CHRONIC SOCIAL STRESS AND

PSYCHOLOGICAL DISTRESS IN RUSSIA

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SUMMARY

Background

In the last two decades, after the collapse of the Soviet Union, chronic social stress and poor mental health have been recognized in Russia as important research areas. The current study is part of a larger chronic social stress research project initiated through Health Promotion Research Centre at the University of Bergen in Norway. In the overall project, data have been collected so far in Norway, Romania, Thailand and Russia. As in the other countries, the main aim of this Russian study was to explore the relationship between chronic social stress, social support, coping resources and distress in a community-based sample of men and women.

All the studies in the programme are guided by a basic social psychological theoretical framework, in which chronic social stress is viewed as a transactional, cognitive process involving appraisal and not completely satisfactory coping, to resolve dissonance among cognitions about a significant other(s). Thus, of the universe of possible sources of stress (poverty, crime, crowding, war, etc), the focus of this study was narrow – restricted to subjectively defined stress caused by perceived problems in close interpersonal relationships.

An important aim of the overall research programme of which this study is a part is to test the basic presumption that stress, when construed and defined in this way, is a fundamental human experience, equally relevant and equally debilitating in any culture, at any time, and in any place. A near replication of the results of the first study (in Norway) was observed in Romania. That gave the impetus for this study, and the Thai study, to test if the particular stress-distress phenomena observed in Norwegian and Romanian cultures are equally as relevant in the rather different cultures of Russia and Thailand.

To attempt to isolate the psychological effects of interpersonal stress, the measurement of other kinds of stress were also included in the study. Psychological stress, the study outcome, was measured by self-reports of loneliness, negative affect, anxiety and depressive symptoms. The research model included also the measurement of two kinds of resources that have been widely reported in the literature to help people cope with stress: intrapersonal resources (hardiness and self-efficacy), and social resources (contact with others and perceived availability of social support).

Main study hypotheses

- Chronic social stress and worries about matters that do not relate to personal relationships are significantly related to depressive symptoms, anxiety, loneliness and negative affect, and are not influenced by age and gender. The expectation was that higher chronic social stress and worry levels would be related to higher distress levels.
- Social support, self-efficacy and hardiness are all significantly and inversely related to depressive symptoms, anxiety, loneliness and negative affect, and not influenced by age and gender.

Method

The data for this study were collected in a cross-sectional population-based survey in 2003. A second wave of data was collected from the same participants several months later, but only the cross-sectional data are included in this thesis, to ensure a manageable thesis. The follow-up data will be used in subsequent studies, following completion of the master's degree, and are not referred to in this report.

The study population was a random sample of 970 men and women aged 25-29 and 40-44 years. The self-administered questionnaire included four measures of psychological distress,

three measures of stress, five measures of social coping resources and two measures of intrapersonal coping resources. Preliminary data analysis was performed using various simple descriptive methods, reliability analysis, and factor analysis. The main analyses related to the study hypotheses were multiple regression analyses.

Results

The response rate was 69% (665 respondents). The scale assessing chronic social stress had six items. About 85 percent of women and 84 percent of men reported experiencing at least one of the six stressors and about 44 percent of women and 39 percent of men reported three or more stressors. Women reported significantly higher prevalence ($p<0.01$) on two of the six items than did men.

Out of the 12 predictors studied, 10 were significantly associated with the four psychological distress indicators (loneliness, anxiety, depression and negative affect).

The most potent predictor for loneliness and negative affect (in terms of variance accounted for) was hardiness ($R^2 = -0.21$ for loneliness and $R^2 = -0.20$ for negative affect). The most potent predictor of anxiety was personal worries ($R^2 = 0.26$), and for depression, general self-efficacy was the strongest predictor ($R^2 = -0.30$). Chronic social stress was less potent than the predictors listed above, but was nevertheless a significant predictor of loneliness, negative affect, anxiety and depression, as hypothesised.

Discussion and conclusions

The study hypotheses were confirmed, suggesting that despite obvious cultural differences, Russians are equally exposed to, and equally susceptible to, chronic social stress, as are Norwegians and Romanians. This study thus offers support for a social psychological model of stress and distress that emphasises the deleterious consequences on mental health of

chronic relationship problems, and the importance both of intra-personal and social coping resources.

Now, three studies with very similar methods have observed basically the same psychosocial phenomena in three quite different cultures. While it may seem obvious to any lay person that chronic relationship problems cause psychological distress, stress researchers have tended strongly to focus on acute stressors, such as sudden illness, the death of a loved one, and so on. Thus chronic social stress has been trivialised in the literature, by its relative absence, if nothing else.

Therein lies the significance of this study, which suggests the possibility that interventions to enhance the social environment, and strengthen intra- and inter-personal coping resources, may have a positive impact on community mental health. This is not directly suggested by this study, of course, but the present study adds to the empirical foundation for eventual intervention research on how strengthened social ties within close social groups might translate into better mental health for entire communities.

The significance of this study also rests in part with its consideration of how positive as well as negative aspects of social relationships are related to mental health. Previous epidemiological research has mostly emphasised the study of the possible benefits of good social ties, however, and indeed, the present study provides further confirmation that positive social ties are directly and significantly related to better mental health. Also, the direct and strong relationship of hardiness and self-efficacy levels to psychological distress levels suggests the potential fruitfulness of further exploration into psychological mechanisms linking stress and distress. This study has examined direct effects of all the predictors on a range of outcome measures, but better models with greater explanatory power might be

constructed in which constructs such as hardiness and self-efficacy are construed as mediators or moderators of the stress-distress link. While this can in principle be undertaken with the present data, the advanced modelling required was beyond the scope of this thesis. There is every intention, however, to continue examination of the data to explore these and other possibilities.

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LIST OF ABBREVIATIONS

BSRS - Bergen Social Relationship Scale

BPWS - Bergen Personal Worries Scale

BCWS - Bergen Community Worries Scale

LOS - Loneliness Scale

HADS-A - anxiety sub-scale of the Hospital Anxiety and Depression Scale

HADS-D - depression sub-scale of the Hospital Anxiety and Depression Scale

PANAS-NA - negative affect sub-scale of Positive and Negative Affect Scale (PANAS)

GSE - General Self-Efficacy Scale

HS - Hardiness Scale

MIC – Medical Insurance Company

RC – Research Coordinator

CINDI – Countrywide Integrated Non-Communicable Diseases Intervention programme.

CHAPTER I: INTRODUCTION, LITERATURE REVIEW

1.1 INTRODUCTION

Life expectancy in Russia has dramatically decreased during the present socio-economical transformation period, and has become much lower than in West European countries and the US (World Health Organization, 2003; Leon & Shkolnikov, 1998). An appreciation of the socio-environmental context in which community health is shaped helps shed light on these developments. Exposure to the stressful psychological environment created by the communist rule breakdown was observed to be the second most important cause of the decline in life expectancy, after health damaging lifestyle (e.g. heavy alcohol consumption) (Bobak et al., 1996; Leon & Shkolnikov, 1998; Siegrist, 2000). Recent studies in the Western Europe and US show that chronic social stress due to relationship problems contributes to a deterioration of physical (e.g. cardiovascular) and mental (e.g. depression) health (Weiner, 1992).

Given the above, it seems plausible that levels of chronic social stress due to relationship problems may be quite high in Russia today, because relationship problems frequently accompany other types of stressors such as financial worries, joblessness and insecurity about the future. Following from that, it seems plausible, also, that psychological distress levels in Russia may be elevating in concert with increased social stress. However, this is conjectural because until now these phenomena have not been examined in Russia. Recent research in Romania -- where economic and social unrest have also followed the drastic political changes in Eastern Europe -- confirmed a relationship between social stress and psychological distress, and high prevalence's of stress and distress. This provided impetus for the present investigation that took place in Russia, in which three classes of predictors of psychological distress (loneliness, anxiety, negative affect and depressive symptoms) were investigated: (1) social stress from relationship problems,

from personal worries and from worries about community conditions, (2) social coping resources, including social connectedness, perceived availability of support and social engagement, and (3) intrapersonal coping resources (social and general self-efficacy, and hardiness).

The current study is part of a larger chronic social stress research project initiated through Health Promotion Research Centre at the University of Bergen in Norway. In the overall project, data have been collected so far in Norway, Romania, Thailand and Russia. As in the other countries, the main aim of this Russian study was to explore the relationship between chronic social stress, social support, coping resources and distress in a community-based sample of men and women.

All the studies in the programme are guided by a basic social psychological theoretical framework, in which chronic social stress is viewed as a transactional, cognitive process involving appraisal and not completely satisfactory coping, to resolve dissonance among cognitions about a significant other(s). Thus, of the universe of possible sources of stress (poverty, crime, crowding, war, etc), the focus of this study was narrow – restricted to subjectively defined stress caused by perceived problems in close interpersonal relationships.

1.2 SIGNIFICANCE AND BACKGROUND

1.2.1 Chronic social stress in Russia

The collapse of the Soviet Union and the process of social, economic, and political transformation that has occurred in Russia subsequently has caused enormous stress for the Russian people (Notzon et al., 1998; Leon et al., 1998). Age-adjusted mortality in

Russia rose by almost 33% between 1990 and 1994. During that period, life expectancy for Russian men and women declined dramatically from 63,8 and 74,4 years to 57,7 and 71,2 years, respectively. More than 75% of the decline in life expectancy was due to increasing mortality rates for those 25-64 years of age. Overall, cardiovascular diseases (heart disease and stroke) and injuries accounted for 65% of the decline in life expectancy. Many factors appear to be at work simultaneously, including economic and social instability, high rates of tobacco and alcohol consumption, poor nutrition, depression, and deterioration of the health care system (Notzon et al., 1998).

Exposure to the stressful psychological environment has been proposed as a significant explanation of the decline in life expectancy in Russia (Bobak & Marmot, 1996; Hertzman et al., 1996; Leon & Shkolnikov, 1998). Psychological stressors include conditions of relative deprivation in terms of income, work and housing, restricted social mobility and freedom, threat to personal security, social isolation and exclusion.

Recent studies show that negative emotions with prolonged stressful experiences may contribute to physical and mental health problems (Weiner, 1992). Nazarova's (2000) study in the industrial city Kazan (Russia) illustrates the kinds of prolonged stressful experiences that have followed the USSR's dissolution. In the Kazan study, every third person was unsatisfied with their job, a fifth did not have sufficient income, a fourth wanted to change their job, a third was afraid of being fired, and the majority were forced to work a second job in addition to a full eight-hour day (Nazarova, 2000).

Being locked in a career that offers little pay and security and that provides no prospects for advancement is experienced as particularly stressful by many workers. Moreover, with rising income inequality, these negative experiences are becoming even more pronounced. Siegrist (2000) suggests that ffeelings of unfairness, injustice and relative deprivation in terms of wealth, family assets and anticipated pension are considered the

driving force of a "social reward deficiency syndrome" that may be involved in creating pathophysiological outcomes.

Growing social stress in Russia is happening in concert with growing health problems in general that are associated in complex ways with drastic social change during the 1990's. Rapid social change, when goals and norms are being redefined, may leave the individual suffering a loss of purpose and meaning, evoking feelings of powerlessness, alienation, isolation and estrangement, which have been linked to depression and cardiovascular morbidity and mortality (Palosuo 2000).

Evidence suggests the negative health effects of social change have been more pronounced among Russian men than among women. For example, some authors have made the claim that the massive rise in unemployment and the collapse of state socialism after 1990 has had a more dramatic effect on men than on women (Weidner, 2000; Leon et al., 1998). As evidence of this, between 1990 and 1994 the difference in life expectancy for Russian men and women grew to become the widest gender gap anywhere in the industrial world (Weidner, 2000). Most affected were middle-aged men, in particular the urban population with a lower level of education (Shkolnikov, et al., 1998).

As several researchers have pointed out, the rapid decline in men's health, especially their vulnerability to coronary heart disease, can not be sufficiently explained by traditional coronary risk factors and lifestyle variables (bad diet, smoking, alcohol abuse), nor by biological or genetic factors when compared to Western Europe (Weidner, 2000). Empirical evidence suggest that it is not the economic change in Russia itself which directly affects health, but how it is mediated by subjective evaluation via psychological factors, especially depressive symptoms and perceived control (Kopp et al., 2000; Bobak

et al., 2000). It has been suggested that men are more affected than are women by the socioeconomic stressors unemployment, income deprivation, loss of status, incongruities with regard to education and occupation (Moller-Leimkuhler 2003). These psychological factors, some of which have been identified in recent studies as risk factors for coronary heart disease (Weidner, 2000), are all associated with traditional Russian masculine culture, perhaps making adaptation to the new circumstances post-1990 more difficult (Levant et al. 2003; Siegrist, 2000). It has been suggested, also, that men are less socially integrated compared to women, that they report less social support than do women, and that their spouse is often their only source of social support Moller-Leimkuhler (2003).

Thus, men's health may be more affected by partner loss, compared to women, and in stressful situations, men are reported to have a less adaptive stress response than women Moller-Leimkuhler (2003). There is also evidence that men are more likely than women to use avoidant coping strategies such as denial and distraction, and to increase alcohol consumption, which is one of the main causes of premature death in Russia (Klose et al., 2004, Nemtsov, 1999).

1.2.2 Chronic social stress and health

Chronic social stress may have many causes, ranging from problematic social relationships to worry about large social issues such as conflict around the world. There is evidence that chronic social stress exerts harmful effects on both physical and mental health. The literature on chronic disease epidemiology, in particular, shows that good health has a consistent, positive relationship with positive social ties in the near social network (Berkman, 1986; Berkman, 1987; Cohen et al, 1994; Schwarzer & Leppin, 1990; Seeman, 2000; Uchino, 1996; Vandervoort, 1999).

There is evidence for this, too, from Russia, where research in the Udmurt area showed that depression was related significantly to dissatisfaction with family relationships (Pakriev, 1998). Another Russian study revealed that the level of blood pressure was higher among the unemployed, among those working with permanent tension, among those living in overcrowded areas, and among those having negative social relationships (Aivazyan, 1991). In a population-based study in Moscow, among 3096 men and women in the age range of 24 –68 years and having hypertension, the level of psychosocial stress was significantly higher compared to a control group without hypertension (Kopina et al., 1996). It has been found also that chronic stress is associated with the development of ischemic heart disease, and with 80 percent of myocardial infarction cases (Ganelina, 1977). Recent Russian research has demonstrated important links between the coronary heart disease, chronic stress, and depression and anxiety (Gafarov, 2003). Data from Taganrog, Russia, showed that people who reported strained family relations had poorer health than those who were free from this socio-emotional burden (Carlson, 2000).
In particular, not being married is an independent predictor of elevated risk of premature male mortality (Watson, 1995). It is thus of more than passing interest to note that in the short period from 1989 to 1992, marriage rates declined by 19 to 35 percent in Russia, Ukraine, Bulgaria and Romania (Hertzman et al., 1996). Being socially excluded is associated with poor emotional health (Rose, 2000). Information obtained from the New Russia Parameter Survey conducted in 1998, indicates that between 80 and 90 percent of the adult population included in this representative survey did not belong to any voluntary associations, and as many as 79 percent of Russians were found to be outside all institutions of civil society (Rose, 2000).

