

## Depression, Perceived Control, and Life Satisfaction in University Students from Central-Eastern and Western Europe

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*The poor health and psychological well-being of people in the former socialist states of Central-Eastern Europe are of serious concern and may be related to low perceived control. We compared depressive symptoms, life satisfaction, and self-rated health in 3,571 male and female university students from 5 Western European countries and 4,793 students from 5 Central-Eastern European countries. Depression scores (short Beck Depression Inventory; Beck & Beck, 1972) were higher in Central-Eastern than Western European samples. The prevalence of low life satisfaction was also greater in Central-Eastern Europeans, but ratings of self-rated health did not differ. Ratings of perceived control were diminished, but sense of mastery and internal health locus of control were higher in Central-Eastern Europe. Depression and low life satisfaction were associated with low perceived control and mastery and with strong beliefs in the influence of chance over health. However, taking these factors into account did not explain the East–West difference in depressive symptoms and low life satisfaction.*

*Keywords:* depression, self-rated health, life satisfaction, Europe, control

There is serious concern about the health of the population of the former communist countries of Central and Eastern Europe (McKee & Shkolnikov, 2001). Although many countries in the region have seen an improvement in life expectancy since the early 1990s, premature mortality remains substantially greater than in Western Europe (Cockerham, 1999; Dolea, Nolte, & McKee, 2002; Leon & Shkolnikov, 1998). The changes in societal structures such as guaranteed jobs and price controls following the end of communism have resulted in profound changes in social circumstances. Kopp, Skrabski, and Szedmak (2000) found substantially higher levels of depression, greater work

stress, and lower perceived social support in Hungarian adults in 1995 compared with 1988. Suicide rates have also increased dramatically in several Central-Eastern European countries over the same period (Makinen, 2000).

Studies carried out exclusively within Central-Eastern Europe do not directly address the question of whether social stress and poor emotional well-being are worse in this region than in other parts of the continent. There have been a limited number of direct comparisons of emotional well-being in similar sectors of the population from Central-Eastern and Western Europe. For example, men aged 50 from Vilnius (Lithuania) showed higher depression and lower self-esteem than men in Linköping (Sweden), whereas greater levels of hopelessness were reported in 1991 by adult residents of Moscow compared with Helsinki (Kristenson et al., 1998; Palosuo, 2000). Data collected in the 1980s from students in several European countries suggested lower subjective well-being in respondents from Central-Eastern Europe (Diener, Diener, & Diener, 1995). Steptoe & Wardle (2001a) recently compared the depression levels of university students from Central-Eastern and Western European countries assessed in 1989–1991 as part of the European Health and Behaviour Study (EHBS). Students were studied as an easily identifiable, socially and demographically comparable sector of the population in different countries. Of the Central-Eastern European respondents, 43.2% exceeded the threshold for moderate depressive symptoms on the short form of the Beck Depression In-

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ventory (BDI; Beck & Beck, 1972) compared with 23.5% in Western Europe (Steptoe & Wardle, 2001a).

The first aim of this study was to discover if the same pattern could be reproduced in new data collected 10 years later (1999–2001) using the same survey protocol as part of the International Health and Behaviour Survey (IHBS). Surveys carried out between 1990 and 1993 have shown health and well-being differences across Europe in both adolescents and adults (Carlson, 1998; Grob, Wearing, Little, & Wanner, 1996), so it is important to discover if differences are continuing. Steptoe & Wardle's (2001a) earlier survey was conducted during an unusual period of social transition and uncertainty as the communist regimes were overthrown, and the young Central-Eastern European participants were living through turbulent times. In contrast, many of the student participants in the new survey were only around 10 years old when communism collapsed and have therefore grown up in a very different atmosphere. An earlier analysis included respondents from only three Central-Eastern European countries (Hungary, Poland, and the former East Germany), whereas the new study included data from a larger number of countries. In these analyses, these were compared with respondents from five Western European countries bounded by the same latitudes geographically. We hypothesized that East–West differences in depression would persist because of the continuing social stress reported in Central-Eastern European countries. In addition, we assessed life satisfaction and self-rated health as further measures of well-being to discover whether East–West differences would be present in these measures as well.

