Psychological well-being and self-esteem in Slovak adolescents

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Intra-individual change over time in psychological well-being and self-esteem among early and middle adolescents in Slovakia

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Abstract

The main aim of this longitudinal study was to explore intra-individual change over time in psychological well-being and self-esteem from early to middle adolescence and to investigate the roles played by gender and parental education. The sample consisted of 519 Slovak adolescents (mean age: 11.48 (SD ± 0.58) at baseline and 14.88 (SD ± 0.45) at follow-up). Two dimensions (depression/anxiety, social dysfunction) of the General Health Questionnaire-12 (GHQ) and two components (negative and positive self-esteem) of the Rosenberg Self-Esteem Scale (RSES) were measured. The difference between proportions test was used to estimate differences in the prevalence rates of improved, deteriorated or stable in GHQ and RSES scores across boys and girls, and multiple logistic regression analysis was performed to analyze associations between changes over time in GHQ and RSES across gender and parental education. Both genders deteriorated statistically in depression/anxiety with a substantially higher change over time among girls compared to boys (ES = 0.63 vs 0.25, respectively) and improved statistically in overall self-esteem and in negative self-esteem with a small ES. Statistically, only girls deteriorated in overall psychological well-being. Both gender (girls) and educational level (lower) of the mother were the strongest factors associated with depression/anxiety at the age of 15, adjusted for the baseline (depression/anxiety) scores. Our findings challenge us to go deeper into relations of other potential socioeconomic factors associated with psychological status and to study pathways between psychological well-being and self-esteem from a domain-specific perspective in early to middle adolescence.

Keywords: adolescents, gender, change over time, parental education, psychological well-being, self-esteem

Introduction

Adolescence is a period that lasts approximately 10 years, usually described as occurring between the ages of 11 and 22 years. During this developmental stage, psychological well-being and self-esteem seems as important components of a person's psychological status. Psychological status not only affects mental functioning, but also physical health-related functioning and social functioning (Michael & Ben-Zur, 2007; Patton & Viner, 2007; Ybrant, 2008; Veselska et al., 2009). Moreover, follow-up studies have found worse psychological well-being and low self-esteem in adolescents as significant predictors of poor mental health in adulthood (Pelkonen et al., 2003; Heinonen et al., 2005; Pelkonen et al., 2008).

The roles of gender and parental education in psychological status have also been observed in adolescents. Most studies have shown that adolescent girls are at an increased risk for developing lower self-esteem (Bolognini et al., 1996), a higher level of sadness (Sweeting & West, 2003) and poorer psychosocial health in terms of self-esteem, depression, self-destruction and a lower sense of coherence (Räty et al., 2005). Boys are more likely to be at risk for psychotic disorders (Patton & Viner, 2007). Adolescents from families with lower parental education were less optimistic (Finkelstein et al., 2007) and reported poorer self-rated health (Goodman et al., 2007).

Knowledge about longitudinal change in psychological well-being and/or self-esteem during adolescence remains limited, since the majority of previous studies were cross-sectional (Allison et al., 2005; Biro et al., 2006; Emami et al., 2007). Results from longitudinal observational studies, to our knowledge, have been restricted to behaviour in 'clinical' settings (Tait et al., 2005). Furthermore, studies targeted on 'healthy' adolescents have evaluated changes in psychological status from childhood to early adolescence, from late adolescence to young adulthood, or have focused on a separate adolescence sub-stage or have not sampled the appropriate age range (Allto-Setala et al., 1996; Sweeting & West, 2003).

The main aim of this longitudinal school-based study is to explore change over time in psychological status from early (age of 11.5 years) to middle adolescence (age of 15 years) and to investigate the role of gender and parental education. Therefore, the following research questions were addressed:

1. Is there a difference between boys and girls in the magnitude and direction (improved, stable or deteriorated) of change in the domains of psychological well-being and self-esteem between the ages of 11.5 and 15 years old?
2. Are gender and parental education predictors of psychological well-being and self-esteem at the age of 15?