The general pattern of findings from the Russian studies described briefly above is in concert with findings from other parts of the world. Research with middle-aged and

younger cohorts in Canada observed social stress to be related to depression (Wade et al., 2000). In one US study, people with depressive disorders reported fewer positive interactions and more negative interactions, compared to people without such disorders (Zlotnick et al, 2000). In another American study, people with marital dissatisfaction experienced major depressive episodes at a rate three times greater than others, and marital dissatisfaction explained 30 percent of new occurrences of major depressive episode (Wisman et al., 1999). In German research, social stressors at work under low social support conditions were related significantly to depressive symptoms. (Dormann et al., 1999).

Only few studies on chronic social stress associated with problematic interpersonal relationships have included social stress, social support and psychological distress variables. A population-based study in Norway among 40-44 year-old people observed chronic social stress to be a significant predictor of loneliness, depression and anxiety, after controlling for levels of social ties and perceived availability of social support (Mittelmark et al., 2004). A similar study in Romania arrived at similar conclusions, but observed also that the intrapersonal coping resource 'self-efficacy' was a significant predictor of psychological distress (Bancila, 2004). Random sample has taken from adult population aged 25 - 89 years.

CHAPTER II. THEORETICAL FOUNDATION

2.1 THEORIES OF STRESS

The concept of stress has been developing since the late 17th century, but only in the early 19th century it has been systematically conceptualised and been a subject of research. By

1936, Selye was using the term stress in a very special, technical sense to mean an orchestrated set of body defences against any form of noxious stimulus (including psychological threats). He called this reaction the General Adaptation Syndrome. Stress was defined as a universal psychological set of reactions and processes created by a demand. In his book 'The Stress of Life' (1976) he described identical bodily reactions to different stimuli and suggested that these non-specific endocrine responses helped the organism to cope physiologically with a wife range of stress agents. He defined these non-specific responses as 'stress'. He pointed that there are two ways in which a stressor can harm an organism: it can either cause damage directly or indirectly. He viewed that illness is the price the organism has to pay for the defence against extended exposure to stressor agents.

The concept of a 'dynamic state' involving adaptation to demand was developed by Selye and Wolff (Wolff, 1953). They viewed stress as an active process of 'fighting back'; the living body engages in adaptation efforts crucial to the maintenance or restoration of equilibrium. Stress, viewed as a biological process of defence, offers an interesting analogy to the psychological process that is 'coping' in which a person struggles to manage psychological stress. Important aspects of stress processes include resources available for coping, their costs, including disease and distress, and their benefits including growth of competence and the joy of triumph against adversity.

In 1966 Lazarus suggested that stress should be treated as an organizing concept for understanding a wide range of phenomena of great importance in human adaptation. He pointed out that stress is not a variable but a rubric consisting of many variables and processes. Lazarus and Cohen (1977) wrote of three types of stress stimuli, or 'stressors':

major changes, often cataclysmic and affecting large numbers of persons; major changes affecting one or a few persons; and daily hassles.

The assumption that psychological stress has a negative impact on health was first studied in the context of obviously stressful major life-events such as the death of a loved one. Psychiatrists exploring the relationship between life-events and psychosomatic and psychiatric illnesses observed that the experience of stressful life-events increased the risk of morbidity and even mortality (Holmes and Masuda 1974). Other researchers were preoccupied with the role in stress-distress processes of so-called minor life-events or 'daily hassles' -- irritating, frustrating, distressing demands that to some degree characterize everyday transactions with the environment (Kanner 1981). Examples of such events are misplacing and losing things, concerns about new events, traffic, being lonely or not getting enough sleep.

Lazarus and Folkman (1984) have been particularly influential in suggesting that daily hassles may be as much or more stressful that major life events. They also introduced a strong cognitive element to thinking about stress-distress mechanisms, in contrast to earlier models of stress. Specifically, they posited that stress is defined by transactions between a person and the environment that are mediated by cognitive processes. From this viewpoint, stress is the result of a perceived mismatch between environmental demands and the resources available to the individual in dealing with these demands. The two central processes in Lazarus' theory that determine the extent of stress experiences in a given situation are cognitive appraisal and coping. Cognitive appraisal is an evaluative process, that determines why and to what extent a situation is perceived as stressful by a given individual. Further, three basic forms of appraisal are distinguished: primary appraisal, secondary appraisal and reappraisal (Lazarus and Folkman, 1984).

The extent to which the situation is experienced as stressful, as well as the individual's success in mastering it, depends on his or her coping resources (Lazarus and Folkman, 1984). Researchers distinguish between intrapersonal and extrapersonal resources (Lazarus and Folkman, 1984; Stroebe and Stroebe, 1987; Cohen and Edwards, 1989). Intrapersonal resources consist of the personality traits, abilities and skills which enable persons to cope with the stress experience. Extrapersonal coping resources are instrumental, including financial resources, features of the physical environment and features of the social environment.

Intrapersonal coping resources include general self-efficacy (Bandura, 1977) and hardiness (e.g. Kobasa et al., 1982), among many other intrapersonal 'strengths' that may influence stress appraisal and coping processes (Zautra et al., 1997). Especially important in this regard is social-cognitive theory's (Bandura, 1977) construct of self-efficacy. If one believes that he can deal effectively with potential environmental stressors, social-cognitive theory posits that she or he will not be so perturbed by them (Bandura, 1997), while a low sense of self-efficacy is associated with depression, anxiety and helplessness (Schwarzer, 1996). General self-efficacy refers to a global confidence in one's coping ability across a wide range of demanding or novel situations (Sherer et al., 1982). A specific construction of the global self-efficacy construct, relevant to coping with chronic stress, is general coping efficacy (GCE). This refers to a person's appraisal of the outcomes of their efforts to cope with chronic stress and 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. In fact very little research on coping efficacy has been done in the area of chronic stress (Gignac and Gottlieb, 1996).

Turning to the hardiness construct, there is suggestive evidence that hardiness protects individuals against the impact of stressful life-events and that this buffering effect is mediated by related differences in appraisal processes. Hardy individual appear to view their lives more positively and as more under their own control. Since the first publication on hardiness (Kobasa, 1979), this personality trait has been empirically demonstrated as an effective moderator in the stress-illness relationship across a wide variety of samples around the world, and accumulated results have led to a maturing of the hardiness concept (Maddi, 1999). Hardiness acts on the individual's appraisal and coping with a stressful event, which, in turn, affects his or her mental health. Some of the hardiness components may predispose individuals to appraise the stressful events in less threatening terms, to view themselves as more capable of coping with it, to rely on more problem-focused and support-seeking strategies, and to rely less on emotion-focused and distancing coping strategies (Florian et al., 1995)

Extrapersonal coping resources include structural and functional elements of the social network (belonging to a social network, perceived availability of social support if needed). The direct effects of social support on health are well documented (see above). However, certain social coping resources have been posited to play a buffering role especially when stress is present (Cohen and Wills 1985). According to the so-called 'stress buffering hypothesis', level of social support will not be strongly associated with psychological distress levels when stress levels are low or very low, but may buffer one from negative effects when stress levels are markedly high.

The subject of chronic social stress associated with problematic interpersonal relationships has received attention in this chapter, but obviously, social stress may have

many other causes. Financial problems, job worries, crowded and substandard housing, concerns with neighbourhood and community safety, and worries about global economic and security issues illustrate they wide range of possible sources of social stress. Individuals differ in the degree to which various environmental conditions are perceived as threatening, and this is reflected among other ways in the degree to which one worries about the conditions of living. Worry is a cognitive process characterised by rumination about life circumstances that arouse feelings of uneasiness, alarm, apprehensiveness, concern, disquiet, doubt, dread, foreboding, misgiving, or trepidation. Excessive worry is a form of psychological distress, and self-reports of worries and their sources provide indications of the types of chronic social stress to which an individual feels exposed.

Since 1980, a rapidly growing experimental literature has arisen on the topic of worry. Its severe forms emerge in individuals who perceive the world to be a dangerous place and who are afraid that they will not be able to cope with the events that their future holds for them (Borkovec, 1994). When the Penn State program began its research on worry, a tentative definition was offered (Borkovec, Robinson, Pruzinsky& Depree, 1983): Worry is a chain of thoughts and images, negatively affect-laden and relatively uncontrollable; it represents an attempts 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 closely to fear process. Worry is highly related to the emotions of fear and anxiety (Borkovec et al., 1983).

As it relates to the present topic, chronic social stress and attendant psychological distress, worry can be conceptualised as an outcome of an appraisal process of a possible threat, Lazarus and Folkman (1984), in which the threat is confirmed, coping responses are perceived to be inadequate, and mastery is doubtful. As will be revealed fully at the

end of this chapter, the assessment of worry about situations other than problematic interpersonal relationships is important in the present study, if only to isolate the degree to which a person's concern about interpersonal relationship problems in particular are associated with psychological distress – the main objective of this thesis.

2.2 THEORETICAL FRAMEWORK OF THE PRESENT STUDY

In this study, the chronic social stress construct is viewed through the prism of three main ideas. Particularly influential is Rook's (1992) understanding of social stress, defined as a process through which actions by people in one's social network, intended and unintended, cause a person psychological or physiological reactions. Making excessive demands, criticism, invading privacy, provoking conflict, meddling, social conflict, giving trite, ineffective or inappropriate support, and aversive contact and social control are examples of such actions (Rook, 1992).

Secondly, it seems important to be explicit in stating that it is one's perceptions of others' actions, not their objective actions *per se*, that are critical in defining social stress. This view is consistent with the transactional perspective on stress of Lazarus and Folkman (1984), in which environment-person interactions are mediated by psychological processes already discussed, most notably appraisal and coping processes.

Third, the construct of cognitive dissonance provides a useful framework for considering social stress (Festinger, 1957; Jones, 1985). Dissonant cognitions, such as (a) there is an important person in my life who (a) hurts me produce an aversive state, which the individual will try to reduce by changing one or both of the cognitions. If attempts to reduce dissonance do not succeed, a person will have to live with dissonance over extended periods. Irresolvable cognitive dissonance involving another with whom one

has a meaningful social relationship defines chronic social stress, but other kinds of unresolved cognitive dissonance are also stressful. One example is that of the cigarette smoker struggling with the opposing cognitions of a continuing desire to smoke in the face of having serious health concerns.

2.3 OPERATIONALISATION OF CHRONIC SOCIAL STRESS CONSTRUCT

Following from the above, chronic social stress is construed as a transactional, cognitive process involving appraisal and not completely satisfactory coping, to resolve dissonance among cognitions about a significant others(s). In the mid-1990's, when the programme of research of which this study is a part was started, no suitable measurement instrument was reported in the literature. As the intention was to study stress-distress phenomena in large-scale health surveys, the needed instrument had to be tuned precisely to the construction of social stress as just referred to, it had to be brief and it had to be usable in a wide range of settings, times and places. The Norwegian team developed a measure meeting these criteria, the Bergen Social Relationships Scale, in research that is described in detail elsewhere (Mittelmark et al, 1999). The BSRS operationalises chronic social stress as the construct is used in the present study.

In developing the BSRS, the aim was to select indicators that would be broadly representative of the universe of indictors, and that would be meaningful for people of all backgrounds and situations. Preliminary research 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'. In developing the BSRS, there was concern also with the need to capture social stress

experiences that were meaningful to the individual, and relatively enduring, rather than trivial and fleeting, reasoning that serious chronic social stress carries the greatest risk to health, including mental health.

The BSRS as finally developed includes six items, one for each situation prototype mentioned above. Each item is structured in a manner consistent with the theoretical foundation of the BSRS, expressing two cognitions that are dissonant as in:

There is a person in my life that needs my help, but whom I don't know how to help.

Cognition 1 Cognition 2

STUDY HYPOTHESES

1. Chronic social stress is significantly related to depressive symptoms, anxiety, loneliness and negative affect among men and women, in both age groups studied – higher chronic social stress levels are related to higher distress levels.
2. Worries about matters other that personal relationships (ie, not chronic social stress) are related significantly to depressive symptoms, anxiety, loneliness and negative affect among men and women, in both age groups studied – higher worry levels are related to higher distress levels.
3. After controlling statistically for the relationship in (2), above, the relationship in (1), above, remains statistically significant.
4. Social support, self-efficacy and hardiness are all related significantly and inversely to depressive symptoms, anxiety, loneliness and negative affect among men and women in both age groups studied.

5. After controlling statistically for the relationships in (2) and (4), above, the relationship in (1), above, remains statistically significant.

CHAPTER III. METHODOLOGY

3.1 METHOD

A cross-sectional survey was conducted in Russia from May to July 2003. It was organized by the Research Centre for Health Promotion (HEMIL) of University in Bergen (Norway) and the State Research Center for Preventive Medicine (SRCPM) of the Russian Federation (Moscow) in the frame of Master fieldwork research and the Russian CINDI (Countrywide International Non-communicable Disease Intervention) program. The WHO CINDI Program focuses its action on the reduction of levels of major non-communicable diseases (cardiovascular diseases, cancer, chronic respiratory diseases, and diabetes) through coordinated, comprehensive health promotion and disease prevention measures. The measures aim to promote healthier lifestyles in communities and to prevent and control common risk factors (such as hypertension, hyperlipidemia, obesity, smoking, alcohol abuse and a sedentary lifestyle). Russia is one of 27 countries participating in CINDI. The Russian CINDI program includes 20 CINDI regions located in different parts of the country. Electrostal (Moscow area) is the Russian CINDI region chosen for the present study.

Electrostal was selected primarily because it is part of an existing non-communicable diseases prevention programme (CINDI) with reliable contact people in the local health authority. Based on successful previous collaboration with Electrostal officials, the investigator was able to establish the collaboration needed for this study, which would have required much more energy and time in another area. With limited financial, human

and time resources, it was therefore practical to organize and conduct the study in Electrostal. Further, potential drawbacks of selecting Electrostal were considered, but none of significance was evident.