The second aim of this study was to evaluate the role of perceived control. Control has emerged as an important explanatory construct in studies of health in Russia and Central-Eastern Europe for a number of reasons. First, some of the societal changes that have taken place in Central-Eastern Europe over the last decade have engendered feelings of lack of control over life choices. These include the loss of collective welfare systems, the loss of job security and consequent unemployment, and periods of economic hardship and stagnation coupled with disappointment about the pace of change following the introduction of market economies (Monee Project, 1999; Stone, 2000). Second, perceived control in Western countries is positively related to health and partly explains the socioeconomic disparities in health and well-being (Bosma, Schrijvers, & Mackenbach, 1999; Lachman & Weaver, 1998). A parallel might be drawn in the comparison between Western and Central-Eastern Europe (Marmot & Bobak, 2000). It has also been argued that the communist system encouraged people to take a passive role with respect to health, delegating responsibility to state-managed health services so that personal efforts

to achieve healthy lifestyles were neither encouraged nor rewarded (Barr & Field, 1996). Low levels of perceived control and strong beliefs in the role of chance are associated with unhealthy lifestyles (Steptoe & Wardle, 2001b). Lower levels of "life control" were reported from Central-Eastern compared with Western countries in the 1990 World Value survey (Carlson, 1998), and associations between poor self-rated health and low perceived control have been observed in several postcommunist countries (Bobak, Pikhart, Rose, Hertzman, & Marmot, 2000). We therefore investigated whether perceived control over life in general, and health-related locus of control in particular, would differ between students from Central-Eastern and Western Europe and whether regional differences in control beliefs might explain regional differences in measures of well-being (depression, life satisfaction and self-rated health).

## Methods

### Sample

The data analyzed in this report come from a larger cross-sectional questionnaire study (Steptoe et al., 2002) of university students in 23 countries and involved comparison between students in five Central-Eastern European countries (Bulgaria, Hungary, Poland, Romania, and Slovakia) and five Western countries (Belgium, France, Germany, England, and the Netherlands). The study was carried out with a network of collaborators in participating centers between 1999 and 2001 (for a complete list, see Steptoe et al., 2002). The questionnaire was developed in English and translated and back translated into the nine languages involved in this analysis (Bulgarian, Dutch, Flemish, French, German, Hungarian, Polish, Romanian, & Slovak) together with eight other languages spoken in other countries not included here. It was administered to groups of students at the end of classes; therefore, participation rates typically exceeded 90% and did not differ between Central-Eastern and Western Europe. Students were told that the study concerned activities related to health and involved international comparisons, but no other details were given. Respondents were aged 17 to 30 years, and those studying medicine or health-related topics were excluded. They were recruited from one to three universities per country. Acceptable data were available from 3,571 students in the five Western European and 4,793 in five Central-Eastern European countries as detailed in Table 1. In Germany, the survey was administered in universities in the former Western states because the parts of the country that were formerly part of the German Democratic Republic (GDR) have been exposed to different pressures (Hillen, Schaub, Hiestermann, Kirschner, & Robra, 2000).

**Table 1.** Details of Participating Country Samples Included in the Analyses

Country	Total N	Men	Women	Age $M \pm SD$
Western Europe	3,571	1,727	1,844	20.6 $\pm$ 2.2
Belgium	536	259	277	19.2 $\pm$ 1.0
England	847	455	392	19.9 $\pm$ 1.8
France	771	399	372	19.9 $\pm$ 1.8
Germany	730	335	395	22.6 $\pm$ 2.5
Netherlands	687	279	408	21.1 $\pm$ 1.8
Central-Eastern Europe	4,793	2,144	2,649	21.1 $\pm$ 1.9
Bulgaria	797	376	421	20.8 $\pm$ 2.3
Hungary	1,186	476	710	21.8 $\pm$ 1.9
Poland	762	336	426	20.9 $\pm$ 1.3
Romania	789	396	393	20.8 $\pm$ 1.6
Slovakia	1,259	560	699	21.0 $\pm$ 1.6

## Measures

Depressive symptoms were assessed with the 13-item BDI. Scores of 5 or more were taken to define mild or moderate depressive symptoms as recommended by Beck and Beck (1972).

