30**	.45	.77	.58
8. When I am confronted with a problem, I can usually find several solutions.								.36**	.5**	.37	.78	.49
9. If I am in a trouble, I can usually think of a solution.									.40**	.46	.77	.59
10. I can usually handle what ever comes to my way.										.48	.77	.62

Cronbach's alpha for Generalised Self-efficacy Scale = 0.79.

<sup>1</sup> Extraction Method: Principal Component Analysis. 1 component extracted.

\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 10b.****Inter-item correlations, Cronbach's alphas, and factor loadings for Generalised Self-efficacy Scale for Boys.**

Items in the scale	2	3	4	5	6	7	8	9	10	Item-total correlation	Cronbach's alpha if item is deleted	Factor loadings <sup>1</sup>
1. I always manage to solve difficult problems if I try hard enough.	.35**	.33**	.28**	.34**	.48**	.30**	.25**	.24**	.24**	.48	.81	.60
2. If someone opposes me, I can find means and ways to get what I want.		.42**	.34**	.41**	.40**	.24**	.24**	.22**	.25**	.49	.81	.62
3. It is easy for me to stick to my aims and accomplish my goals.			.38**	.42**	.38**	.33**	.38**	.20**	.30**	.55	.81	.67
4. I am confident that I could deal efficiently with unexpected events.				.56**	.33**	.33**	.32**	.27**	.36**	.56	.81	.68
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.					.39**	.36**	.30**	.31**	.47**	.63	.80	.74
6. I can solve most problems if I invest the necessary effort.						.29**	.31**	.32**	.28**	.56	.81	.67
7. I can remain calm when facing difficulties because I can rely on my coping abilities.							.28**	.19**	.29**	.45	.82	.56
8. When I am confronted with a problem, I can usually find several solutions.								.43**	.31**	.48	.81	.60
9. If I am in a trouble, I can usually think of a solution.									.35**	.43	.82	.55
10. I can usually handle what ever comes to my way.										.50	.81	.61

Cronbach's alpha for Generalised Self-efficacy Scale = 0.83.

<sup>1</sup> Extraction Method: Principal Component Analysis. 1 component extracted.

\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 11a.****Inter-item correlations for Social Self-efficacy Scale for Girls.**

Items in the scale	2	3	4	5	6	Item-total correlation	Cronbach's alpha if item is deleted	Factor loadings <sup>1</sup>
1 It is difficult for to make new friends.	.12*	.21**	.02	.33**	.37**	.37	.45	.67
2. If I see someone I would like to meet, I go to that person instead of waiting for him to come to me.		.07	.26**	.12**	.25**	.28	.50	.51
3. If I meet someone interesting who is hard to make friends with, I'll soon stop trying to make new friends with that person.			.11*	.16**	-.01	.18	.54	.35
4. When I'm trying to become friends with someone who seems uninterested at first, I don't give up easily.				.02	.16**	.19	.54	.35
5. I do not handle myself well in social gatherings.					.30**	.32	.47	.63
6. I have acquired my friends through my personal ability at making friends.						.38	.45	.71

Cronbach's alpha for Social Self-efficacy Scale = 0.52.

<sup>1</sup> Extraction Method: Principal Component Analysis. 1 component extracted.

\* Correlation is significant at the  $p \leq 0.05$  levels (2-tailed).

\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 11b.****Inter-item correlations for Social Self-efficacy Scale for Boys.**

Items in the scale	2	3	4	5	6	Item-total correlation	Cronbach's alpha if item is deleted	Factor loadings <sup>1</sup>
1 It is difficult for to make new friends.	.15*	.36**	-.02	.37**	.23**	.40	.40	.54
2. If I see someone I would like to meet, I go to that person instead of waiting for him to come to me.		.07	.32**	.04	.24**	.29	.45	.37
3. If I meet someone interesting who is hard to make friends with, I'll soon stop trying to make new friends with that person.			.02	.15**	.03	.21	.49	.57
4. When I'm trying to become friends with someone who seems uninterested at first, I don't give up easily.				-.05	.26**	.20	.50	.73
5. I do not handle myself well in social gatherings.					.07	.19	.50	.51
6. I have acquired my friends through my personal ability at making friends.						.32	.44	.49

Cronbach's alpha for Generalised Self-efficacy Scale = 0.54

<sup>1</sup> Extraction Method: Principal Component Analysis. 1 component extracted.

\* Correlation is significant at the  $p \leq 0.05$  levels (2-tailed).

\*\* Correlation is significant at the  $p \leq 0.01$  levels (2-tailed).