3.2 SAMPLING

Electrostal is an industrial town located 50 kilometres northeast of Moscow. The main industries include heavy machinery construction, metallurgy (production of steel) and related industries such as the production of machine tools, lathes, bicycles and so on. There are different types of educational institutions: several universities and colleges; compulsory schools in each district; several sport, musical and art schools and so on. Health care system is comprised mostly of state hospitals and outpatient clinics. Medical service is free and accessible for all residents. There are good community services for preschool and school children: kinder-gardens, schools, hospitals and outpatient clinics. Electrostal has good sports facilities such as swimming pools, stadiums for skating, hockey and football, tennis and so on. People mostly live in blocks of flats. The majority of residents have summer houses with a small piece of land where they grow vegetables, fruits and berries. There are good public transport communications with Moscow; therefore some residents prefer to go there for work and study. The total population of Electrostal is about 148,000 (details given in Table 1). At the time of the survey, there were 23,028 inhabitants in the age groups 25-29 and 40-44, and there were fewer men than women – 48 percent and 52 percent respectively.

The survey was conducted using a random sample of adult men and women between 25-29 and 40-44 years of age, selected from among all men and women living in the town. These age ranges were selected to permit comparisons with similar studies in Norway, Romania and Thailand, in which these age groups were sampled.

Various possibilities were considered as sources of names for selecting a random sample, namely: regional passport and visa service, electoral rolls, and medical insurance company files. After considerable investigation, it was decided that using the information provided by the Central Medical Insurance Company would be the optimal way to obtain the sample. An electronic list of the entire population was available, including individuals' places of employment, providing the opportunity to reach part of population at their work places. No other source of names could not provide an electronic list of employment information, as the Medical Insurance Company did. The insurance list was therefore the most appropriate source from which a sampling frame could be developed. Figure 2 shows the steps of the sample selection. The total random sample contained 1200 persons in all, with equal numbers of men and women in each age bracket.

As described elsewhere in this report, this study was a collaboration between two Research Centres, in Norway and in Russia, and data were collected from all participants in two parts. The part regarding stress was the main concern of the Norwegian centre, and a CINDI part about cardiovascular diseases and their relationship to chronic social stress was the main concern of the Russian Centre (but not an object of this thesis research). The CINDI programme, as the host programme, used its existing guidelines to determine the sample size. CINDI follows WHO standards, in which each gender and age group should include 150-200 respondents. Since in this study there were 4 groups (See chapter "Sampling", p.16) the required sample size was estimated to be between 600-800 respondents. Also used in determining the sample size was the known typical response rate of population-based studies (2/3 of population) and the number of errors in population lists (20 percent). On the basis of the above, a sample size of 1200 was selected.

The sample list contained the following information about participants: full name, gender, date of birth, home address, and place of employment. In order to increase the response rate, questionnaires were distributed at the large factories for those in the sample that were employed in those places (30 percent of the total sample). The remaining participants were surveyed at home (62 percent).

3.3 DATA COLLECTION

Survey organization

The initial agreement to conduct the present research was organized between the two research centers long before the beginning of the study. The initial letter was sent from the Norwegian research center to the Russian research center where the main purpose of the study was explained and the responsible person (research coordinator) was indicated. In Figure 3, a schema of how the survey was organized is presented, and is summarized here:

1) The survey application was sent by the Russian Research Center to the administration of local government in the town of Electrostal (Moscow area).
2) The application was approved by the vice chairman of the administration and directed to the head of the Health Department with a request for assistance with the research.
3) The head of the Health Department sent the official application to the Central Medical Insurance Company (Moscow) with a request to provide a randomly selected sample (list) of the total population in town. In addition, official letters about the survey with a request of assistance were produced for the directors of four large factories and the chief doctors at all (four) outpatient clinics in town.

4) These letters were delivered by the author during visits to the Central Medical Insurance Company, factories and outpatient clinics.
5) The vice chairman of the Health Department informed the head of Central Medical Insurance Company and all the chief doctors about the impending survey, and to expect visits from the author.
6) The author had meetings with the head of the Central Medical Insurance Company and all the chief doctors of the outpatient clinics. The author delivered the official letters from the administration and briefed them on the survey. A meeting was set up with the medical staff willing to assist with the survey.
7) A courier delivered the letters to the factories' directors. These letters were officially registered by the director's secretaries (stamped, dated and signed). Contact phone numbers and copies of registered letters were provided to the author.
8) Thereafter the author called each factory and contacted the person appointed by the executive director to conduct the survey.

Survey organization on executive level

A meeting for those who volunteered to conduct the survey was held in the Center of Medical Prevention in Electrostal (n = 14). Each volunteer received a list of the random sample, survey questionnaires, letters/applications to the sample participants, instructions for collecting the data, copies of official letters from the administration sent to their respective factory or outpatient clinic, and training in how to collect the data.

The person responsible for handing out the questionnaires made at least two visits to each participant of the study, to distribute questionnaires and to collect them back. Those distributing the questionnaires briefed the participants about the survey and its

confidentiality protections. They handed out the copies of the official letter from the local administration and a personalized letter/application. The application letter explained the purpose of the study and the confidentiality policy.

The questionnaires were filled-in and put in envelopes by participants. The envelopes did not contain information about participants. Research assistants collected the envelopes and delivered them to the author.

3.4 MEASUREMENTS

A packet containing the questionnaire was distributed to participants with instructions how to complete it. The packets included the following measures:

- The 6-item Bergen Social Relationship Scale, abbreviated the BSRS (mean = 4.5, SD = 3.7, Cronbach's alpha = 0.76), used in Norwegian population-based study (Mittelmark et al. 2004). See Table 16 for the items. The items are prefaced by the written instruction: 'Think about everyone (children, parents, siblings, spouse or significant other, neighbours, friends, colleagues and others you know) while you answer the following: *There are people in my life whom I care about, but who dislike one another; there is a person in my life who needs my help, but whom I don't know how to help; there is an important person in my life who wants to support me, but who often hurts my feelings instead; there is a person I have to be with almost daily who often henpecks me; there are people who make my life difficult because they expect too much care and support from me; there is someone I care about who expects more of me than I can manage.* Response alternatives: describes me very well; describes me quite well; does not describe me very well; does not describe me at all.

- The 11-item Bergen Personal Worries Scale, abbreviated the BPWS, measures people's degree of worry about daily life stressors in their personal lives (excluding relationship problems such as measured by the BSRS). It was developed originally for a companion study in Romania (mean = 17.6, SD = 9.6, Cronbach's alpha = 0.83) (Bancila, 2004). The response frame was 'My feelings during the past month'. The items are: *my personal safety, my job security, a member of my family, my financial situation, my time pressure, my physical health, my mental health, my responsibility at work, my unpaid bills, my responsibilities to my family, and health care services.* The response alternatives are: not worried, a little worried, somewhat worried, quite worried, and extremely worried.
- The 6-item Bergen Community Worries Scale, abbreviated the BCWS measures people's degree of worry about large scale issues such as the economy (also developed in the Romanian study referred to above). The response frame was 'My feelings during the past month'. The items are: *the world economy, the national economy, wars throughout the world, crime in the community, drugs in schools, the political stability in the country.* The response alternatives are: not worried, a little worried, somewhat worried, quite worried and extremely worried.

Positive social ties were measured with single items (see Tables 17-21, Appendix 2 for the items):

- The availability of a confident and the availability of instrumental support (can borrow money for a short period), each with four point response scales ranging from 'describes me very well' to 'does not describe me at all';
- Marital status with four response options: married or living as in marriage, single, divorced, widow(er);

- Frequency of participation in social group activities with four response options: never or only few times a year, one to three times a month, about once a week, more than once a week, and
- Satisfaction with number of good friends, with the response scale no/yes.

The questionnaire contained four measures of psychological distress:

- The 6-item Loneliness Scale, abbreviated the LS (mean = 4.3; SD = 3.8; Cronbach's alpha = 0.77), modified slightly from a scale developed for use in population-based studies in Western Norway (Kraft and Loeb, 1997). The items are: *I feel I have enough contact with people who care about me; I often feel lonely; I feel it is difficult to talk with people I have not met before; I feel lonely even when I am with other people; I often feel that others do not understand me or my situation; I feel that others care about me. The response alternatives are: very much; quite a bit; somewhat; not much; only a little; not at all.*
- The 7-item anxiety sub-scale of a Norwegian version of the Hospital Anxiety and Depression Scale, abbreviated the HADS-A (mean = 4.7; SD = 3.3; Cronbach's alpha = 0.81). The HADS-A has a Cronbach's alpha of between 0.78 and 0.93 in a range of studies and correlates well with other widely used scales having similar measurement purposes (Bjelland et al., 2002; Herrmann, 1997). The distinct advantage of the HADS-A is its briefness. Items are (response frame 'feelings during the past week'): *I feel nervous and restless; I have an anxious feeling, as if something dreadful could happen; my head is full of worries; I can sit in peace and quiet and feel relaxed; I feel anxious, as if I had butterflies in my stomach; I am restless and feel I have to stay active constantly; I can suddenly get a feeling of panic.* Response alternatives: four, variable in wording depending on the item.

- The 7-item depression sub-scale of a Norwegian version of the Hospital Anxiety and Depression Scale, abbreviated the HADS-D (mean = 3.1; SD = 3.9; Cronbach's alpha = 0.78). The HADS-D has a Cronbach's alpha of between 0.82 and 0.90 in a range of studies and correlates well with other widely used scales having similar measurement purposes (Bjelland et al., 2002). The distinct advantage of the HADS-D, like the HADS-A, is its briefness. Items are (response frame 'feelings during the past week'): *I take joy in things, as I have before; I can laugh and see the amusement in situations; I am in good humour; I feel as if everything is going sluggishly; I don't care any more about my appearance; I look happily to the future; I can take joy in good books, radio and television.* Response alternatives: four, variable in wording depending on the item.
- The 10-item negative affect sub-scale, abbreviated the PANAS-NA of Positive and Negative Affect Scale (PANAS) with general time instruction for response (mean = 18.1; SD = 5.9; Cronbach's alpha = 0.87) (Watson et al., 1988). Items are: distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, afraid. Response alternatives: very seldom, seldom, now and then, often and very often.

The questionnaire contained two measures of intra-personal coping resources:

- The 10-item General Self-Efficacy Scale, abbreviated the GSE of Schwarzer and Jerusalem (Scholz et al., 2002). In a composite analysis using data from 25 countries the GSE mean = 29.55; SD = 5.32; Cronbach's alpha = 0.86.
- The 15-item version of the Hardiness Scale, abbreviated the HS of Bartone (1991), which includes positively as well as negatively keyed items covering the three hardiness components commitment, control and challenge (Cronbach's

alpha coefficients ranging from 0.70 to 0.77 for the three components, and 0.83 for the overall scale).

Translation methods

The translation of all scales from English to Russian followed the dual focus approach of Erkut et al. (1999) and the recommendations of van de Vijver and Leung (2000). The translation was concept-driven rather than driven by word equivalence, with bilingual teams of psychologists and linguists producing translations that were evaluated by Russian focus groups. Final adjustments were made based on focus group feedback.

3.5 ETHICAL CONSIDERATION

The present study was a part of the larger research project on chronic social stress at the University of Bergen, Research Centre for Health Promotion, which had already received approved from the Regional Ethics Committee. As the present study was largely a replication of the Norwegian study, the current study was conducted under the umbrella of existing Ethics Committee approval.

The present study was approved by the responsible decision-makers at each step of the research. Questionnaires were distributed in person, allowing the research assistants to explain the study, its confidentiality protections and answer any questions. They also provided the official letter describing the research, signed by Head of Public Health Department of local administration. In addition, the details of the study and its confidentiality were provided in writing in the letter/application, which was distributed with the questionnaires. To ensure the content of the survey remained confidential, the questionnaires did not contain the name or address of the participant. Questionnaires contained only unique case numbers, allowing linking of data from two waves (the data

were collected in two waves, but only the data from wave 1 were used in this thesis). In order to connect the data from each participant from waves 1 and 2 a unique number was assigned to each case. These numbers were cross-referenced to a list containing the names, addresses and work places of the cases. Following wave 2 data collection, the list was destroyed such that the data set was completely anonymous. Participants were instructed to not sign or write their names on the questionnaire: 'Please do not write your name or other identifying information on this survey. Your answers will be kept completely confidential'. The participant put the filled questionnaire in an envelope and sealed it. There were no identification marks for the research assistant to see the responses.

Five questionnaires could not be used, because they were not completed properly by persons with various problems (e.g. psychiatry disorders, alcohol abuse).

3.6 INCLUSION AND EXCLUSION CRITERIA

All the participants in the random sample were visited by research assistants at their listed home addresses or work places. If the person was not at home or at work during the first visit, up to two additional visits were made. Those leaving their factories were visited at their addresses by health workers.

Those not residing at their listed addresses were excluded from the sample, as they had been included in the list by mistake; they accounted for 18.4 percent of the sample. Also excluded from the sample were the deceased and those of the wrong age. The total sampling error was 19.2 percent. Causes of sampling mistakes are presented in the Table 3 (Appendix 2). The errors, described above, were excluded from the calculation of the response rate. The number of participants in the "purged" sample amounted to 970. The

response rate for the purged sample was 68.6 percent. Eleven percent of those approached refused to participate in the survey. The number of respondents by age and gender is presented on the Figure 4 (Appendix 1) and in the Table 5 (Appendix 2).

3.7 DATA ANALYSIS

Data were analyzed using the SPSS 12.0 software system. Initially, *descriptive statistics* were conducted. Frequency tables, bar charts, histograms, medians, means and standard deviations were calculated to gather information about variables. Some variables were reversed coded so that directionally was correct for all items. Low scores, where 0 represents the lowest, indicate better mental health and less social stress, while high scores indicate poorer health and higher social stress.

Cross-tabulations were obtained for categorical variables when searching for relationships between two variables. To assess the statistical significance of relationships, the chi-square statistic was used. The expected and observed frequencies were obtained together with an associated probability that the two variables were related (p-value). This data set contains both categorical and continuous variables. Tests for normality were conducted for continuous variables. Independent Samples t-tests were performed to explore mean differences between men and women for continuous variables.

Factor analysis is a tool to explore patterns of correlations among variables, and discover clusters of variables that are strongly intercorrelated, while being relatively unrelated to other such clusters. There are many versions of factor analysis. In this study, principal component analysis was used both without rotation and with Varimax rotation (eigenvalue set to one).

The Hierarchical Multiple Regression analysis provided information about the relationship between chronic social stress, social support, personal coping resources and psychological distress (loneliness, anxiety, depression, negative affect). Main effects (effects of each factor, ignoring the other factors) and interactions (two or more factors interacting, having more explanatory power than when considered individually) were examined. Stress variables (chronic social stress, personal and community worries), social support/network (five single items), self-efficacy, hardiness, age and gender were included in the analysis as predictive factors.

CHAPTER IV. RESULTS

4.1 ANALYSIS VARIABLES (DESCRIPTIVE STATISTICS)

Descriptive statistics for scales used in the study are presented in Table 6 (for single items see Tables 17-21, Appendix 2).