Methods

Study design and sample

The study sample consisted of 519 adolescents attending 8 elementary schools in Kosice (about 260 000 inhabitants, Slovakia). All schools were selected randomly. Passive parental consent was obtained for all participants. Data collection was carried out in September 1999 (baseline) and in April-June 2003 (follow-up). Response rates of 88.8% (baseline) and 63.4% (follow-up) were achieved, with non-response due mainly to the absence of students from school on the day of data collection (baseline) but also for other reasons, e.g. moving away with parents or changing school (follow-up). Respondents completed questionnaires in school classrooms in the absence of their teachers.

Measures

Demographic variables

Information on age was calculated using the birth date obtained by respondents. At baseline and at follow-up, the mean age of respondents was 11.48 (SD ± 0.58) and 14.88 (SD ± 0.45) years, respectively.

To obtain information on *parental education* respondents were asked to answer two questions: 'What is the highest completed education of your father (mother)?' The four categories used in the questionnaire were re-coded into 3 categories as follows: 'post-secondary vocational' (uncompleted/completed primary school, post-secondary vocational programmes), 'accredited post-secondary vocational' and 'university and postgraduate'.

Psychological well-being

The 12-item version of the General Health Questionnaire (GHQ-12) (Goldberg & Williams, 1988) was used as a measure of psychological well-being. In this study the GHQ-12 was used with two dimensions ('depression/anxiety' and 'social dysfunction') both consisting of 6 items according to Sarkova et al. (2006). Respondents indicated on a four-point scale how they have been feeling over the last four weeks. Likert-type scoring (0-1-2-3) was used, with scores ranging from 0 to 18 for both dimensions. Higher scores indicate worse psychological well-being, more depression/anxiety and/or more social dysfunction.

Self-esteem

The Rosenberg Self-Esteem Scale (RSE) (Rosenberg, 1965) was used as a measure of self-esteem. In this study the RSE was used with two components ('negative self-esteem' and 'positive self-esteem') both consisting of 5 items according to Sarkova et al. and Halama (Halama, 2008). The items were scored using a four-point scale (1='strongly agree', 2='agree', 3='disagree', 4='strongly disagree'). Sum scores range from 5 to 20 for both components, with higher scores indicating higher self-esteem.

Internal consistency of the GHQ-12 and RSE

Since Cronbach's alpha is dependent on the number of items in the scale and on the mean inter-item correlation (MIIC), one can achieve a highly reliable estimate either by having many items or by having highly inter-correlated items (or a combination of the two) (Cortina, 1993; Clark & Watson, 1995). The degree of inter-item correlation is a straightforward indicator of internal consistency, while the number of items is entirely irrelevant. According to the guidelines by Briggs and Cheek, the MIIC should fall within an optimal range between 0.20 and 0.50, but should not be less than 0.15 (Clark & Watson, 1995; Taylor et al., 2003). Therefore, taking the upper value of the range, an MIIC ≥ 0.25 seems reasonable.

 The internal consistency of the scales in the current study was sufficient to good. Cronbach's alpha ranged from 0.70 to 0.79 and mean inter-item correlation (MIIC) ranged from 0.28 to 0.39. The alphas for the 'social dysfunction' and 'negative self-esteem' sub-scales were 0.70, which are sufficient, given the number of items and corresponding MIIC (0.34 and 0.29). Cronbach's alphas for the 'depression/anxiety' and 'positive self-esteem' sub-scales were ≥ .70, with MIIC of .39 and .32, respectively, thus indicating good reliability. The GHQ-12 and RSE total scales yielded good Cronbach's alphas due to the number of items.

Statistics

The chi-square test (Fisher's exact test when appropriate) was used to compare boys and girls on baseline characteristics. Continuous variables were distributed normally in the current study (Shapiro Wilk, p > 0.05) and were therefore compared with the Student t-test; they are presented as means ± SD.A post hoc Bonferroni correction was applied to all tests to adjust for multiple comparisons with p < 0.004 (p < 0.05/12 comparisons) indicating statistical significance. The difference between proportions test (Newcombe & Altman, 2005) was used for estimating differences in prevalence rates of improved, deteriorated or stable in psychological status across boys and girls and are presented as numbers and percentages.