**Table 12.**  
**Descriptive statistics for scales used in Romanian Youth study.**

Scales	Range		Mean		S.D.		Skewness		Kurtosis		Cronbach's alpha	
	girls	boys	girls	boys	girls	boys	girls	boys	girls	boys	girls	boys
BRSR	0-18	0-18	9.7	8.5	3.6	3.6	0.11	0.03	-0.53	-0.20	0.55	0.56
PWS-C	0-40	0-40	13.2	9.4	7.4	7.5	0.62	1.26	0.04	1.43	0.80	0.85
EWS-C	0-20	0-20	8.6	6.7	4.4	4.3	0.56	0.49	0.32	-0.48	0.67	0.71
CWS-C	0-12	0-12	3.2	3.0	3.2	3.2	0.92	1.06	-0.14	0.43	0.67	0.60
GSE	0-40	0-40	20.4	21.0	4.9	5.2	-0.2	-0.59	-0.11	0.78	0.79	0.83
SSE	0-24	0-24	11.4	21.0	3.4	3.2	-0.7	-0.19	-0.34	-0.20	0.54	0.51
DEPSYM	0-24	0-24	9.8	6.4	5.8	5.2	0.40	0.94	-0.8	0.55	0.79	0.78

**Table 13.**  
**Model 1. Regression model with depression symptoms as the predicted variable**

Fit indicators and predictors	Block 1		Block 2		Block 3		Block 4	
	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys
Adjusted R <sup>2</sup>	.00	.01	.07	.07	.24	.19	.24	.20
F-value	0.177	2.674	2,083	1.766	4.270	3.143	4.234	3.172
F change	0.18	2.67	2.23	1.80	11.5	7.64	1.9	1.56
Degrees of freedom	211	183	197	169	193	165	191	163
Significance of F change (p<)	.67	.10	.01**	.04*	.00**	.00**	.15	.21
<b>Predictors</b>								
- Age	-.03	.12	-.12	.02	-.13	.04	-.14	.05
- Perceived availability of a confidant			-.06	<b>-.21**</b>	-.02	<b>-.23**</b>	.00	<b>-.19*</b>
- Perceived availability of financial support			-.04	.02	.01	.04	.01	.05
- Participation in social activities			-.07	.07	-.02	.07	-.02	.10
- Perceived teacher(s) evaluation			.12	.08	.09	.06	.07	.05
- Perceived fairness of teacher(s) evaluation			<b>.17*</b>	<b>.17*</b>	.10	.12	.09	.10
- Frequency of interaction with friends in daytime			-.07	.14	-.09	.13	-.08	.12
- Frequency of interaction with friends in evenings			.05	-.09	.03	-.03	.04	-.02
- Frequency of phone calls to friends			-.02	.08	.01	.13	.03	.13
- Perceived father support			-.01	-.03	.04	.05	.04	.05
- Perceived mother support			<b>-.22**</b>	-.04	-.10	.00	-.09	.00
- Perceived brother support			.04	-.06	.03	-.07	.03	-.05
- Perceived sister support			-.02	-.01	-.02	.00	-.02	-.02
- Perceived support from friends of the same sex			.03	-.07	.03	-.13	.04	-.14
- Perceived support from friends of the opposite sex			-.06	.09	-.06	.07	-.05	.09
- Chronic social stress					<b>.28***</b>	.13	<b>.30***</b>	.13
- Personal worries					<b>.25***</b>	<b>.35***</b>	<b>.24***</b>	<b>.31***</b>
- Educational worries					.09	.00	.08	.00
- Community worries					-.13	-.03	-.12	-.02
- General self-efficacy							.00	-.10
- Social self-efficacy							-.13	-.08

\* Predictors are significant at  $p \leq 0.05$ .\*\* Predictors are significant at  $p \leq 0.01$ .\*\*\* Predictors are significant at  $p \leq 0.001$ .

**Table 14.**  
**Model 2. Regression model with depression symptoms as the predicted variable**

Fit indicators and predictors	Block 1		Block 2		Block 3		Block 4	
	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys
Adjusted R <sup>2</sup>	.00	.01	.01	.05	.23	.19	.25	.19
F-value	0.241	3.887	2.664	7.417	21.847	16.506	20.258	13.583
F change	0.24	3.89	5.08	10.80	40.30	24.29	10.87	1.71
Degrees of freedom	287	266	286	265	284	263	283	262
Significance of F change (p<)	.62	<b>.05*</b>	<b>.03*</b>	<b>.00**</b>	<b>.00***</b>	<b>.00***</b>	<b>.00***</b>	.19
<b>Predictors</b>								
- Age	-0.03	<b>.12*</b>	-0.03	.12	-0.03	<b>.13*</b>	-0.05	<b>.12*</b>
- Perceived availability of a confidant			<b>-.13*</b>	<b>-.20**</b>	-0.05	<b>-.21***</b>	-0.02	<b>-.19**</b>
- Chronic social stress					<b>.29***</b>	<b>.14**</b>	<b>.33***</b>	<b>.15**</b>
- Personal worries					<b>.29***</b>	<b>.32***</b>	<b>.27***</b>	<b>.31***</b>
- Social self-efficacy							<b>-.18***</b>	-0.08

\* Predictors are significant at  $p \leq 0.05$ .

\*\* Predictors are significant at  $p \leq 0.01$ .

\*\*\* Predictors are significant at  $p \leq 0.001$ .