Bergen Social Relationships Scale (BSRS)

Scores of BSRS ranged from 0 to 18, with a mean of 7.3 (S.D. = 3.6). Inter-item correlations, item-total correlations, and Cronbach's alphas for each scale as a whole and with each item deleted were examined. A summary of the results is displayed in Table 7. Inter-item correlations ranged from 0.14 to 0.50, and item-total correlation ranged from 0.25 to 0.53. Cronbach's alpha for the BSRS was 0.68. Deletion of any item would not change the reliability of the scale. The 6 items of the BSRS were subjected to principal components analysis (PCA) to assess the suitability of the data for factor analysis. Inspections of the correlation matrix revealed the presence of many coefficients of 0.3 and above. The Kaiser-Meyer-Oklin value is 0.77, exceeding the recommended value of

0.6 (Kaiser, 1970, 1974) and the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix.
Factor analysis with the principal component method revealed that the BSRS has a one-factor structure with eigenvalue exceeding 1, explaining 39.5 percent of the variance. Factor loadings ranged from 0.40 to 0.75.

Loneliness scale (LOS)

Scores of LOS ranged from 0 to 17, with a mean of 5.8 (S.D. = 2.9). As shown in Table 8, inter-item correlations for LOS ranged from 0.14 to 0.51 and item-total correlation ranged from 0.27 to 0.59. Cronbach's alpha for the LOS was 0.70. Principal component analysis revealed the presence of one factor with eigenvalue exceeding 1, explaining 41.1 percent of variance. Factor loadings were from 0.43 to 0.79.

Anxiety sub-scale (HADS-A)

Scores of HADS-A ranged from 0-18, with a mean of 6.1 (S.D. = 3.3). As shown in Table 9, inter-item correlations for HADS-A ranged from 0.14 to 0.53, and item-total correlation ranged from 0.23 to 0.56. Cronbach's alpha for the HADS-A was 0.76. Principal component analysis revealed the presence of one factor with eigenvalue exceeding 1, explaining 41.7 percent of variance. Factor loadings were from 0.34 to 0.73.

Depression sub-scale (HADS-D)

Scores of HADS-D raged from 0-16, with a mean 4.8 (S.D. = 3.2). As shown in Table 10, inter-item correlations for HADS-D ranged from 0.11 to 0.33, and item-total correlations ranged from 0.32 to 0.47. Cronbach's alpha for the HADS-D was 0.67. Principal component analysis revealed the presence of one factor with eigenvalue exceeding 1, explaining 33.6 percent of variance. Factor loadings were from 0.49 to 0.68.

Negative affect sub-scale (PANAS-NA)

Scores of PANAS-NA ranged from 0 to 40, with a mean of 13.9 (S.D. = 5.6). As shown in Table 11, inter-item correlations for PANAS-NA ranged from 0.03 to 0.61, and item-total correlation ranged from 0.29 to 0.61. Cronbach's alpha for the PANAS-NA was 0.80. Principal components analysis revealed the presence of two factors with eigenvalue exceeding 1. The main factor explains 36.5 percent of the variance. Factor loadings were from 0.40 to 0.73.

Bergen Personal Worries scale (BPWS)

Scores of BPWS raged from 0-44, with a mean of 28.4 (S.D. = 7.4). Table 12 shows that inter-item correlations for BPWS ranged from 0.18 to 0.50, and item-total correlations ranged from 0.36 to 0.60. Cronbach's alpha for the BPWS was 0.84. Principal component analysis with eigenvalue exceeding 1 revealed the presence of one factor explaining 38.4 percent of variance. Factor loadings were from 0.45 to 0.70.

Bergen Community Worries Scale (BCWS)

Scores of BCWS raged from 0-24, with a mean of 14.8 (S.D. = 4.7). Table 13 shows that inter-item correlations for BCWS ranged from 0.23 to 0.67, and item-total correlations ranged from 0.47 to 0.66. Cronbach's alpha for the BCWS was 0.83. Principal components analysis with eigenvalue exceeding 1 revealed the presence of one factor explaining 53.6 percent of variance. Factor loadings were from 0.62 to 0.79.

General Self-efficacy Scale (GSE)

Scores of the GSE ranged from 0 to 30, with a mean of 16.8 (S.D. = 5.4). As shown in Table 14, inter-item correlations for the GSE ranged from 0.34 to 0.68, and item-total

correlations ranged from 0.58 to 0.74. Cronbach's alpha for the GSE was 0.91. Principal component analysis with eigenvalue exceeding 1 revealed the presence of one factor, explaining 55.2 percent of variance. Factor loadings were from 0.71 to 0.80.

Hardiness Scale (HS)

Scores of the HS ranged from 6 to 44, with a mean of 23.0 (S.D. = 5.8). The results, displayed in Table 15a-b, show that inter-item correlations for the HS ranged from 0.00 to 0.63 and item-total correlations ranged from 0.07 to 0.52. Cronbach's alpha for the HS was 0.69. Principal component analysis revealed the presence of two factors with eigenvalue exceeding 1. The main factor explains 27.6 percent of variance. Factor loadings were from 0.02 to 0.71.

Scale correlations

Inter-scale correlations among the LOS, HADS-A, HADS-D, BSRS, PANAS-NA, BPWS, BCWS, GSE, and HS were examined. Correlation coefficients ranged from 0.01 to 0.56. The results are presented in Table 16.

Social support variables

Distributions of answers for the social support variables are presented in the Tables 17-21.

4.2 PREVALENCE OF CHRONIC SOCIAL STRESS

The prevalence of chronic social stress in Russia was examined for each of the six BSRS items by gender, based on the affirmative responses 'Describe me very well' and 'Describe me quite well' (Table 22). Prevalence ranged from 18 to 55 percent among women and from 17 to 51 percent among men. Women showed highest prevalence (55 percent) of stress for the item 'There is a person in my life that needs my help, but I do not

Table 22. Prevalence of chronic social stress items, comparing men and women

Table 22. Prevalence of chronic social stress items, comparing men and women

Chronic Social Stress Scale Items	Males	Females
1. There are people in my life that I care about, but who dislike one another.	50.5	46.0
2. There is a person in my life that needs my help, but I do not know how to help.	49.5	54.9
3. There is an important person in my life that wants to support me, but who often hurts my feelings instead.	23.5*	32.3*
4. There is a person I have to be around almost daily that often henpecks me.	16.8	18.3
5. There are people that make my life difficult because they expect too much care and support from me.	34.6*	44.3*
6. There is someone I care about that expects more of me than I can manage.	43.8	40.9

* $p \leq 0.01$ on the comparison between men and women

know how to help'. Also high prevalence (46 percent and 44 percent) was reported for the items 'There are people in my life that I care about, but who dislike one another' and 'There are people that make my life difficult because they expect too much care and support from me'. Among men the highest prevalence (51 percent) was indicated for the item 'There are people in my life that I care about, but who dislike one another'. Also high prevalence (50 percent and 44 percent) was reported for the items 'There is a person in my life that needs my help, but I do not know how to help' and 'There is someone I care about that expects more of me than I can manage'. The lowest prevalence was for the item 'There is a person I have to be around almost daily that often henpecks me' both for women and men (18 percent and 17 percent respectively).

Women reported significantly higher prevalence ($p<0.01$) on two of six items of BSRS than did men: 'There is an important person in my life that wants to support me, but who often hurts my feelings instead' and 'There are people that make my life difficult because they expect too much care and support from me' (Table 22).

Figure 5 (Appendix 1) presents the cumulative prevalence of chronic social stressors, ranging from none to all six of the stressors. About 85 percent of women and 84 percent of men reported from one to all six stressors. Three or more stressors were indicated by 44 percent of women and 39 percent of men, and five or six stressors were reported by 9 percent of women and 8 percent of men.

4.3 PREDICTION OF PSYCHOLOGICAL DISTRESS (REGRESSION ANALYSIS)

A series of regression models were created to develop the best model for prediction of psychological distress (loneliness, anxiety, depression, negative affect). The initial regression models, which included only age and gender as predictors of the psychological distress variables, were compared with additional models containing the other predictors (social support, stress and personal resources variables). All social support/network variables were added in the second model. The BSRS, BPWS and BCWS were included in the third model. The GSE was added in the forth model, and the HS was entered in the fifth model. These steps were undertaken for each of the four psychological distress measures: loneliness (LOS), anxiety (HADS-A), depression symptoms (HADS-D), and negative affect (PANAS-NA).

4.3.1 Loneliness

In the model in which loneliness was the predicted variable (Table 23), adjusted R^2 increased from 0.00 to 0.21 when the social support/network variables were added in the second model, and to 0.28 when the BSRS, BPWS, and BCWS were entered in the third model. The addition of the GSE in the forth model resulted in alteration of adjusted R^2 to 0.35 and the insertion of the HS in the fifth model altered it to 0.38.

Inspection of the standardised Beta coefficients in the fifth model revealed that an effect of gender shown in model 2 disappeared, and that all there predictor domains (social support, stress, intra-personal characteristics) offered significant predictive value in the prediction of level of loneliness. In general, the magnitudes of the social support coefficients were moderated by the addition of the stress variables, and the magnitudes of the support and the stress variables were moderated by the addition of the self-efficacy variable. The addition of the hardiness in turn moderated the magnitude of the self-

efficacy variable. Summarising, models 2 through 4 tended to over-emphasise the predictive utility of the support, stress and self-efficacy variables, compared with model 5 that included hardiness. However, while the magnitudes of the Beta coefficients associated with most of the predictors decreased in subsequent models as described above, the final model had good predictive utility, with $R^2 = 0.38$.

Table 23. Standardized Beta coefficients, regression models with loneliness as the predicted variable.

Predictors	Model 1	Model 2	Model 3	Model 4	Model 5
Age	- .04	- .02	- .04	.01	.04
Gender	- .07	**- .09***	- .06	- .01	- .02
Marital status		**- .11****	**- .13*****	**- .11****	**- .10****
Satisfaction with number of good friends		**- .24*****	**- .19*****	**- .15*****	**- .14*****
Participation in social groups		**- .08***	- .06	- .02	.00
Perceived availability of a confidant		**- .28*****	**- .24*****	**- .21*****	**- .20*****
Perceived availability of financial support		**- .09***	**- .09***	**- .08***	**- .08***
Chronic social stress			**.24*****	**.20*****	**.18*****
Personal worries			**.12****	.07	.06
Community worries			**- .11****	- .07	- .04
Self-efficacy				**- .30*****	**- .20*****
Hardiness					**- .21*****
<u>Fit statistics</u>					
Adjusted R^2	.0	.21	.28	.35	.38
F change	1.96	36.01	23.24	72.25	28.87
Degrees of freedom	2.662	5.657	3.654	1.653	1.652
Significance of F change (p <)	.142	.000	.000	.000	.000

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

Model 1 includes the predictors age group and gender.
Model 2 includes marital status, satisfaction with number of good friends, participation in social activities, perceived availability of a confidant, and perceived availability of financial support.
Model 3 includes chronic social stress, personal worries, and community worries.
Model 4 includes self-efficacy.
Model 5 includes hardiness.

4.3.2 Anxiety

In the model in which anxiety was the predicted variable (Table 24), the addition of the social support/network variables in the second model resulted in alteration of the adjusted R^2 from 0.05 to 0.10. The insertion of the BSRS, BPWS and BCWS in the third model sharply increased the adjusted R^2 to 0.25. The addition of the GSE in the forth model increased adjusted R^2 to 0.29 and also the HS in the fifth model resulted in the alteration of adjust R^2 to 0.30.

Examining the standardised Beta coefficients, approximately the same pattern of changes in coefficient magnitudes was observed as for loneliness; that is, each subsequent model tended to diminish the magnitudes of the coefficients associated with the variables in the previous model. The most notable difference in a comparison of the analyses of loneliness and anxiety was that while gender was not a significant predictor of loneliness, it persisted as a significant predictor of anxiety even after the addition of support, stress, self-efficacy and hardiness variables. Women in general reported higher levels of anxiety than did men, regardless of the levels of the other predictor variables.

Table 24. Standardized Beta coefficients, regression models with anxiety as the predicted variable.

Predictors	Model 1	Model 2	Model 3	Model 4	Model 5
Age	**- .09***	- .06	- .05	- .01	.01
Gender	**- .21*****	**- .22*****	**- .17*****	**- .13*****	**- .14*****
Marital status		.02	- .04	- .02	- .01
Satisfaction with number of good friends		**- .10***	- .03	.00	.01
Participation in social groups		- .07	- .02	.00	.02
Perceived availability of a confidant		**- .17*****	**- .14*****	**- .11****	**- .10****
Perceived availability of financial support		- .03	- .01	.00	- .01
Chronic social stress			**.25*****	**.21*****	**.20*****
Personal worries			**.31*****	**.27*****	**.26*****
Community worries			- .02	.02	.04
Self-efficacy				**- .24*****	**- .18*****
Hardiness					**- .13****
<u>Fit statistics</u>					
Adjusted R^2	.05	.10	.25	.29	.30
F change	17.70	8.07	45.25	41.67	10.02
Degrees of freedom	2.662	5.657	3.654	1.653	1.652
Significance of F change (p <)	.000	.000	.000	.000	.002

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

Model 1 includes the predictors age group and gender.
Model 2 includes marital status, satisfaction with number of good friends, participation in social activities, perceived availability of a confidant, and perceived availability of financial support.
Model 3 includes chronic social stress, personal worries, and community worries.
Model 4 includes self-efficacy.
Model 5 includes hardiness.

4.3.3 Depressive symptoms

In the model in which depressive symptoms was the predicted variable (Table 25), adjusted R^2 increased from 0.05 to 0.17 and then to 0.22 when the social support/network variables were entered in the second model and BSRS, BPWS, and BCWS in the third model. The addition of the GSE in the forth model and the HS in the fifth model also increased adjusted R^2 to 0.35 and 0.38 respectively.

Examining the standardised Beta coefficients revealed patterns largely consistent with those seem for loneliness and anxiety, with one important exception. In the prediction of depression, age was a significant predictor in all models, while gender was not. Older respondents had higher depressive symptoms scores than did younger respondents, irrespective of level of social support, stress, self-efficacy and hardiness.

Table 25. Standardized Beta coefficients, regression models with depressive symptoms as the predicted variable.