Multiple logistic regression analysis was performed to analyze associations between changes detected between 11.5 and 15 years in the domains of psychological well-being (improved vs. deteriorated-stable) and gender (boys), parents' education (highest) and overall self-esteem at the age of 11.5 years (Model 1). Furthermore, associations between changes in overall self-esteem (improved vs. deteriorated-stable) and gender (boys), parents' education (highest) and the domains of psychological well-being at the age of 11.5 years were investigated (Model 2). In order to avoid contamination bias, domains of negative and of positive self-esteem were not used simultaneously in predicting improvement-deterioration in domains of psychological well-being.

All statistical analyses were performed using SPSS version 15.0 software (SPSS, 1997).

Effect sizes

We calculated changes in psychological well-being and self-esteem by subtracting individual scores assessed at the age of 11.5 from the scores assessed at the age of 15 only when the change over time was significant. A change in scores showing a minus sign indicated improvement in depression/anxiety and social dysfunction and, in contrast, deterioration in negative and positive self-esteem.

For each outcome measure, we calculated the magnitude of change between the age of 11.5 and 15 years of age using the method of the standardised response mean (SRM), which was calculated as the individual change in score divided by the SD of change in the cohort boys and of girls, respectively (Wyrwich & Wolinsky, 2000; Crosby et al., 2003). Effect sizes were calculated only after rejecting the null-hypothesis that a difference occurred due to random variation. To avoid overestimation of the effect using Cohen's thresholds for effect size interpretation, intra-individual change assessed with an SRM should be adjusted by $SRM * \sqrt{2} * \sqrt{(1-r)}$, where r is the correlation coefficient between baseline and follow-up (Middel & van Sonderen, 2002). Cohen's thresholds for effect size (ES) were used for classifying subjects as improved, deteriorated or stable over time: an ES between -.20 < .20 indicates a 'trivial' difference; an ES between ≥ .20 to < .50 a 'small' improvement; an ES between ≥ -.20 to < -.50 a small deterioration; an ES of ≥ .50 to < .80 a moderate improvement; and an ES ≥ .80 a substantial improvement (with similar extents of deterioration for negative ES values) (Cohen, 1988).

Therefore, subjects were classified as 'improved' in the domains of the GHQ-12 if their change score indicated a decline and were classified as 'deteriorated' if their change score increased. The negative and positive ES of changes in self-esteem were labelled in the opposite direction.

Results

Selection bias

There were no initial differences at the age of 11.5 years between the participants and study drop outs by gender (51.1% vs. 48.0%; 95% CI: -5.9% to 12.0%) and by lower educational levels of their parents. However, subjects whose mother or father had a university education were underrepresented in the follow-up compared to the drop-outs (education of mother: 33.6 % vs. 18.0%; 95% CI: 5.4% to 25.9%) and (education of father: 44.3% vs. 21.4%; 95% CI: 2.0% to 34.0%). Furthermore, there were no significant differences between drop-outs and participants in the domains of psychological well-being and in the domains of self-esteem (p > 0.05).

Gender differences at 11.5 years

Table 5.1 shows the sociodemographic characteristics (age, parental education), means and standard deviations of the GHQ-12 and RSES with its domains stratified by gender. At baseline, boys showed a higher level of positive self-esteem but the size of this difference was small (Effect Size = 0.21).