Life satisfaction was assessed with the question, "All things considered, how satisfied are you with your life as a whole?" with responses "very satisfied," "moderately satisfied," "neutral," "moderately dissatisfied," and "very dissatisfied" rated from 1 to 5, with higher scores indicating greater dissatisfaction. Self-rated health was assessed as "excellent," "very good," "good," "fair," or "poor" rated 1 to 5 with higher scores indicating poorer health.

Respondents' perceptions of control and mastery over their lives were assessed with three items taken from the questionnaire included in the surveys conducted by the MacArthur Foundation Network on Successful Mid-Life Development (Lachman & Weaver, 1998). Two items ("There is little I can do to change many of the important things in my life," and "I have little control over the things that happen to me") are described by Lachman and Weaver as measures of perceived constraints or control, whereas the third ("Whether or not I am able to get what I want is in my own hands") is regarded as a measure of perceived mastery. Each item was rated on a 5-point scale ranging from 1 (*disagree strongly*) to 5 (*agree strongly*).

Health locus of control was assessed using the Multidimensional Health Locus of Control scales devised by Wallston, Wallston, and DeVellis (1978). These scales have been used extensively in health research, and construe health-related locus of control as varying along three dimensions: beliefs in internal or personal control over health, beliefs in powerful others such as medical staff, and beliefs in chance or fate (Norman & Bennett, 1996). There are 18 items, each of which is rated on a 6-point scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Six items contribute to the Internal Locus of Control scale (e.g., "I can pretty much stay healthy by taking good care of myself"), 6 to the Power-

ful Others scale (e.g., "following doctor's orders to the letter is the best way from me to stay healthy"), and 6 to the Chance Locus of Control scale (e.g., "when I become ill, it's a matter of fate"). Ratings were summed; therefore, scores on each scale ranged from 6 to 36, with higher scores indicating greater beliefs in internal, powerful others, and chance control over health.

## Statistical Analysis

The average number of depressive symptoms and mean ratings of life satisfaction and self-rated health of respondents from Western and Central-Eastern European regions were calculated adjusting for age and gender. Data are presented as means with 95% confidence intervals (CIs), and all comparisons with non-overlapping CIs were significant at  $p < .001$  or greater. In addition, for descriptive purposes, the proportion of individuals reporting depression scores  $> 4$ , less than moderate satisfaction with life, and health ratings of fair or poor are presented. Differences in perceived control and health locus of control were analyzed as continuous measures. Data from the Hungarian sample were excluded from health locus of control analyses because the rating scale was different from that used in other countries. The influence of perceived control, perceived mastery, and health locus of control on well-being measures was analyzed with a series of multiple regression models. In Model 1, region (Central-Eastern vs. Western), sex, and age were regressed on depression and life satisfaction scores, and unstandardized  $B$  coefficients (with 95% CIs) are presented. Subsequent models added perceived control and mastery and health locus of control measures and then the two sets of measures together. Interactions between gender and region were not tested. All analyses took account of the clustering of data within individual country samples when comparing Central-Eastern and Western regions, and CIs were adjusted accordingly using STATA Version 6. Similar results were obtained when depression and life satisfaction were subject to binary categorization and analyzed with logistic methods.

## Results

The populations studied are described in Table 1. There was a higher proportion of male respondents in Western than Eastern country samples (48.4% vs. 44.7%). The Central-Eastern Europeans were slightly older on average ( $M = 21.1$  years,  $CI = 21.0-21.2$ ) than the Western Europeans ( $M = 20.6$  years,  $CI = 20.5-20.7$ ).