Predictors	Model 1	Model 2	Model 3	Model 4	Model 5
Age	**- .22*** **	**- .19*** **	**- .22*** **	**- .14*** **	**- .12*** **
Gender	- .01	- .03	- .01	.05	.04
Marital status		- .01	- .03	.00	.01
Satisfaction with number of good friends		**- .21*** **	**- .17*** **	**- .11** **	**- .10** **
Participation in social groups		**- .08***	- .06	- .01	.01
Perceived availability of a confidant		**- .21*** **	**- .17*** **	**- .13*** **	**- .11** **
Perceived availability of financial support		**- .10** **	**- .10** **	**- .09** **	**- .09** **
Chronic social stress			**.16*** **	**.10** **	**.07***
Personal worries			**.13** **	.07	.05
Community worries			**- .16*** **	**- .09***	- .06
Self-efficacy				**- .41*** **	**- .30*** **
Hardiness					**- .23*** **
<u>Fit statistics</u>					
Adjusted R^2	.05	.17	.22	.35	.38
F change	16.96	21.16	13.51	132.83	36.44
Degrees of freedom	2.662	5.657	3.654	1.653	1.652
Significance of F change (p <)	.000	.000	.000	.000	.000

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

Model 1 includes the predictors age group and gender.
Model 2 includes marital status, satisfaction with number of good friends, participation in social activities, perceived availability of a confidant, and perceived availability of financial support.
Model 3 includes chronic social stress, personal worries, and community worries.
Model 4 includes self-efficacy.
Model 5 includes hardiness.

4.3.4 Negative affect

In the model in which negative affect was the predicted variable (Table 26), adjusted R^2 increased from 0.04 to 0.09 and then to 0.17 when the social support/network variables were entered in the second model and the BSRS, BPWS, and BCWS were added in the third model. The adjusted R^2 increased to 0.20 and then to 0.23 when the GSE and HS were included, respectively.

Examining the standardised Beta coefficients revealed the same pattern of moderation described for the other analyses. Similar to the analysis on anxiety, gender was a significant predictor of negative affect, even after controlling for all the other variables. Women had higher negative affect scores that did men, irrespective of level of social support, stress, self-efficacy and hardiness.

Table 26. Standardized Beta coefficients, regression models with negative affect as the predicted variable.

Predictors	Model 1	Model 2	Model 3	Model 4	Model 5
Age	**- .10***	**- .08***	**- .09***	- .05	- .03
Gender	**- .19*****	**- .21*****	**- .17*****	**- .14*****	**- .15*****
Marital status		.01	- .02	- .01	.00
Satisfaction with number of good friends		**- .15*****	**- .10****	- .07	- .06
Participation in social groups		- .07	- .05	- .02	- .00
Perceived availability of a confidant		**- .14*****	**- .10****	**- .08****	- .06
Perceived availability of financial support		- .03	- .02	- .01	- .02
Chronic social stress			**.23*****	**.20*****	**.18*****
Personal worries			**.16*****	**.12****	**.11****
Community worries			- .07	- .03	- .01
Self-efficacy				**- .22*****	**- .12****
Hardiness					**- .20*****
<u>Fit statistics</u>					
Adjusted R^2	.04	.09	.17	.20	.23
F change	15.75	8.53	19.92	30.24	21.40
Degrees of freedom	2.662	5.657	3.654	1.653	1.652
Significance of F change (p <)	.000	.000	.000	.000	.000

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

Model 1 includes the predictors age group and gender.
Model 2 includes marital status, satisfaction with number of good friends, participation in social activities, perceived availability of a confidant, and perceived availability of financial support.
Model 3 includes chronic social stress, personal worries, and community worries.
Model 4 includes self-efficacy.
Model 5 includes hardiness.

An overall examination of regression analysis results was undertaken by comparing the magnitudes of the standardised Beta coefficients of each predictor in the analyses of all four psychological distress measures (Table 27). Across all models, the psychological distress variables had in general significant negative relationships with the social support items, the HS and the GSE, while they had positive associations with the BSRS and the BPWS.

One social support indicator, participation in social groups, was a significant factor in just two of the twenty models that were computed and was not present in any of the final models. Conversely, three predictors were significant elements in the final models for all four psychological distress variables: chronic social stress, self-efficacy and hardiness. Only two predictors did not figure significantly in the final models of any of the psychological distress measures: (1) participation in groups and (2) stress about large issues (e.g., the economy) as measured by the BCWS. All the other predictors were significant in at least one of the final models. The primary fit statistic for these models, adjusted R^2, indicated that the models with the best fit were those computed for loneliness ($R^2 = 0.38$) and for depressive symptoms ($R^2 = 0.38$).

Table 27. Standardized Beta coefficients, regression models with loneliness, anxiety, depressive symptoms and negative affect as the predicted variables.

Predictors	Loneliness	Anxiety	Depression	Negative affect
Age	.04	.01	**- .12*** **	- .03
Gender	- .02	**- .14*** **	.04	**- .15*** **
Marital status	**- .10** **	- .01	.01	.00
Satisfaction with number of good friends	**- .14*** **	.01	**- .10** **	- .06
Participation in social groups	.00	.02	.01	- .00
Perceived availability of a confidant	**- .20*** **	**- .10** **	**- .11** **	- .06
Perceived availability of financial support	**- .08***	- .01	**- .09** **	- .02
Chronic social stress	**.18*** **	**.20*** **	**.07***	**.18*** **
Personal worries	.06	**.26*** **	.05	**.11** **
Community worries	- .04	.04	- .06	- .01
Self-efficacy	**- .20*** **	**- .18*** **	**- .30*** **	**- .12** **
Hardiness	**- .21*** **	**- .13** **	**- .23*** **	**- .20*** **
Fit statistics				
Adjusted R^2	.38	.30	.38	.23
F change	28.87	10.02	36.44	21.40
Degrees of freedom	1.652	1.652	1.652	1.652
Significance of F change (p <)	.000	.002	.000	.000

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

Model 1 includes the predictors age group and gender.
Model 2 includes marital status, satisfaction with number of good friends, participation in social activities, perceived availability of a confidant, and perceived availability of financial support.
Model 3 includes chronic social stress, personal worries, and community worries.
Model 4 includes self-efficacy.
Model 5 includes hardiness.

The results showed that 10 of the 12 predictors were significant in the study. The most potent predictors were as follows:

- For loneliness -- marital status, 'Satisfaction with number of good fiends', 'Perceived availability of a confidant', 'Perceived availability of financial support', chronic social stress, self-efficacy and hardiness;
- For anxiety -- 'Gender', 'Perceived availability of a confidant', chronic social stress, personal worries, self-efficacy and hardiness;
- For depressive symptoms -- 'Age', 'Satisfaction with number of good fiends', 'Perceived availability of a confidant', 'Perceive availability of financial support', chronic social stress, self-efficacy and hardiness;
- For negative affect -- 'Gender', chronic social stress, personal worries, self-efficacy and hardiness.

Examining the results across the analyses of the all psychological distress variables (Table 27), reveals that three variables predicted significantly the levels of all the distress measures: the BSRS, the HS and the GSE, after accounting for the effects of the other variables in the models. Perceived availability of a confidant is the next most reliable predictor of distress, reaching statistical significance for all the distress measures except negative affect. Thus these statistical models confirm that overall, the study data fit the conceptual model well. Among the most interesting of the finding, perhaps, are those having to do with social coping resources. Two conceptually distinct types of social coping resources were measured: structural/actual (marital status; satisfaction with number of friends; participation in social groups) and perceived availability of support if needed (a confidant, and financial support). These results suggest that perceived availability of a confidant and perceived availability of financial support are not

conceptually associated; even though the underlying logic is the same ('I can get help if I need it'). At an early point in the analysis, the idea of computing a summary score for social resources was considered, using all five social resource variables.

The idea was rejected on the grounds that too many different aspects of social environment were represented by the variables, and the results confirm that much important information would have been overlooked had a summary variable been used.

CHAPTER V: DISCUSSION

5.1 SUMMARY OF FINDINGS

5.1.1 Prevalence of chronic social stress

This study provides the first estimates from a Russian investigation for the prevalence of chronic social stress. The pattern of findings is largely consistent with the results of previous studies in Norway (Mittelmark et al., 2004) and Romania (Bancila et al., 2004) that used the same measure (BSRS). However, the absolute rates vary widely among three studies. About 85 percent of women reported at least one stressor, compared to 60 percent of Norwegian women and 89 percent of Romanian women. The respective figures for men were 84 percent in Russia, 50 percent in Norway and 86 percent in Romania. In this investigation, three or more stressors were indicated by 44 percent of women and 39 percent of men, while in the Norwegian data the prevalence rates were much lower -- 24 percent and 16 percent, respectively. In Romania, the respective figures were 53 percent for women and 49 percent for men. Thus the prevalence rates for chronic social stress due to interpersonal problems were intermediate in the Russian sample, compared with the lower rates in the Norwegian data and the higher rates in the Romanian data. The differences in rates should not, however, be overemphasised. The

BSRS is a subjective measure that can be validated only by its association with other subjective measures with which it is in theory related. One might criticise this study on this basis, but the theoretical framework of this research includes the core idea that stress is constructed by the interaction of environment and person. Stress is the outcome of cognitive processes involving appraisal of environmental circumstances, and different people may come to different conclusions even when faced with the same situation. For example, one person may joyfully leap from a airplane with a parachute, while another passenger on the same airplane could never be persuaded to do so. It is also important to note that the purpose of this study was not to estimate the prevalence of chronic social stress. The comparison with Norwegian and Romanian data is made even more problematic in that sampling strategies varied among the studies, and no weighting or any other kind of adjustment has been attempted to correct for biases due to the sampling differences.

5.1.2 Chronic social stress and psychological distress relationship

The main aim of the study was the examination of the stress-distress relationship. As in the companion Norwegian and the Romanian studies (see Chapter I (1.2.2)), chronic social stress was defined as a transactional, cognitive process involving appraisal and not completely satisfactory coping, to resolve dissonance among cognitions about a significant other(s). On theoretical grounds, this process is assumed to be a fundamental psychological phenomenon, intransigent in the face of culture, time, place, age and gender.

The study confirmed the first hypothesis, that chronic social stress is significantly related all four measures of psychological distress. In every statistical model, chronic social stress as measured by the BSRS was a potent predictor, and the inclusion of other

significant predictors did not significantly diminish the effects of social stress. The first hypothesis stated also the expectation that neither gender nor age would moderate to insignificance the relationship between social stress and psychological distress. In this study, age and gender differences were observed, with age being a significant predictor of depression, and gender being a significant predictor of anxiety and negative affect. This finding is consistent with the other Russian data showing the highest prevalence of depressive symptoms occurs among young women and old men (Pakriev et al., 1998). This is also consistent with studies indicating that more women suffer from social anxiety disorder then do men (Graaf et al., 2003; Weinstock, 1999). However, social stress was a significant predictor of psychological distress, even accounting for age and gender differences, as theorized.

The second and third hypotheses state that worries (stress) about matters other than interpersonal problems are also related significantly to psychological distress, but that this does not moderate to insignificance the relationship between social stress and psychological distress. Two scales used in the Romanian study by Bancila (2004) were used to test these hypothesizes in the present investigation: the BPWS which assesses worries due to personal circumstances (but not due to relationships) and the PCWS, which measures broader concerns, for example worries about drugs and crime in the community. Contrary to predictions, the BCWS was not a significant predictor in any of the final regression models. In two analyses, those on loneliness and depressive symptoms, the BCWS was a significant predictor until intrapersonal resources were entered, causing the BCWS to reduce to insignificance. The BPWS was a significant predictor of all four psychological distress measures, until the intrapersonal resource variables were entered into the regression models in the final steps. At that point, the BPWS became insignificant in the prediction of loneliness and depressive symptoms. The

third hypothesis, regarding the continued predictive utility of the BSRS after controlling for personal worries and community worries, was testable therefore only for the personal worries variable and two outcome variables – anxiety and negative affect. In the final models for these outcomes, in which the BPWS was a significant predictor, the BSRS was also a significant predictor, providing partial confirmation for the third hypothesis.

The fourth hypothesis states that extra- and intra-personal resources (social support, self-efficacy and hardiness) are significant predictors of psychological distress, bearing inverse relationships to the four outcome measures. This was confirmed (for all four outcome variables) for the two intrapersonal resources measures, but only partly confirmed for social support. Of the five social support measures, only the perceived availability of a confidant was a dependably significant predictor of psychological distress in the final models (for three of four outcomes).[1]

The fifth hypothesis states that the BSRS will remain a significant predictor of psychological distress even with all the other predictor variables in the models, and this was confirmed. However, the moderation in the standardized Beta coefficients for the BSRS after the addition of self-efficacy and hardiness indicates that the significance of social stress as a predictor of psychological distress is over-estimated when intra-personal resources are not accounted for.

The core interest of this investigation was to explore further the construct of chronic social stress, and to do so in the context of a series of investigations in various countries, all based on the same theoretical and research models. In the first project, in Norway,

[1] The term social support is used as short hand; only two of the five measures concern the perceived availability of social support. There are in addition two social structure measures (marital status and satisfaction with number of good friends) and one social engagement measure (participation in social groups).

chronic social stress was observed to predict psychological distress after accounting for social support, but other measures of stress were not included, nor were measurements made of intra-personal coping resources. A plausible rival hypothesis was therefore advanced, that chronic social stress is not associated with psychological distress, but rather with other factors that are associated with psychological distress (the classic 'third variable' problem).

The second project, in Romania, addressed the shortcomings of the Norwegian study and the rival hypothesis, by adding other stress measures and intra-personal coping resource measures. In this improved study design, chronic social stress remained a significant predictor of psychological distress. The present project, the next in the series, further strengthened the assessment of intra-personal resources by adding the measurement of hardiness, and added a third cultural context, that of Russia. As the tests of the hypotheses show, chronic social stress was a significant predictor of psychological distress, as in the Norwegian and the Romanian studies, in a study design more robust than the preceding ones. This strengthens confidence in the fundamental soundness of the chronic social construct based on a transactional model of stress, in which psychological distress is aroused by unresolved cognitive dissonance about relationships with significant others. Thus, the BSRS adds a useful measure to community-based studies of how the social environment affects health, when used in conjunction with measures of perceived availability of social support (especially the availability of a confidant).

Next, a discussion of the comparison of the results of the three studies in the series is taken up (see Tables 28-30). In those tables, the relative importance of predictors is indicated by the magnitudes of the standardized Beta coefficients in regression models,

and the overall fit of regression models is indicated by the R^2 statistic and the change in the F statistic at the second step.

Turning first to loneliness (Table 28), the most obvious result is that the model fits better when tested with Norwegian data ($R^2 = 0.40$, see Mittelmark, et al, 2004), compared to Romanian ($R^2 = 0.22$, see Bancila, 2004) and to Russian data ($R^2 = 0.27$). Why this may be so is hinted at by the Beta's for the satisfaction with number of good friends' variable. This variable carried much of the predictive utility of the equation constructed with the Norwegian data, less so with the Russian data, and was a minor contributor to the equation constructed with the Romanian data. No other large differences were observed for the Beta's of any other variable.