Table 5.1 Sociodemographic characteristics and psychological status at the baseline, by gender

	Boys	Girls	P value
	N=264	N=255	
Age (years)	11.49 ± 0.61	11.46 ± 0.57	.52[1]
Psychological status at the age of 11.5	N=228	N=224	
Psychological well-being	8.48 ± 4.38	8.91 ± 5.03	.33[1]
Depression/anxiety	3.39 ± 3.27	3.87 ± 3.55	.13
Social dysfunction	5.15 ± 2.15	5.04 ± 2.36	.62
Self-esteem	27.81 ± 3.78	27.20 ± 4.19	.10
Negative self-esteem	12.77 ± 2.72	12.65 ± 2.52	.62
Positive self-esteem	15.02 ± 2.17	14.54 ± 2.54	.03[1] (ES[2]=0.21)
Educational level of the mother	N=158	N=158	
Post-secondary vocational	23 (14.6)	29 (18.4)	.63[3]
Accredited post-secondary vocational	96 (60.8)	94 (59.5)	
University and postgraduate	39 (24.7)	35 (22.2)	
Educational level of the father	N=153	N=154	
Post-secondary vocational	30 (19.6)	37 (24,0)	.35[3]
Accredited post-secondary vocational	81 (52.9)	69 (44.8)	
University and postgraduate	42 (27.5)	48 (31.2)	

[1] Student's T-test; [2] Effect size for independent groups; [3] Chi-square test

Changes over time in psychological status among boys and girls and individual effects sizes

Table 5.2 shows change over time in psychological status from 11.5 to 15 years for participants who completed both assessments. The table also shows pre- to post- effect sizes, representing the magnitude of change over time in psychological well-being and self-esteem.

Both gender significantly and relevantly deteriorated on the depression/anxiety dimension of the GHQ-12. However, the amount of change over time was substantially greater among girls compared to the change between 11.5 and 15 years among boys (ES = 0.63 and 0.25 respectively). Only girls significantly and relevantly deteriorated during these three and half years in overall psychological well-being (ES = 0.48). Both gender groups significantly and relevantly improved in overall self-esteem, with small effect sizes ranging from 0.30 among boys and 0.22 among girls, and in the negative component of the RSE, accompanied with small effect sizes ranging from 0.34 among boys and 0.22 among girls.

Boys and girls did not change in the GHQ-12 dimension of social dysfunction and in the positive component of the RSE, and only boys did not change in overall psychological well-being in the period between 11.5 and 15 years.

Table 5.2 Changes over time in psychological well-being and self-esteem between the age of 11.5 and 15 years, stratified by gender

	11.5 years		15 years		P value	Effect size	95% CI	
	mean	(SD)	mean	(SD)		(ES)	for ES	
Boys		n=140						
Psychological well-being	8.25	(4.14)	9.14	(4.67)	ns			
Depression/anxiety	3.14	(3.01)	4.56	(4.02)	.0001[1]	0.25	0.01	0.46
Social dysfunction	5.16	(1.95)	5.23	(2.16)	ns			
Self-esteem	28.14	(3.93)	32.32	(4.02)	.0001[1]	0.30	0.06	0.54
Negative self-esteem	13.17	(2.67)	14.08	(2.70)	.0001[1]	0.34	0.10	0.57
Positive self-esteem	14.88	(2.14)	15.21	(2.37)	ns			
Girls		n=150						
Psychological well-being	8.22	(4.55)	10.60	(5.40)	.0001[1]	0.48	0.24	0.71
Depression/anxiety	3.53	(3.28)	5.82	(3.93)	.0001[1]	0.63	0.40	0.86
Social dysfunction	4.73	(2.19)	4.80	(2.35)	ns			
Self-esteem	27.73	(4.01)	31.65	(4.34)	.0002[1]	0.22	0.04	0.45
Negative self-esteem	12.89	(2.60)	15.45	(2.76)	.0003[1]	0.22	0.02	0.44
Positive self-esteem	14.83	(2.26)	15.22	(2.32)	ns			

[1] Student's T-test for paired observations

Although the mean scores on depression/anxiety, overall self-esteem and negative self-esteem showed significant and relevant differences over time for both boys and girls, the question was raised whether the proportions of those who improved, deteriorated or remained stable in these variables differed across gender.