The mean BDI ratings were higher for Central-Eastern ( $M = 4.86$ ,  $CI = 4.7-5.0$ ) than Western ( $M = 3.80$ ,  $CI = 3.6-4.0$ ) European students adjusted for age and gender (Table 2). The proportion of students with depression scores of 5 or more was also greater in Central-Eastern than Western European samples (43.4% vs. 30.6%). This difference was present in both men and women. Central-Eastern Europeans were less likely to describe their lives as satisfying than Western Europeans, and more Central-Eastern Europeans had low life satisfaction ratings (22.1% vs. 15.9%). By contrast, average self-rated health did not differ between Central-Eastern and Western samples, although the proportion of students rating their health as only fair or poor was greater in the Central-Eastern European countries (12.3% vs. 9.64%).

### Perceived Control, Perceived Mastery, and Health Locus of Control

There were differences between Western and Central-Eastern European samples on the three questions concerning perceived control and mastery (Table 2). Central-Eastern Europeans showed greater agreement with the statements that there was little they could do to

change important things in their lives and that they had little control over what happened to them. This pattern is indicative of low perceived control over life chances. However, Central-Eastern Europeans were also more likely to endorse the mastery statement that "Whether I can get what I want is in my own hands." Thus, more Central-Eastern than Western Europeans believed in the importance of their own efforts in achieving desired goals.

Central-Eastern and Western students differed in health locus of control scales, but the pattern was not the same as that found in similar samples in 1989 to 1991. Internal locus of control was greater in Central-Eastern than Western European respondents as was belief in the influence of powerful others over health. Beliefs in the influence of chance over health did not differ between the European regions (Table 2). Steptoe and Wardle (2001a) previously found no difference in internal control but higher chance beliefs in Central-Eastern than Western samples.

### Control and Well-Being

A series of regression models assessed the associations between perceived control, mastery, locus of control and well-being, and the role that control beliefs play in accounting for differences in depression and life satisfaction between Central-Eastern and Western European samples. Self-rated health was not included in these analyses because there was no overall difference between regions on the continuous measure but only on the binary division. These analyses are summarized in Tables 3 and 4. Model 1 in Table 3 confirms that region and sex were independent predictors of BDI

**Table 2.** Well-Being and Control in Central-Eastern and Western European Samples

Measure	Averages and Proportions Adjusted for Age and Sex (95% CI)	
	Western Europe	Central-Eastern Europe
Depression		
<i>M</i> BDI score	3.80 (3.6-4.0)	4.86 (4.7-5.0)*
BDI scores > 4 (%)	30.6 (29.0-32.2)	43.4 (42.0-44.8)*
Life satisfaction		
<i>M</i> rating	1.92 (1.89-1.95)	2.13 (2.11-2.16)*
Dissatisfied or neutral (%)	15.9 (14.6-17.2)	22.1 (20.9-23.2)*
Self-rated health		
<i>M</i> rating	2.49 (2.46-2.52)	2.52 (2.50-2.55)
Fair or poor (%)	9.64 (8.6-10.7)	12.3 (11.4-13.2)*
Perceived control and mastery		
Little I can do to change important things in my life	2.22 (2.18-2.25)	2.36 (2.33-2.39)*
Little control over what happens to me	2.24 (2.20-2.27)	2.45 (2.42-2.49)*
Whether I can get what I want is in my own hands	3.65 (3.61-3.68)	3.88 (3.85-3.91)*
Health locus of control		
Internal	24.2 (24.1-24.4)	26.6 (26.4-26.7)*
Powerful others	16.4 (16.2-16.6)	19.4 (19.3-19.6)*
Chance	17.2 (17.0-17.3)	17.1 (17.0-17.3)

Note. CI = confidence interval; BDI = Beck Depression Inventory.  
\* $p < .001$ .