This indicates that the differences between Russia, Romania and Norway have less to do with chronic social stress than with perceptions about what a satisfactory friendship network is. It is not possible to discuss which aspects of perceptions about social networks may be at play in these differences, since none of the studies probed deeply into this matter with qualitative interviews. Also, it is probably not wise to overemphasize these differences, since the Beta's for the most powerful social support predictor, perceived availability of a confidant, were similar across the studies (as, indeed, were the Beta's for all the other social support variables).

The main conclusion is that whatever the reason the model had a better fit with the Norwegian than with the Eastern European data, it did not have to do with the measurement and meaning of chronic social stress. Since the BSRS was constructed to be immune to variation in the cultural context of research, this pattern of findings is comforting.

For anxiety and depressive symptoms, analyses replicating the original Norwegian analysis with Romanian data are not published, so the comparison is limited to Russia and Norway. As Table 29 shows, in the analysis of anxiety the pattern noted for loneliness is evident. The Norwegian data fit the model better tan the Russia data do, the Beta's for chronic social stress are not very dissimilar, and the Beta's for the satisfaction with number of good friends variable vary widely in magnitude by country. The analysis of depressive symptoms is less clear-cut (Table 30). The Norwegian data fit the model better than the Russian data do, but the pattern of Beta magnitudes noted for loneliness and anxiety is not evident for depression. This departure cannot be dismissed merely because depression is conceptually (and clinically) distinct from loneliness and from anxiety. For depression, the variable with the largest inter-country Beta differences is participation in social activities. Lower social participation level was an important predictor in the model with the Russian data, and a trivial predictor in the model with the Norwegian data.

Again, one can only speculate why this might be so, since qualitative data on this subject were not collected. Speculating nevertheless, there is a reciprocal relationship between social involvement and psychological distress, and depression, especially, is a risk factor for social withdrawal. If the magnitude of depressive symptoms is greater in Russia than in Norway, this might trigger greater social withdrawal and thus account in part for the present results. Given the substantial social and economic changes that characterized Russian society when these data were collected, and the relative stability, calm and safety of contemporary Norwegian life, it is not hard to imagine differences in the severity of depressive symptoms and in social participation that could account for these results.

The studies with which the present one is most directly comparable are those referred to above, from Norway and Romania. Although not directly comparable, a few other population-based studies of chronic social stress have been conducted. They demonstrate that psychological distress are related significantly to social stress construed in various ways (Walen & Lachman, 2000; Whisman & Bruce, 1999; Wade & Cairney, 2000; Zlotnick *et al*, 2000, Dormann & Zapf, 1999). However, in all these studies the emphasis has been on poor psychological health, consistent with the basic stress-distress model that the studies have as a common base. When various studies with substantial methodological heterogeneity draw the same basic conclusion – that social stress and social support are related significantly to psychological distress in the general population – the rationale for continuing research in this arena seems warranted.

5.2 LIMITATIONS AND IMPLICATIONS

Limitations of this study have theoretical, empirical and practical dimensions. The construct of psychological distress can be contested, as there is no widely accepted theoretical framework that defines its content and boundaries. Future studies would be enhanced by theory developments, and at the least, the use of a wide array of indicators is to be recommended. The same can be said of intrapersonal coping resources, many of which are suggested by the literature, but for which no integrative framework is yet available.

This study examined the data for main effects of predictors on the predicted variables, ignoring the possibility of interactions among the predictors. The literature on social stress, social support, and health provides a somewhat confusing mix of evidence about direct versus buffering effects of social support. However, if direct effects (main effects) are observed, as in the present study, the buffering hypothesis must be rejected, even

without the testing of interaction terms. That is because the buffering hypothesis, which is a special instance of interaction, posits that high levels of social support will be protective only when stress levels are also high. That is, the buffering hypothesis states that when stress levels are low, level of social support will be unrelated to psychological distress. This study, having observed that social support is related to psychological distress even when stress levels are low, thus provides evidence refuting the buffering hypothesis. Therefore, in the interests of parsimony, the decision was taken to use the simpler main effect models only, and not examine interaction effects. This decision, while no doubt criticisable, seems also defensible on account of the large number of predictor variables used in this study. Headaches would have followed from trying to decide which few of many possible interaction terms to include. This was judged not worth the effort, given the practical limitations of a master's thesis. However, these matters certainly seem worth probing in further analyses of these data.

Validity issues are also of concern, since the Russian, the Norwegian and the Romanian studies employ the same measures. However reliable the results are, the validity of the results must be suspect when studies use the same instruments. Confidence in the validity of the constructs of the underlying model would be enhanced by additional research with heterogeneous measurements of the psychological distress construct. For example, the present studies use the HADS scales for anxiety and depression, but it would be helpful in future research to examine the degree to which similar results are obtainable with other widely used measures, such as the Beck Depression Inventory and the Center for Epidemiological Study of Depression Scale.

Second, improvements are desirable in the conceptualization and measurement of intra-personal resources for coping with stress, which in this study was represented by two

measures, that of self-efficacy and hardiness. Other theoretically relevant intrapersonal coping resources, for example, are sense of coherence and mastery.

Third, longitudinal observational and intervention research on social support and social stress processes is called for to provide a sounder foundation for interventions and developing practice guidelines. The results of this study clearly show that social support and social stress are associated with various aspects of mental health. Therefore, it seems reasonable that interventions could be developed that would address both the positive and negative side of social relationships, to help build environments that support mental health. However, the present results do not illuminate any specific recommendation for practice, due to the cross-sectional design.

A final topic that requires attention, and not already mentioned in this chapter, is that the validity of the study results may be influenced by two sample-related issues: refusals to participate, and errors on the sampling list. To the extent that selection bias is associated with these issues, the validity of the study is compromised. If, for example, people with high levels of psychological distress refused to participate, or became institutionalised and therefore dropped from the sampling list, they would not have been included in the study. This would have truncated the range of observed values of the outcome variables and could well have had the same effect for the predictor variables. The effect on the analysis would in this case most likely have been an underestimation of the magnitude of the stress-distress link.

However, this is conjecture, and there are many other possible validity problems due to less than complete coverage of the original sample. Within the confines of this study, it was impossible to undertake post hoc study of this issue, for example, by attempting to

contact refusers, to collect a minimal set of data for purposes of comparison with participants.

However, in the world of survey research, the universal experience is that people at the extremes are less likely than average people to participate in survey research. The very rich and the very poor, the very healthy and the very unhealthy, and so on, are less likely to participate. The result is truncation of the ranges of responses in surveys, which can sometimes be estimated, and oftentimes cannot be estimated (as in this study). The inevitable result is that the strength of relationships among study variables is likely underestimated, leading possibly to under-appreciation of important associations between risk factors, protective factors and health. That such problems attend this study is highly likely, but that they have in some way produced the pattern of significant associations observed seem unlikely. Quite the opposite, for the reasons just mentioned, the magnitude of the stress-distress links, and of the association of intra-personal and social coping resources with distress, are more likely underestimated in this study, rather than overestimated.

5.3 IMPLICATIONS OF THE STUDY FOR THE RESEARCH PROGRAMME OF WHICH IT IS A PART, AND FINAL THOUGHTS

The study hypotheses were confirmed, suggesting that despite obvious cultural differences, Russians are equally exposed to, and equally susceptible to, chronic social stress, as are Norwegians and Romanians. This study thus offers support for a social psychological model of stress and distress that emphasises the deleterious consequences on mental health of chronic relationship problems, and the importance both of intra-personal and social coping resources.

Now, three studies with very similar methods have observed basically the same psychosocial phenomena in three quite different cultures. While it may seem obvious to any lay person that chronic relationship problems cause psychological distress, stress researchers have tended strongly to focus on acute stressors, such as sudden illness, the death of a loved one, and so on. Thus chronic social stress has been trivialised in the literature, by its relative absence, if nothing else.

Therein lies the significance of this study, which suggests the possibility that interventions to enhance the social environment, and strengthen intra- and inter-personal coping resources, may have a positive impact on community mental health. This is not directly suggested by this study, of course, but the present study adds to the empirical foundation for eventual intervention research on how strengthened social ties within close social groups might translate into better mental health for entire communities.

The significance of this study also rests in part with its consideration of how positive as well as negative aspects of social relationships are related to mental health. Previous epidemiological research has mostly emphasised the study of the possible benefits of good social ties, however, and indeed, the present study provides further confirmation that positive social ties are directly and significantly related to better mental health. Also, the direct and strong relationship of hardiness and self-efficacy levels to psychological distress levels suggests the potential fruitfulness of further exploration into psychological mechanisms linking stress and distress. This study has examined direct effects of all the predictors on a range of outcome measures, but better models with greater explanatory power might be constructed in which constructs such as hardiness and self-efficacy are construed as mediators or moderators of the stress-distress link. While this can in principle be undertaken with the present data, the advanced modelling required was

beyond the scope of this thesis. There is every intention, however, to continue examination of the data to explore these and other possibilities.

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Appendix 1

Figure 1. The relationship between chronic social stress, social support, coping resources and psychological distress. Conceptual model of the present study.