The proportion of girls who deteriorated in the depression/anxiety domain of the GHQ-12 between the age of 11.5 and 15 was significantly larger compared to the proportion of boys who deteriorated (66% vs. 51%, respectively; 95% CI: -25.9% to -3.4%; p = .04). Furthermore, the proportion of boys who improved in depression/anxiety was significantly larger compared with the proportion of girls who improved (35% vs. 23%, respectively; 95% CI: 1.3% to 22%; p = .04). The proportion of boys and girls who remained stable in their perceived overall self-esteem significantly differed (16% vs. 7%, respectively; 95% CI: 1.3% to 16.2%; p = .04). There were no significant differences in the proportions of improved, stable or deteriorated boys and girls with regard to the negative self-esteem domain of the RSE (Table 5.3).

Table 5.3 Differences between proportions of boys and girls, who improved, deteriorated or remained stable in psychological well-being and self-esteem

Direction of change between 11.5 – 15	Boys		Girls		Total		P value	95% CI	
	n	(%)	n	(%)	n	(%)			
Depression/anxiety									
improved	48	(34.5)	34	(22.8)	82	(28.5)	.04[1]	1.3	22.1[2]
stable	20	(14.4)	17	(11.4)	37	(12.8)		3.4	26.0
deteriorated	71	(51.1)	98	(65.8)	169	(58.7)			
Self-esteem									
improved	77	(56.6)	83	(56.1)	160	(56.3)	.04[1]		
stable	22	(16.2)	11	(7.4)	33	(11.6)		1.25	16.2
deteriorated	37	(27.2)	54	(36.5)	91	(32.0)			
Negative self-esteem									
improved	81	(57.9)	78	(52.0)	159	(54.8)	ns.		
stable	20	(14.3)	18	(12.0)	38	(13.1)			
deteriorated	39	(27.9)	54	(36.0)	93	(32.1)			

[1] Chi-square test; [2] difference of proportions test

Factors associated with improvement and deterioration in psychological status

Table 5.4 presents the results of multivariable logistic regression analyses. The 'deterioration-stable' subgroup was used as a reference group. The table shows odds Ratios for improved-deteriorated psychological well-being and self esteem at the age of 15 years according to gender, parents' education and baseline outcomes at the age of 11.5 years.

Model 1: Girls are more likely to deteriorate in overall psychological well-being, and this association was mainly due to the depression/anxiety domain [OR = 1.72; p= 0.03; 95% CI: 1.32 to 2.80] and [OR = 2.12; p= .004; 95% CI: 2.02 to 2.80], respectively. A low educational level of the mother and low overall self-esteem at the age of 11.5 years of age were associated with a deterioration in depression/anxiety [OR = .46; p= .04; 95% CI: .21 to 1.01] and [OR = 1.89; p= .01; 95% CI: 1.16 to 1.92], respectively. No factors were found for a change in social dysfunction.

Model 2: A high level of depression/anxiety at the age of 11.5 years predicted a decreased level of overall self-esteem and negative self-esteem at the age of 15 [OR = 1.63; p= .005; 95% CI: 1.59 to 1.84] and [OR = 1.23; p= .03; 95% CI: 1.19 to 1.34], respectively. No factors were found for a change in positive self-esteem.

Table 5.4 Multivariable logistic regression analyses. Odds Ratios for improved-deteriorated psychological well-being and self esteem at the age of 15 according to gender and parents' education