**Table 3.** Multiple Linear Regressions on Beck Depression Inventory Scores

Variable	Model 1		Model 1 + Perceived Control		Model 1 + Health LOC		Model 1 + Perceived Control + Health LOC	
	B	95% CI	B	95% CI	B	95% CI	B	95% CI
Region (East vs. West)	1.22	1.00 – 1.44***	0.86	0.64 – 1.09***	1.26	1.02 – 1.50***	0.93	0.69 – 1.17***
Sex (women vs. men)	0.43	0.21 – 0.65***	0.36	0.14 – 0.58***	0.58	0.36 – 0.80***	0.51	0.29 – 0.73***
Age	-0.004	-0.10 – .01	-0.004	-0.09 – .02	-0.004	-0.05 – 0.06	-0.002	-0.06 – 0.52
Perceived control and mastery								
Little I can do to change important things in my life (agree vs. disagree)			0.50	0.40 – 0.60***			0.47	0.37 – 0.57***
Little control over what happens to me (agree vs. disagree)			0.71	0.60 – 0.82***			0.55	0.44 – 0.67***
Whether I can get what I want is in my own hands (agree vs. disagree)			-0.45	-0.55 – -0.34***			-0.41	-0.52 – -0.30***
Health LOC								
Internal health LOC (low vs. high)					-0.06	-0.09 – -0.04***	-0.03	-0.06 – -0.01*
Powerful others LOC (high vs. low)					0.04	0.02 – 0.07***	0.03	0.07 – 0.06***
Chance LOC (high vs. low)					0.17	0.14 – 0.19***	0.12	0.10 – 0.15***

Note. Higher scores indicate greater depression. CI = confidence interval; LOC = locus of control.  
 \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Table 4. Multiple Linear Regressions on Life Satisfaction

Variable	Model 1		Model 1 + Perceived Control		Model 1 + Health LOC		Model 1 + Perceived Control + Health LOC	
	B	95% CI	B	95% CI	B	95% CI	B	95% CI
Region (East vs. West)	0.24	0.20 - 0.28***	0.22	0.18 - 0.26***	0.27	0.23 - 0.31***	0.24	0.19 - 0.28***
Sex (women vs. men)	-0.001	-0.04 - 0.04	0.001	-0.04 - 0.04	0.007	-0.03 - 0.05	0.006	-0.04 - 0.05
Age	0.02	0.007 - 0.26***	0.02	0.01 - 0.03***	0.02	0.01 - 0.03***	0.02	0.01 - 0.03***
Perceived control								
Little I can do to change important things in my life (agree vs. disagree)			0.07	0.05 - 0.08***			0.06	0.04 - 0.08***
Little control over what happens to me (agree vs. disagree)			0.09	0.07 - 0.11***			0.08	0.06 - 0.11***
Whether I can get what I want is in my own hands (agree vs. disagree)			-0.08	-0.10 - -0.06***			-0.08	-0.10 - -0.06***
Health LOC								
Internal health LOC (low vs. high)					-0.005	-0.10 - -0.01*	0.001	-0.003 - 0.01
Powerful others LOC (high vs. low)					0.001	-0.01 - 0.01	-0.001	-0.01 - 0.01
Chance LOC (high vs. low)					0.01	0.008 - 0.02***	0.007	0.002 - 0.01**

Note. Higher scores indicate lower satisfaction. CI = confidence interval; LOC = locus of control.  
\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

scores, with higher scores in Central-Eastern versus Western European samples and in women compared with men. The perceived control and mastery items were all independently associated with depression, with depressive symptoms being more common in those who felt there was little they could do to change important things in their lives and who had little control over their futures and less depression among respondents who felt that they could get what they wanted through their own efforts. However, these associations did little to diminish the relation between region of Europe and elevated depression. Scores on the Powerful Others and Chance Locus of Control scales were positively associated with depression, whereas Internal Locus of Control was protective. Combining the Perceived Control and Health Locus of Control measures in the same analyses revealed persistent independent effects for perceived control and for all three Locus of Control scales. The regression coefficient for region decreased from 1.22 to 0.93 after taking these factors into account, indicating that perceived control and locus of control accounted for about 24% of the difference between Central-Eastern and Western European samples in depression. Thus, the association between control and depression did not explain most of the difference in depressive symptoms between respondents from Central-Eastern and Western Europe. The overall variance ( $r^2$ ) accounted for by these models increased from 2% for Model 1 to 10.4% for Model 4.