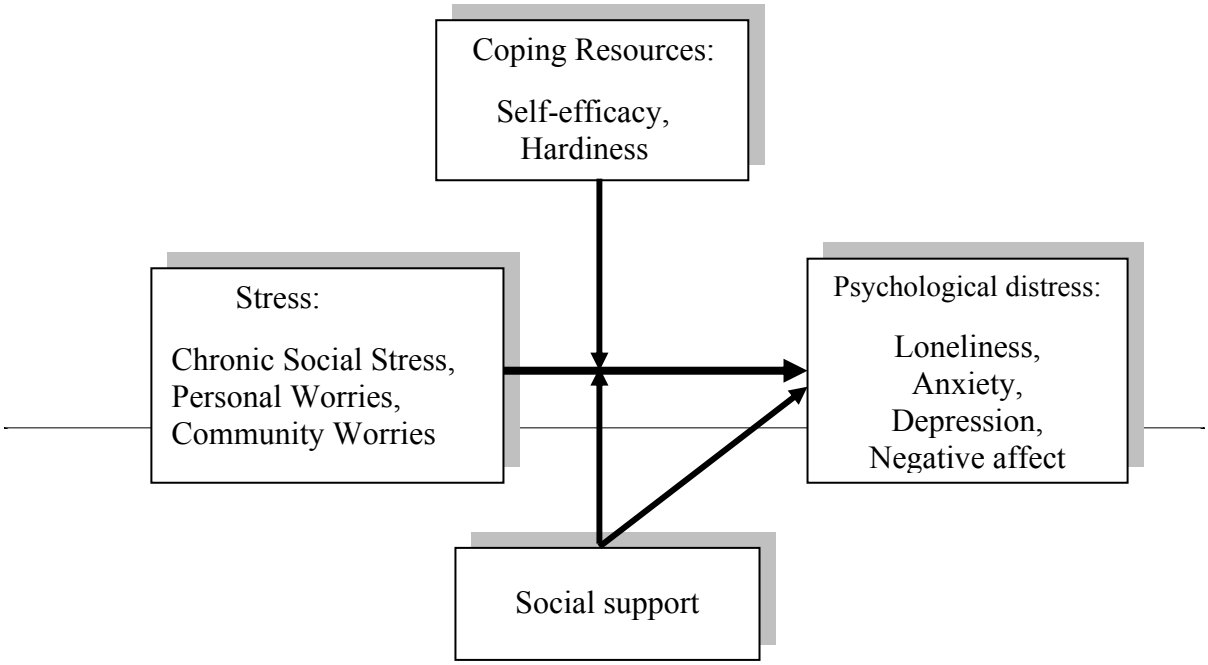


Figure 2. Sample selection

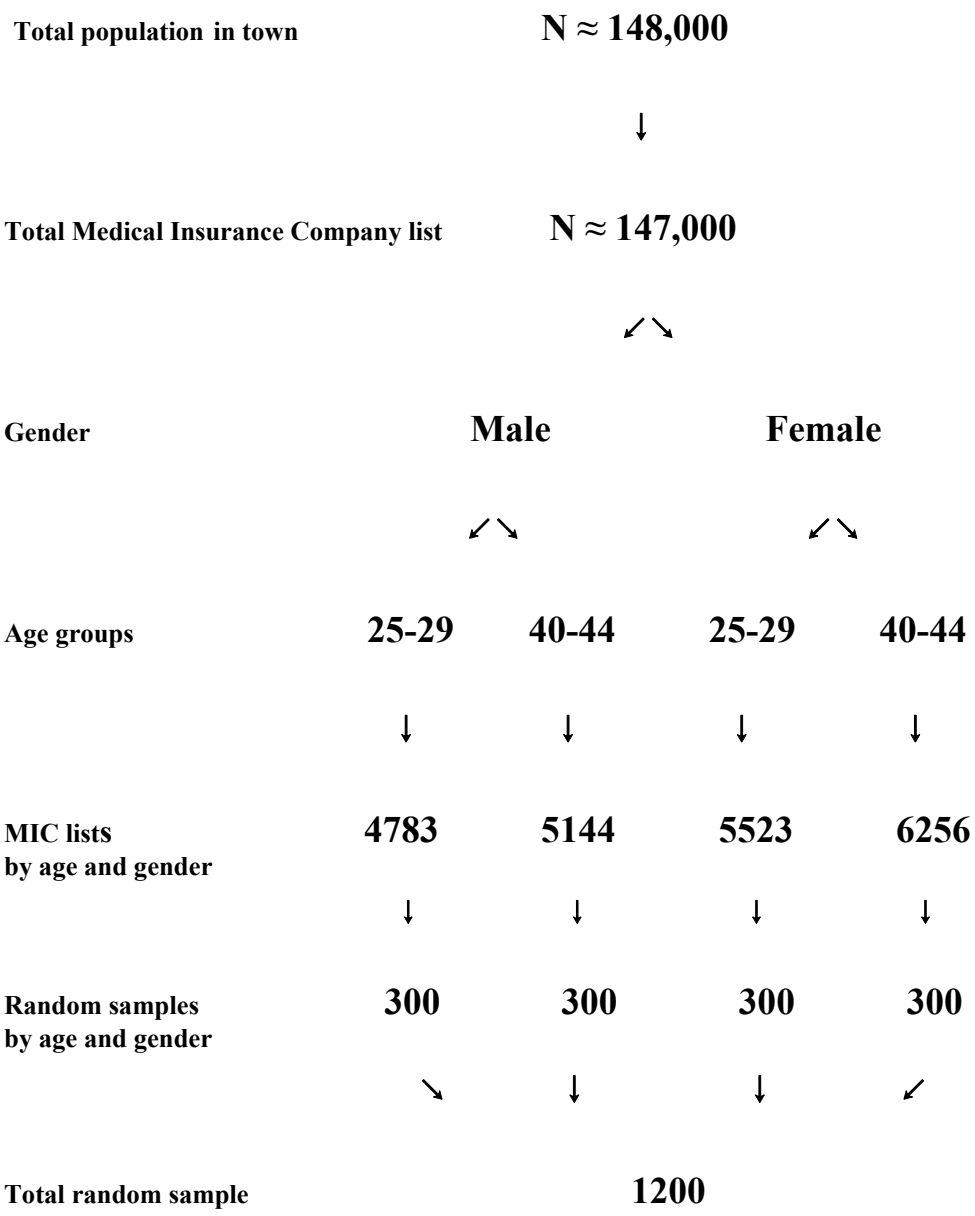


Figure 3. Survey organization

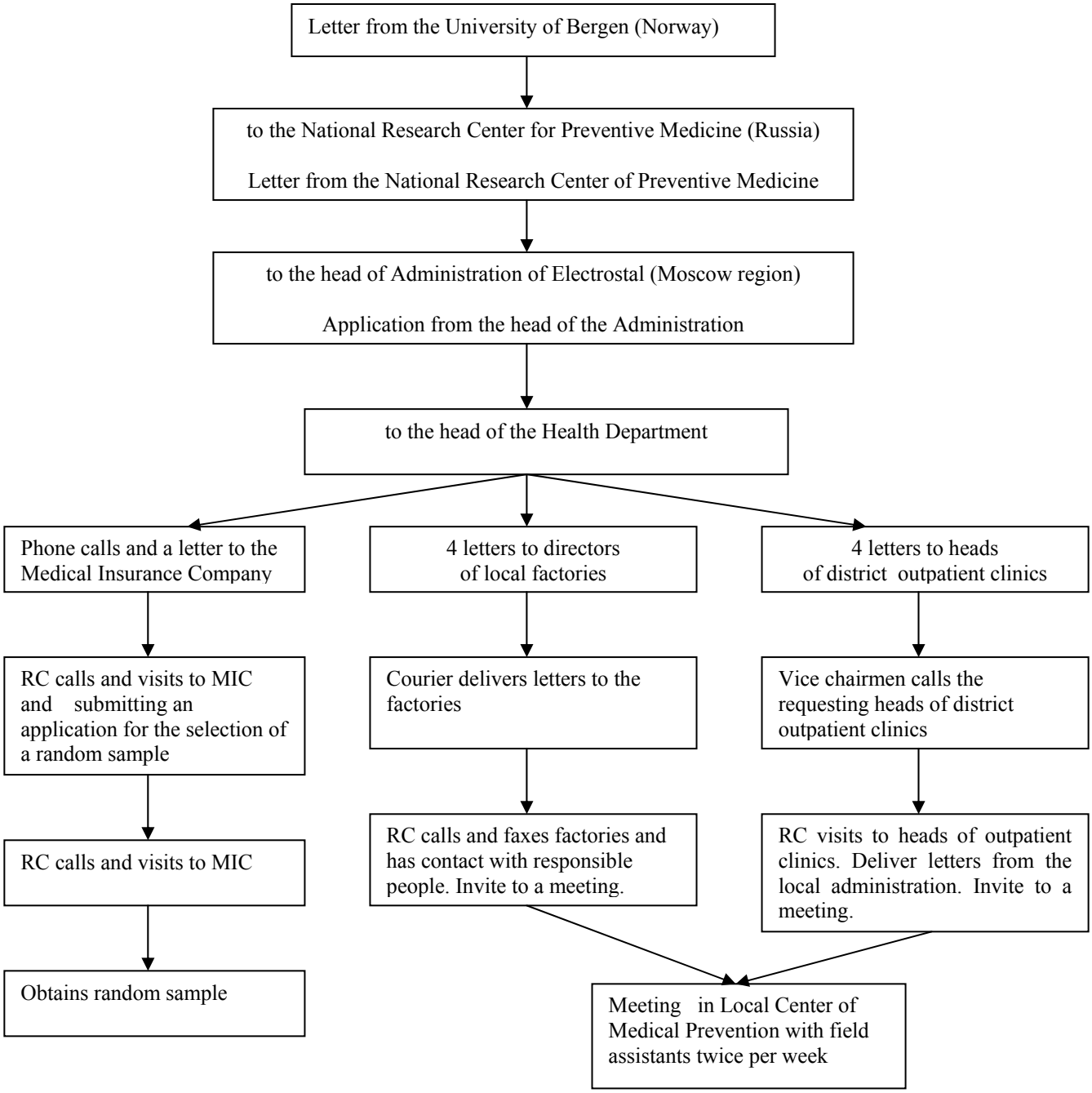


Figure 4. Survey response

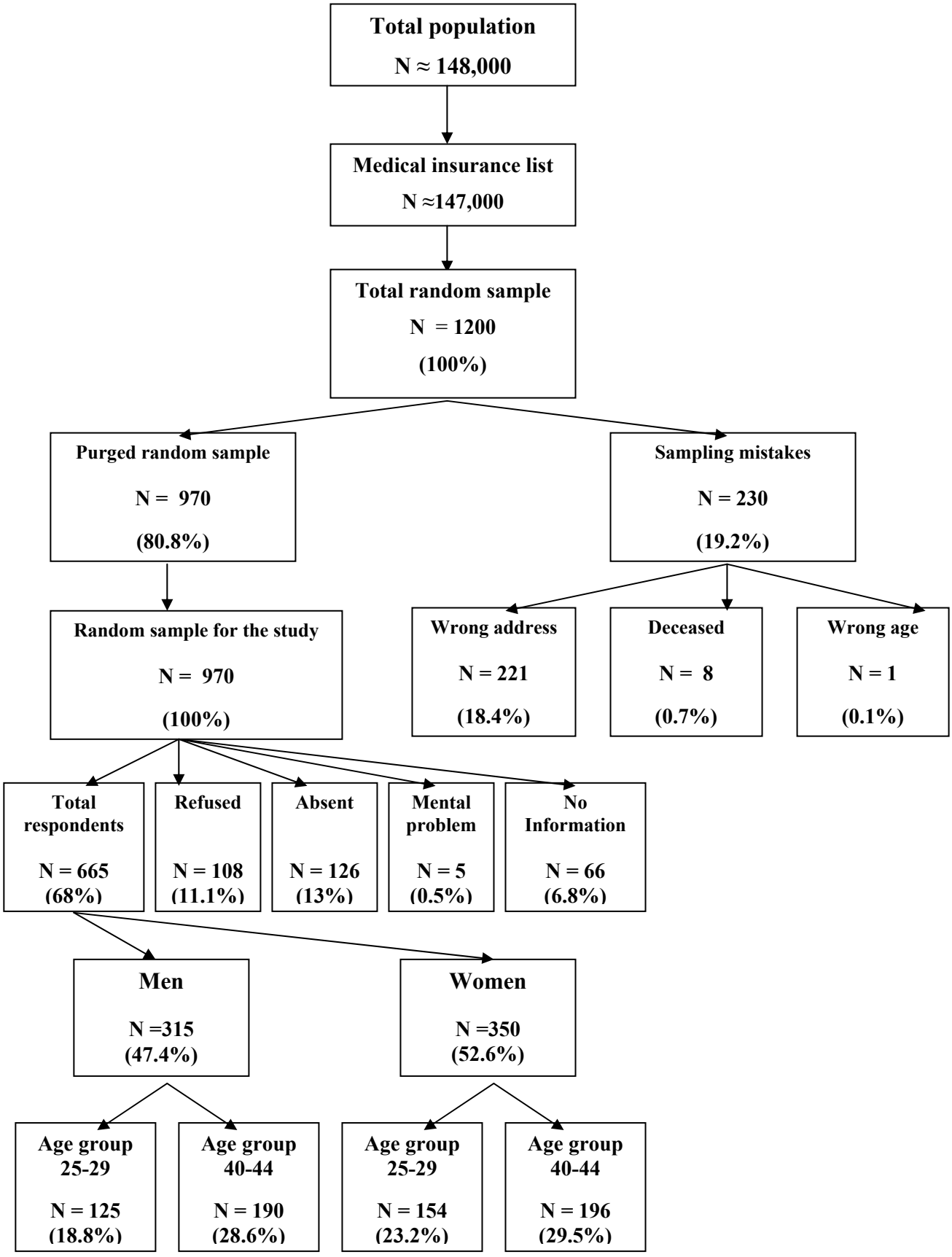
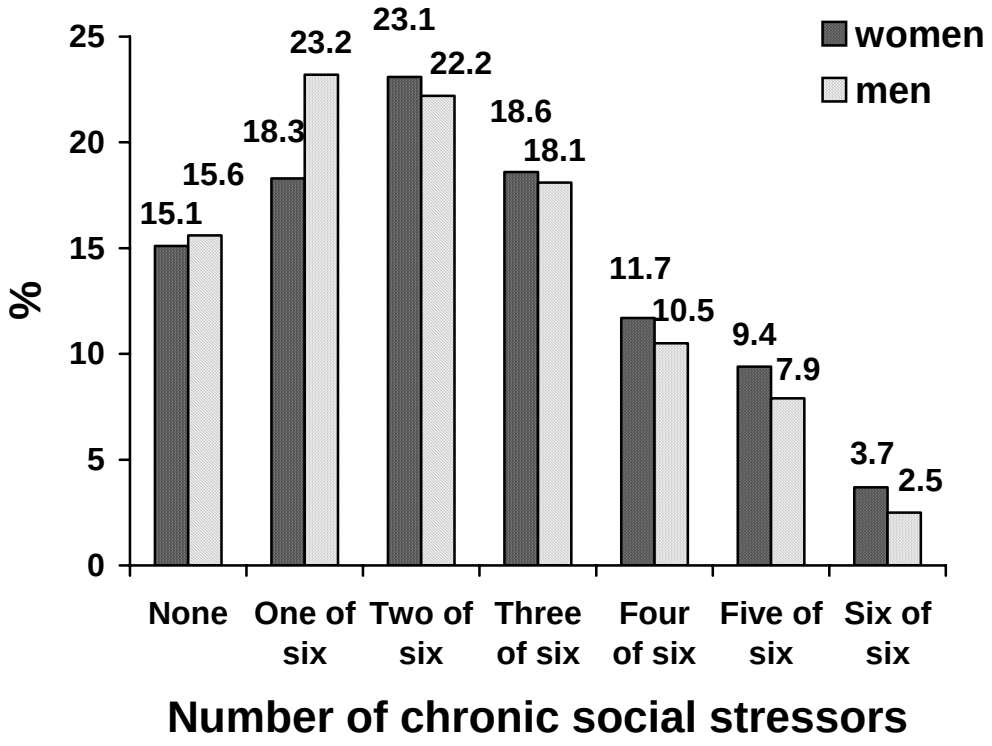


Figure 5. Number of chronic social stressors reported by men and women



Appendix 2

Table 1. Population in Electrostal by age groups and gender in 2003

Age groups (years)	Men		Women		Total	
	N	%	N	%	N	%
25-29	4828	49.5	4928	50.5	9756	100
40-44	6226	46.9	7046	53.1	13272	100
Both	11054	48.0	11974	52.0	23028	100

Table 2. Population in the Medical Insurance Company's list by age groups and gender in 2003

Age groups (years)	Men		Women		Total	
	N	%	N	%	N	%
25-29	4783	46.4	5523	53.6	10306	100
40-44	5144	45.1	6256	54.9	11400	100
Both	9927	45.7	11779	54.3	21706	100

Table 3. Causes of sample mistakes in survey

	Sample	Wrong address or work place	Deceased	Wrong age
N	1200	221	8	1
%	100	18.4	0.7	0.1

Table 4. The number of responded and non-response causes in the survey

	Sample	Responded	Refused to participate	Absent at the time	Psychiatric disorders	No information
N	970	665	108	126	5	66
%	100	68.6	11.1	13.0	0.5	6.8

Table 5. Number of respondents by gender and age groups: 25-29 and 40-44

	Men		Women		Total	
Age groups	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**
25-29	125	39.7	154	44.0	279	42.0
40-44	190	60.3	196	56.0	386	58.0
Total	315	100.0	350	100.0	665	100.0

Table 6. Descriptive statistics for scales used in Russian study

Scales	N	Range	Mean	SD	Skewness	Kurtosis	Cronbach's alpha
BSRS	665	0-18	7.3	3.6	.33	- .02	.68
HADS-A	665	0-18	6.1	3.3	.62	.43	.76
HADS-D	665	0-16	4.8	3.2	.75	.52	.67
LOS	665	0-17	5.8	2.9	.57	.58	.70
BPWS	665	0-44	28.4	7.4	- .56	.70	.84
BCWS	665	0-24	14.8	4.7	- .81	.96	.83
PANAS-NA	665	0-40	13.9	5.6	.30	.56	.80
GSE	665	0-30	16.8	5.4	- .13	.47	.91
HS	665	6-44	23.0	5.8	.15	.35	.69

Table 7. Item correlations, Cronbach's alphas, and factor loadings for Bergen Social Relationships Scale

Items	Inter-items correlations					Item-total correlation	Cronbach's alpha if item deleted	Factor loadings[1]
	2	3	4	5	6			
There are people in my life that I care about, but who dislike one another.	.16**	.17**	.19**	.18**	.14**	.25	.69	.75
There is a person in my life that needs my help, but I do not know how to help.	--	.19**	.20**	.22**	.25**	.31	.67	.72
There is an important person in my life that wants to support me, but who often hurts my feelings instead.	--	--	.35**	.34**	.32**	.43	.63	.69
There is a person I have to be around almost daily that often henpecks me.	--	--	--	.40**	.33**	.47	.62	.65
There are people that make my life difficult because they expect too much care and support from me.	--	--	--	--	.50**	.53	.60	.49
There is someone I care about that expects more of me than I can manage.	--	--	--	--	--	.49	.61	.40
Cronbach's alpha = .68								

[1]Extraction method is principle component analysis. 1 components extracted.

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

Table 8. Item correlations, Cronbach's alphas, and factor loadings for Loneliness Scale

Items	Inter-items correlations					Item-total correlation	Cronbach's alpha if item deleted	Factor loadings[1]
	2	3	4	5	6			
1. I feel I have enough contact with people that care about me.	.30**	.23**	.31**	.25**	.28**	.42	.67	.60
2. I often feel lonesome.	--	.25**	.51**	.37**	.22**	.51	.63	.72
3. I feel it is difficult to talk with people I have not met before.	--	--	.40**	.25**	.14**	.38	.68	.59
4. I feel lonely even when I am around other people.	--	--	--	.45**	.17**	.59	.61	.79
5. I often feel that others do not understand me or my situation.	--	--	--	--	.14**	.44	.65	.66
6. I feel that others care about me.	--	--	--	--	--	.27	.71	.43
Cronbach's alpha = .70								

[1]Extraction method is principle component analysis. 1 components extracted.
** Correlation is significant at the $p \leq 0.01$ (2-tailed).