Variable (in order of entry)	Regression coefficient B	Standard Error	Wald	p-value	OR	95 % CI lower	upper
Model 1: psychological well-being							
Improvement-deterioration in Psychological well-being							
Male gender[1]	0.53	0.25	4.35	**0.03**	1.72	1.32	2.80
Highest education father	0.11	0.34	0.10	0.75	1.11	0.57	2.15
Highest education mother	-0.09	0.51	0.03	0.86	0.91	0.34	2.46
Self-esteem at the age of 11.5 yrs.	0.06	0.03	2.71	0.10	1.06	0.99	1.13
Improvement-deterioration in Depression/anxiety domain							
Male gender	0.75	0.26	8.46	**0.004**	2.12	2.02	2.80
Highest education father	-0.04	0.44	0.01	0.93	0.96	0.41	2.29
Highest education mother	-0.77	0.40	3.79	**0.04**	0.46	0.21	1.01
Self-esteem at the age of 11.5 yrs.	0.09	0.03	5.86	**0.01**	1.89	1.16	1.92
Model 2: self-esteem							
Improvement-deterioration in Positive Self-esteem domain							
Male gender	-0.13	0.26	0.02	0.96	0.99	0.60	1.63
Highest education father	0.30	0.22	1.81	0.18	1.35	0.87	2.09
Highest education mother	-0.44	0.26	2.86.	0.09	0.65	0.39	1.07
Depression/anxiety at the age of 11.5 yrs.	0.15	0.05	7.71	**0.005**	1.63	1.59	1.84
Social dysfunction at the age of 11.5 yrs.	0.54	0.07	0.65	0.42	1.05	0.92	1.21
Improvement-deterioration in Negative self-esteem domain							
Male gender	-0.22	0.25	0.76	0.38	0.81	0.49	1.31.
Highest education father	0.11	0.22	0.24	0.62	1.11	0.73	1.70
Highest education mother	-0.36	0.25	2.10	0.14	0.70	0.43	1.14
Depression/anxiety at the age of 11.5 yrs.	0.11	0.04	4.67	**0.03**	1.23	1.19	1.34
Social dysfunction at the age of 11.5 yrs.	0.04	0.06	0.47	0.49	1.05	0.92	1.19

[1] Boys are used as reference group

As none of the factors in the analysis were associated with improvement or deterioration in both social dysfunction and positive self esteem, these results are not shown

Discussion

The aim of this study was to describe changes in psychological well-being and self-esteem in adolescence followed longitudinally from age 11.5 to 15 years. At baseline, there was significant difference between 11.5 year-old boys and girls in positive self-esteem in favour of boys. Comparing longitudinal data from early to middle adolescence, we found intra-individual deterioration in psychological well-being and improvement in self-esteem among boys and girls with different effect sizes and differences in proportions of boys and girls who improved, deteriorated or remained stable.

Gender differences and changes over time in psychological well-being

Both genders deteriorated significantly and relevantly in the depression/anxiety dimension. However, while this change over time indicates a small deterioration in boys, it means a moderate deterioration in girls. This effect-size gender difference in the depression/anxiety domain could be explained also by the finding that only girls deteriorated significantly and relevantly in overall psychological well-being with small effect size. From a proportional perspective, we found larger significant proportions of girls who deteriorated in the depression/anxiety dimension and of boys who improved in the depression/anxiety dimension. Our findings that no significant gender differences in psychological well-being at the age of 11.5 years are in line with previous research (Sweeting & West, 2003). We found larger changes over time in terms of deterioration in the depression/anxiety domain in girls compared to boys, supporting the evidence of increased gender difference with increasing age. Similar trends were noted by Sweeting & West (2003) and Tait et al. (2003). Our findings of proportionally larger changes over time among girls, who deteriorated, and boys, who improved on depression/anxiety domain, raise questions regarding what is behind these changes and what factors trigger them. From a developmental perspective, biological puberty in girls significantly precedes, rather than corresponding with, the age of successful functioning as an adult. This emerging mismatch creates, together with other socio-cultural influences, fundamental pressures on contemporary adolescents and on how they live in society (Gluckman & Hanson, 2006). Finally, from a mental health perspective, early to middle adolescence is recognised as the time of emergence of an excess of internalising disorders in girls (depression/anxiety), in comparison with the childhood, where boys predominated as a result of their excess within the diagnostic categories of behavioural and attention disorders (Patton & Viner, 2007).