A somewhat similar pattern was evident for life satisfaction. Low life satisfaction was more common in Central-Eastern than Western samples and in older than younger respondents but did not differ between men and women (Table 4). Life satisfaction was poorer in participants who perceived little control over their life situation and among those with stronger beliefs in the influence of chance on their health and was lower in those with high internal health locus of control. However, the regional difference was not attenuated by including perceived control and health locus of control in the analysis (Table 4). In the final analysis, region, age, all three perceived control ratings, and chance locus of control were independently associated with life satisfaction. The overall variance accounted for increased from 2.3% for Model 1 to 6.6% for Model 4.

### Discussion

The hypothesis that the differences between Western and Central-Eastern European students in depression observed in 1989 to 1991 would be replicated in this new sample assessed in 1999 to 2001 was confirmed. The samples of university students were collected in the same fashion in the two surveys, and the

age range was the same. The age- and sex-adjusted proportion of participants from Central-Eastern Europe with BDI scores of 5 or more were 43.2% in the earlier study (Steptoe & Wardle, 2001a) and 43.4% in this investigation. The consistency is remarkable considering that different countries were involved in the two surveys. A change was seen in the proportion of students with elevated scores in Western Europe: 30.6% compared with 23.5% in the earlier study. This is consistent with results from a range of studies that have shown increased incidence of depression and other psychological problems in young people from Western Europe and the United States over recent years (Fombonne, 1998). However, the regional difference remained substantial and suggests that growing up in the postcommunist era has not led to reductions in the levels of depressive symptoms that were evident during the turbulent transition phase. The focus of these analyses was on regional differences in Europe rather than on the individual countries making up each regional cluster. Individual country comparisons are being analyzed as part of the larger IHBS and therefore are not presented here.

Differences were also seen in life satisfaction, with greater dissatisfaction with life among students in the East compared with the West. Life satisfaction is a general perception of life situation rather than a mood like depression, but the results suggest that the poor well-being of young people in Central-Eastern Europe extends beyond affective state.

The differences between Central-Eastern and Western Europe in self-rated health were less striking. Although the proportion reporting fair or poor health was greater in Central-Eastern Europe, average ratings did not differ (Table 2). Respondents in this study were from a healthy young adult population and may not have been old enough for consistent health effects to emerge. The proportion of respondents to rate themselves in the lowest two categories of the 5-point self-rated health scale was smaller than in many studies of adults (Bobak et al., 2000; Carlson, 2001). Studies of how people understand and interpret ratings of self-rated health indicate that a complex set of perceptions contribute, particularly in predominantly healthy samples (Manderbacka, 1998). It is possible that self-rated health has a different meaning in the student age group than in older people. Health awareness may be particularly limited in young men compared with women because the latter typically have more contact with health services because of issues related to screening and contraception.

The measures of perceived control reflect the complexity of the construct and that different elements may be independent of one another (Skinner, 1996). The two questions concerning constraints over life chances both indicated lower control in Central-Eastern than Western samples. However, the mastery item "whether

"I can get what I want in my own hands" was more frequently endorsed positively by Central-Eastern Europeans (Table 2). This item may reflect the belief that although external factors place limitations on life chances in Central-Eastern Europe, there are also opportunities for personal action. The respondents from Central-Eastern Europe in this survey may have found that an entrepreneurial outlook might help them achieve desired goals despite structural constraints. Many young people in Central-Eastern Europe have a pragmatic style, finding ways of working within or avoiding the societal factors that obstruct desired activities on a daily basis.