Table 9. Item correlations, Cronbach's alphas, and factor loadings for HADS-Anxiety sub-scale

Items	Inter-items correlations						Item-total correlation	Cronbach's alpha if item deleted	Factor loadings[1]
	2	3	4	5	6	7			
1. I feel tense or "wound up"	.38**	.45**	.22**	.32**	.30**	.35**	.53	.70	.68
2. I get a sort of frightened feelings as if something awful is about to happen		.41**	.14**	.39**	.30**	.41**	.53	.71	.70
3. Worrying thoughts go through my mind			.17**	.42**	.23**	.43**	.56	.70	.72
4. I can sit at ease and feel relaxed				.19**	.09*	.14**	.23	.77	.34
5. I get a sort of frightened feeling like "butterflies" in the stomach					.28**	.53**	.55	.71	.72
6. I feel restless as I have to be on the move						.28**	.37	.74	.53
7. I get sudden feelings of panic							.55	.70	.73

Cronbach's Alpha = .76

[1]Extraction method is principle component analysis. 1 components extracted.

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

Table 10. Item correlations, Cronbach's alphas, and factor loadings for HADS-Depression sub-scale

Items	Inter-items correlations						Item-total correlation	Cronbach's alpha if item deleted	Factor loadings[1]
	1	2	3	4	5	6			
1. I still enjoy the things I used to enjoy	.23**	.29**	.18**	.18**	.19**	.17**	.34	.64	.54
2. I can laugh and see the funny side of things		.27**	.19**	.20**	.26**	.24**	.39	.62	.59
3. I feel cheerful			.32**	.22**	.33**	.21**	.47	.60	.68
4. I feel as if I am slowed down				.29**	.22**	.11**	.36	.63	.57
5. I have lost interest in my appearance					.21**	.16**	.34	.63	.54
6. I look forward with enjoyment to things						.23**	.40	.62	.62
7. I can enjoy a good book or radio or TV program							.32	.64	.49

Cronbach's Alpha = .67

[1]Extraction method is principal component analysis. 1 components extracted.
** Correlation is significant at the $p \leq 0.01$ (2-tailed).

Table 11. Item correlations, Cronbach's alphas, factor loadings for PANAS-NA sub-scale

Items	Inter-items correlations									Item-total correlation	Cronbach's alpha if item deleted	Factor loadings[1]
	1	2	3	4	5	6	7	8	9			
1. Distressed	.25**	.18**	.17**	.27**	.26**	.05	.24**	.10*	.17**	.30	.80	.41
2. Upset		.32**	.39**	.26**	.39**	.22**	.42**	.29**	.38**	.55	.77	.67
3. Guilty			.48**	.22**	.28**	.23**	.27**	.25**	.35**	.47	.78	.60
4. Scared				.31**	.29**	.25**	.36**	.31**	.54**	.58	.77	.71
5. Hostile					.39**	- .03	.38**	.13**	.18**	.38	.79	.51
6. Irritable						.14**	.61**	.29**	.32**	.56	.77	.68
7. Ashamed							.20**	.26**	.31**	.29	.81	.40
8. Nervous								.38**	.34**	.61	.76	.73
9. Jittery									.37**	.44	.78	.56
10.Afraid										.55	.77	.68
Cronbach's Alpha = .80												

[1] Extraction method is principal component analysis. 1 components extracted.

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

Table 12. Item correlations, Cronbach's alphas, factor loadings for Bergen Personal Worries Scale

Items	Inter-items correlation										Item-total correlation	Cronbach's alpha if item deleted	Factor loadings[1]
	2	3	4	5	6	7	8	9	10	11			
1. A member of my family	.32**	.33**	.18**	.29**	.29**	.28**	.33**	.21**	.50**	.29**	.48	.82	.59
2. My job security		.41**	.24**	.26**	.35**	.26**	.27**	.24**	.32**	.34**	.48	.82	.58
3. My financial situation			.25**	.40**	.26**	.27**	.36**	.32**	.37**	.36**	.54	.82	.64
4. My time pressure				.21**	.29**	.23**	.21**	.18**	.24**	.25**	.36	.83	.45
5. My physical health					.31**	.37**	.45**	.26**	.27**	.34**	.51	.82	.62
6. My responsibilities at work						.44**	.42**	.31**	.42**	.29**	.55	.81	.65
7. My personal safety							.47**	.29**	.34**	.46**	.55	.81	.66
8. My mental health								.39**	.41**	.34**	.60	.81	.70
9. My unpaid bills									.37**	.20**	.44	.83	.55
10. My responsibilities to my family										.42**	.59	.81	.70
11. Health care services											.53	.82	.64
Cronbach's Alpha = .84													

[1]Extraction method is principal component analysis. 1 components extracted.

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

Table 13. Item correlations, Cronbach's alphas, and factor loadings for Bergen Community Worries Scale

Items	Inter-items correlation					Item-total correlation	Cronbach's alpha if item deleted	Factor loadings[1]
	2	3	4	5	6			
1. The world economy	.67**	.45**	.30**	.23**	.44**	.56	.80	.70
2. The national economy		.47**	.40**	.27**	.50**	.63	.79	.76
3. Wars throughout the world			.54**	.45**	.52**	.66	.78	.79
4. Crime in community				.55**	.51**	.62	.79	.75
5. Drugs in schools					.32**	.47	.82	.62
6. The political stability in the country						.62	.79	.76
Cronbach's alpha = .83								

[1]Extraction method is principal component analysis. 1 components extracted.

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

Table 14. Item correlations, Cronbach's alphas, factor loadings for General Self-efficacy Scale

Items	Inter-items correlations									Item-total correlation	Cronbach's alpha if item deleted	Factor loadings[1]
	2	3	4	5	6	7	8	9	10			
1. I always manage to solve difficult problems if I try hard enough	.68**	.53**	.59**	.38**	.53**	.43**	.35**	.45**	.43**	.65	.90	.72
2. If someone opposes me, I can find means and ways to get what I want		.64**	.62**	.44**	.50**	.51**	.34**	.45**	.46**	.70	.90	.76
3. It is easy for me to stick to my aims and accomplish my goals			.61**	.44**	.43**	.51**	.38**	.42**	.44**	.66	.90	.73
4. I am confident that I could deal efficiently with unexpected events				.51**	.53**	.56**	.45**	.52**	.50**	.74	.90	.80
5. Thanks to my resourcefulness, I know how to handle unforeseen situations					.50**	.66**	.43**	.48**	.52**	.64	.90	.71
6. I can solve most problems if I invest the necessary effort						.55**	.47**	.55**	.50**	.68	.90	.75
7. I can remain calm when facing difficulties because I can rely on my coping abilities							.46**	.55**	.60**	.71	.90	.78
8. When I am confronted with a problem, I can usually find several solutions								.61**	.49**	.58	.91	.66
9. If I am in a trouble, I can usually think of a solution									.62**	.69	.90	.76
10. I can usually handle whatever comes my way										.68	.90	.75
Cronbach's alpha = .91												

[1]Extraction method is principal component analysis. 1 components extracted.
** Correlation is significant at the $p \leq 0.01$ (2-tailed).

Table 15a. Inter-item correlations for Hardiness Scale

Items	Inter-items correlations													
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
No. 1	.33**	- .22**	.00	.13**	.16**	.15**	.25**	.26**	.23**	- .08*	.27**	.16**	- .18**	.28**
No. 2		- .34**	- .02	.08*	.25**	.18**	.35**	.25**	.30**	- .14**	.29**	.16**	- .23**	.38**
No. 3			.17**	.13**	- .11**	- .15**	- .12**	- .13**	- .17**	.36**	- .10*	- .07	.49**	- .25**
No. 4				- .08*	- .02	- .02	.07	.09*	.03	.15**	.05	- .03	.11**	- .00
No. 5					.30**	.16**	.21**	.15**	.14**	.17**	.20**	.20**	.15**	.13**
No. 6						.37**	.39**	.23**	.63**	- .03	.34**	.20**	- .09*	.32**
No. 7							.41**	.28**	.42**	- .02	.33**	.26**	- .11**	.33**
No. 8								.38**	.38**	- .05	.31**	.15**	- .17**	.35**
No. 9									.38**	- .05	.38**	.23**	- .19**	.34**
No. 10										- .12**	.41**	.24**	- .17**	.39**
No. 11											- .06	- .04	.48**	- .18**
No. 12												.36**	- .17**	.42**
No. 13													- .15**	.22**
No. 14														- .32**
No. 15														

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

Table 15b. Cronbach's alphas, factor loadings and item-total correlation for Hardiness Scale

Items	Item-total correlation	Cronbach's alpha if item deleted	Factor loadings[1]
1. Most of my life gets spent doing things that are worthwhile.	.28	.67	.48
2. Planning ahead can help avoid most future problems.	.29	.67	.58
3. I don't like to make changes in my everyday schedule.	- .07	.71	- .40
4. Working hard does not matter, since only the bosses profit by it.	.08	.70	- .02
5. Changes in routine are interesting tome.	.35	.66	.28
6. By working hard you can always achieve your goals.	.50	.64	.63
7. I really look forward to my work.	.43	.65	.59
8. If I'm working on a difficult task, I know when to seek help.	.48	.64	.64
9. Most of the time, people listen carefully to what I say.	.43	.66	.59
10. Try you best at work really pays off in the end.	.52	.64	.71
11. It bothers me when my daily routine gets interrupted.	.07	.70	- .25
12. Most days, life is really interesting and exciting for me.	.51	.64	.65
13. I enjoy the challenge when I have to do more than one things at a time.	.31	.67	.44
14. I like having a daily schedule that doesn't change very much.	- .07	.71	- .43
15. When I make plans I'm curtain I can make them work.	.39	.66	.68

Cronbach's alpha = .69

[1]Extraction method is principal component analysis. 1 component extracted.

Table 16. Correlation matrix for study scales

Scales	Inter-items correlation							
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1. LOS	.45**	.52**	.32**	.43**	.13**	- .08*	- .45**	- .45**
2. HADS-A		.43**	.32**	.56**	.36**	.13**	- .38**	- .31**
3. HADS-D			.22**	.35**	.14**	- .06	- .52**	- .49**
4. BSRS				.29**	.13**	- .02	- .22**	- .22**
5. PANAS-NA					.20**	.01	- .35**	- .35**
6. BPWS						.48**	- .17**	- .10**
7. BCWS							.06	.13**
8. GSE								.56**
9. HS								

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

Table 17. Distribution of answers on perception of availability of a confidant

Item: "I have someone I care about, with whom I can talk about my personal problems".	Frequency	Percent
0. Describes me very well	333	50.1
1. Describes me quite well	263	39.5
2. Does not describe me very well	57	8.6
3. Does not describe me at all	12	1.8
Total	665	100.0

Table 18. Distribution of answers on perceived availability of financial support

Item: "There is at least one person who would loan me money for a short period".	Frequency	Percent
0. Describes me very well	377	56,7
1. Describes me quite well	208	31,3
2. Does not describe me very well	36	5,4
3. Does not describe me at all	44	6,6
Total	665	100,0

Table 19. Marital status

Item: "Your marital status is:"	Frequency	Percent
0. Married or living as in marriage	488	73,4
1. Single	86	12,9
2. Divorced	79	11,9
3. Widow(er)	12	1,8
Total	665	100,0

Table 20. Satisfaction with number of good friends

Item: "Do you feel you have enough good friends?"	Frequency	Percent
0. No	235	35,3
1. Yes	430	64,7
Total	665	100,0

Table 21. Participation in the social groups activities

Item: "How often do you usually participate in social groups such as sport team, political activities, religious groups, or other group activities?"	**Frequency**	**Percent**
0. Never or only few times a year	555	83,5
1. One to three times a month	64	9,6
2. About once a week	27	4,1
3. More than once a week	19	2,9
Total	665	100,0

Table 28. Standardized Beta coefficients in regression models with loneliness as the predicted variable: Russia, Norway and Romania.

	Russia		Norway[1]		Romania[2]	
Variables	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Marital status (single = 0, married = 1)	-.11	-.13	-.16	-.16	-.14	-.13
Satisfaction with number of good friends	-.23	-.20	-.37	-.33	-.05	-.04
Participation in social activities	-.08	-.08	-.05	-.06	-.08	-.09
Perceived availability of a confidant	-.28	-.26	-.24	-.21	-.28	-.24
Perceived availability of instrumental support	-.09	-.09	-.11	-.10	-.05	-.08
Chronic social stress	--	.26	--	.32	--	.32
Fit statistics						
Adjusted R^2	.21	.27	.31	.40	.12	.22
F change	35.54	59.29	446.51	828.89	16.17	71.74
Degrees of freedom	5,659	1,658	5, 5063	1, 5062	5, 568	1, 567
Significance of F change (p <)	.000	.000	.000	.000	.000	.000

[1] Mittelmark et al., 2004

[2] Bancila et al., 2004

Table 29. Standardized Beta coefficients in regression models with anxiety as the predicted variable: Russia and Norway.

	Russia		Norway[1]	
Variables	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Marital status (single = 0, married = 1)	-.01	-.02	-.04	-.04
Satisfaction with number of good friends	-.07	-.03	-.16	-.17
Participation in social activities	-.09	-.09	-.08	-.08
Perceived availability of a confidant	-.18	-.15	-.13	-.10
Perceived availability of instrumental support	-.03	-.04	-.07	-.06
Chronic social stress		.29		.34
Fit statistics				
Adjusted R^2	.05	.13	.08	0.19
F change	7.65	60.69	80,256	706.784
Degrees of freedom	5,659	1,658	5, 4974	1, 4973
Significance of F change (p <)	.000	.000	.000	.000

[1] Mittelmark et al., 2004

Table 30. Standardized Beta coefficients in regression models with depression as the predicted variable: Russia and Norway.

	Russia		Norway[1]	
Variables	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Marital status (single = 0, married = 1)	-.01	-.01	-.03	-.03
Satisfaction with number of good friends	-.20	-.18	-.21	-.18
Participation in social activities	-.10	-.10	-.04	-.04
Perceived availability of a confidant	-.23	-.21	-.22	-.20
Perceived availability of instrumental support	-.11	-.11	-.09	-.08
Chronic social stress		.16		.26
Fit statistics				
Adjusted R^2	.14	.16	.14	.21
F change	22.38	20.27	146,203	375,211
Degrees of freedom	5,659	1,658	5, 4528	1, 4527
Significance of F change (p <)	.000	.000	.000	.000

[1] Mittelmark et al., 2004