Gender differences and changes over time in self-esteem

Adolescence is seen as important period for self-esteem formation. Both genders improved significantly and relevantly in overall self-esteem and in negative self-esteem, with a small magnitude among boys as well as girls. From a proportional perspective, we found significant larger proportion of boys who remained stable in overall self-esteem in comparison to girls. Our findings of significant higher level of positive self-esteem, but with a small magnitude, among boys in age of 11.5 years, are in line with the results of most other research in this field (Bolognini et al., 1996; Baldwin & Hoffmann, 2002; Halama, 2008). Our findings of small changes over time, in terms of improvement, on overall self-esteem and on negative self-esteem in both genders can be compared with studies suggesting that self-esteem is a dynamic construct. However, these studies did not give clear and consistent results and were mostly focused on mean-level changes. Some of them conclude that self-esteem increases (Birndorf et al., 2005); while others report that it declines (Brown et al., 1998) or fluctuates (Baldwin & Hoffmann, 2002) during the adolescent years. Our findings of proportionally larger change over time in overall self-esteem among boys who remained stable in comparison to girls could be considered more supportive to those who indicate that self-esteem remains fairly static (Bolognini et al., 1996) during this life period.

Factors associated with changes over time in psychological status

Our findings in line with previous studies showed that gender was associated only with psychological well-being (Allison et al., 2005). Girls were more likely to deteriorate in overall psychological well-being, and this association was mainly due to the depression/anxiety domain. However, some studies (Baldwin & Hoffmann, 2002; Tait et al., 2003) confirmed that there was no significant impact of gender on changes over time in self-esteem.

Our results revealed that a lower educational level of the mother can play a role in relation to the depression/anxiety domain and does not play role in relation to self-esteem. The contribution of parents on depressive mood of adolescents was confirmed by Michael, Ben-Zur (2007), however not as an educational factor but as relational factor. We can presume that mothers with higher educational level might better understand developmental changes and be more sensitive when some problems or symptoms occur in their adolescent children. Studies conducted on the relationship of self-esteem to parental education found no significant affect of parental education on self-esteem in adolescents (Birndorf et al., 2005) or on global self-worth in girls (Biro et al., 2006). Moreover, another study concluded that there are other socioeconomic factors – like positive family communication (Birndorf et al., 2005), parental attitudes and behaviours

(Pervin, 1993) factors associated with school environment (Birndorf et al., 2005), or race in girls (Brown et al., 1998; Birndorf et al., 2005; Biro et al., 2006)– which contribute significantly to the self-esteem.

We also found that the depression/anxiety domain at the age of 15 was associated with low overall self-esteem at the age of 11.5 years (model 1), and decreased levels of overall and negative self-esteem at the age of 15 years were associated with a high level of the depression/anxiety domain at the age of 11.5 years (model 2). Poor overall self-esteem was a independent predictor of psychological well-being in an Australian sample (Tait et al., 2003), and symptoms of depression and low self-esteem in middle adolescence were identified as risk factors for subsequent depression only in Finnish females (Pelkonen et al., 2008). Thus, answering the question of whether low self-esteem is secondary to the depression/anxiety domain or vice versa remains open.

Strengths and limitations

The strength of our study is its focus on change over time in psychological status by gender and the use of intra-individual changes in psychological status across adolescents. Moreover, the measure of psychological well-being used in our research brings findings on an age group in which the GHQ-12 is not so frequently used. Next strength is the examination of the possibility of age by gender and by parental education interactions in psychological status. Limitations are the underrepresentation of adolescents with higher parental education in the follow-up sample and the unfamiliarity of adolescents with their parent's socioeconomic status. However, despite this underrepresentation of subjects with parents having university education, drop-outs did not differ in psychological well-being and self esteem compared to those who participated at baseline.

Conclusion

The emergence or increase of an excess of poorer psychological status in adult females is rooted in adolescence. The results of our study challenge us to continue in this research and go deeper into relations of other potential socioeconomic factors (parental occupation, social support) associated with psychological well-being and self-esteem or uncover pathways between psychological well-being and self-esteem from a domain-specific perspective in early to middle adolescence. Understanding these patterns can increase the potential for work in the field of mental health promotion as well as health risk behaviour prevention in adolescents.

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