Health-related locus of control is moderately associated with general control beliefs but is also influenced by specific expectations concerning health (Wallston, 1992). Steptoe and Wardle (2001a) found no difference in internal control between Western and Central-Eastern European students but stronger beliefs in powerful others and in chance among Central-Eastern Europeans. In this study, Central-Eastern European students had greater beliefs in their own influence on health and greater beliefs in powerful others but no differences in chance. The pattern suggests a trend toward stronger beliefs in self-control over health than in the earlier survey. It may be that young adults in Central-Eastern Europe coming to maturity in the 1990s have acquired a sense of personal responsibility over health that was not present among individuals raised in the communist period. The new health insurance and national health systems being put in place in the 1990s in Central-Eastern European countries place more responsibility for health maintenance on the individual than did socialist medical systems.

The analyses relating control measures with well-being present an interesting pattern. Depression and low life satisfaction were both associated with low perceived control, low perceived mastery, and with low internal and high chance locus of control. These findings are in line with previous investigations (Bobak, Pikhart, Hertzman, Rose, & Marmot, 1998; Bobak et al., 2000; Carlson, 1998; Lachman & Weaver, 1998). However, measures of control did not substantially account for differences in well-being between Central-Eastern and Western Europeans. Only about 24% of the regional difference in depression scores and none of the life satisfaction difference was accounted for measures of perceived control and locus of control (Tables 3 and 4). Thus, the differences in well-being and perceptions of control across European regions appear to be somewhat separate phenomena in this study. Perceived control may be more important for explaining health variations within societies than across populations.

This study was carried out with university students, a privileged and educated category of young adults,

and data are not representative of the participating countries. The comparison made in this study might therefore be expected to present a more favorable pattern of results in both Western and Central-Eastern Europeans than in the population at large. Within each country, students were sampled from one to three universities and therefore are not representative of students in general. The rationale for studying students is detailed more fully elsewhere (Steptoe & Wardle, 1996). To make international comparisons, it is necessary to compare like with like. In the absence of representative sampling, the assessment of university students allows comparisons to be made between relatively healthy sectors of the young population in each country, all of whom have similar educational backgrounds. This eliminates variability due to ill health and education, both of which influence well-being (Lewis et al., 1998; Rahkonen, Arber, & Lahelma, 1995). Data were collected in classes, and this led to a higher participation and lower refusal rate than in most surveys of the general population. In addition, depression is a significant health problem among university students in several countries, and information concerning its patterning internationally is relevant to understanding the underlying processes (Allgöwer, 2000; Furr, Westefeld, McConnell, & Jenkins, 2001).

It was not possible to compare exactly the same countries in this survey and in an earlier comparison (Steptoe & Wardle, 2001a) of Central-Eastern and Western European students. Firstly, an earlier study (Steptoe & Wardle, 2001a) included one country (GDR) that no longer exists, whereas others (such as Austria and Switzerland) that participated in the EHBS were not included in the IHBS. However, the sample from Central-Eastern Europe was increased by the addition of Bulgaria, Romania, and Slovakia, and therefore, the representation was broader than in the previous comparison.

Another factor that needs to be considered is access to education. Access to higher education is generally wider in Western than Central-Eastern Europe. Although there are variations between countries, an average of 22.5% of young adults in the five Central-Eastern European countries included in the study participated in tertiary education (including university education) in 1997 compared with 50.6% in the five Western countries (World Bank, 2001). Because access is influenced by family and social background, the respondents from Central-Eastern Europe are likely to have come from a more select group than the Western Europeans. This would have had the effect of underestimating rather than overestimating differences between East and West because affluence is generally associated with greater well-being (Goodman, 1999).



The 1990s were a period of marked political and economic fluctuation within countries rather than an era of progressive change, and life satisfaction varied considerably. This study provides a snapshot of the situation in 1999 to 2001, and the cross-sectional design also prevents any causal conclusions from being drawn about the associations between perceived control variables and well-being. Nevertheless, the results indicate that poor subjective well-being continues to be a particular problem in Central-Eastern Europe. Although aspects of sense of control and perceptions of control over health may be involved, we were unable to identify clear mediating processes. The constructs of control proved complex, involving subtle differences in this population. In the light of the importance attached to control and mastery in understanding patterns of population health (Syme, 1989), this issue merits more detailed investigation in international comparative studies.

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