Self-Esteem in Adolescents: A Two-Wave Time-Lag Study across the Iron Curtain

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Abstract

Background: The aim was to conduct a time-lag study on how democracy and dictatorship may influence self-esteem in adolescents. **Methods:** Adolescents (aged 15-16) from Sweden and Bulgaria were compared using the 'I Think I Am' questionnaire measuring self-esteem 1989-1991 (T1) when Bulgaria was a communistic dictatorship and Sweden a parliamentary democracy and 2015-16 (T2) when both countries were democracies. **Results:** The lower global self-esteem in Bulgaria compared to Sweden at T1 equalised at T2, which mainly was related to the sub-scales 'Relations with others' and 'Psychological well-being'. Both global self-esteem and 'Relations with others' had a significant interaction between time and country, indicating that the country differences in self-esteem were modified by time, i.e. our proxy for governance. The differences that existed between the sexes in Sweden at T1 equalised at T2. The girls in both countries had lower results in the sub-scale 'Psychological well-being' than the boys at both time-points. **Conclusion:** The prior differences in self-esteem between a democracy and a communistic dictatorship equalised over a generation of democracy. We suggest that the amelioration self-esteem in the former dictatorship is due to decrease of social stressors. This lower self-esteem related to others could be seen as 'Dictatorship damage'.

Background

Different forms of governance, i.e. dictatorship or democracy, form different compatriots [1–4] and how dictatorships impact the well-being among its citizens has been discussed since the time of the ancient Greeks [5]. Despite this, few studies have been conducted on the psychological impact of governance. This scarcity of studies is at least partially related to the difficulties of getting permission to examine an autocratic state as dictators tend to fear criticism and opposition [4]. A wave of democratic changes swept over Europe in the early 1990s after the fall of the Berlin wall in 1989 and the collapse of the Soviet Union in 1991. These changes cleared a path for the formation or restoration, in some cases, of liberal democratic institutions in Europe, as well as elsewhere in the world [6].

Our previous study [7] compared levels of self-esteem in adolescents in Bulgaria and Sweden, two countries on either side of the Berlin Wall before it fell in 1989; the study was cross-sectional in design. In our previous study, we found that the adolescents in Bulgaria had a lower global self-esteem related to relations to others than their Swedish counterparts, which was suggested as being related to the higher presence of dictatorship-related macro-environmental stressors in the communistic dictatorship Bulgaria and to a more equal distribution between the sexes in the Bulgarians [7].

Self-esteem is often defined as a personality characteristic that mirrors the level of global regard that one has for oneself as a person [8, 9]. It is widely recognised that self-esteem is strongly and closely related to psychopathology in adolescents where low levels of self-esteem are correlated with a higher degree of depression, anxiety and eating- and disruptive disorders [9–11]. From an intercultural perspective, global self-esteem has also been shown to have good correlation with neuroticism (negatively) and extraversion (positively) in a cross-cultural study that included participants from 53 different countries [12].

Females often have lower global self-esteem than males, particularly in late adolescence [9, 11]. It has been hypothesized that the differences in body maturation during puberty between the sexes may lead to lower self-esteem in the girls than in the boys, who generally want to become stronger, gain muscle mass and girls, who generally want to become thinner, gain body fat [9]. It has also been hypothesised that gender roles and gender stereotypes in peer and teacher interactions, a strong emphasis on female looks and appearance, physical violence against females and differences in participation in sport activities between sexes in adolescence may play a role in these gender differences. However, to our best knowledge, no studies have been conducted to elucidate whether democracy and dictatorship influence self-esteem in male and female adolescents representative for the respective form of society.

We decided on the following aims:

Our first aim was to analyse the difference in self-esteem in adolescents (girls and boys separately) in Sweden and Bulgaria between time-point 1 (1988–1991) and time-point 2 (2015–2016).

Our second aim was to analyse the difference in self-esteem (girls and boys separately) between Sweden and Bulgaria at time-point 1 and time-point 2.

Our third aim was to analyse potential effect modifications (girls and boys separately), that is, whether the change over time was significantly different between the two countries, or similar, and whether the difference between the two countries significantly changed over time. We also aimed to analyse interactions between sex and time in both countries.

Methods

Study population

One country on either side of the Iron curtain, Sweden and Bulgaria, was included in the present time-lag study. Data were collected first during the period 1988–1991 (time-point 1) and again in 2015–2016 (time-point 2). At the time of the first data collection; i.e. in 1989/90 Bulgaria (the People's Republic of Bulgaria) was a communistic dictatorship, and Sweden was a parliamentary constitutional monarchy. The democracy score in 1989, i.e. the year when the Berlin wall fell, was 10 (Full Democracy) in Sweden and – 7 (Autocracy) in Bulgaria according to the Polity IV index (range: -10 to + 10) [13], which is currently one of the most widely used indexes measuring democracy/autocracy [14]. The democracy score in 2016 was still 10 (Full Democracy) in Sweden but increased from – 7 to 9 (Democracy) in Bulgaria with the major change from – 7 to 8 between 1989 and 1990 after the fall of communism and the restoration of democratic institutions.

Despite the differences in governance over time between the two countries, they are also similar in several other aspects, i.e. both countries are located in Europe, have a Christian past and a language that is almost exclusively spoken within the country and are relatively secular. In addition, both countries joined the European Union between the waves of measurement. The primary school completion rate in 1990

was 99.5% in Bulgaria and 96.5% in Sweden. Similar percentage completion rates for 2016 were observed in both countries [15]. The populations of Bulgaria and Sweden in 1990 were also comparable; 8.821 and 8.559 million inhabitants respectively [16] with the data from 2016 being more pronounced with Sweden having 9.923 and Bulgaria 7.128 million inhabitants, with the decrease in population being a common trend in the ex-communistic states [15].

The educational systems in relation to civic education had clear similarities as the ICCS report in 2009 specifies that Sweden and Bulgaria both incorporate Civics and Citizen education cross-curricularly and integrated into several subjects at lower secondary school, i.e. prior to our data collection in relation to age. Both countries also had very similar approaches to civic and citizenship education teaching, teacher training, student assessment, and school evaluation [17]. During the time of the first data collection, both countries were also known for their industrial high-technological competence with Bulgaria producing a large percentage of the electronics in the Soviet-bloc and Sweden having several high-technological companies, such as Ericsson and ABB, that were considered leaders in their respective fields.

The present study was based on data collected from questionnaires and filled in by the pupils in the classrooms. The data collection has both times been done under the supervision of the third author, a specialist in child and adolescent psychiatry, a licensed physician in both Bulgaria and Sweden, and a co-author of the present study.

The study population in the first time-point of data-collection consisted of 203 adolescents in total, 111 from Sweden and 92 from Bulgaria. Data were collected in the autumn terms 1988 and 1989 in Bulgaria, before the fall of the Berlin Wall on November 9th 1989, and in Sweden during the spring terms of 1989 and 1991.

The study population in the second wave consisted of 632 adolescents in total, 165 from Sweden and 467 from Bulgaria. Data were collected in the autumn term 2015 in Bulgaria and in Sweden during the spring term 2016. The questionnaires in Sweden were collected in the 9th grade when the adolescents were aged 15 to 16 years. In Bulgaria, the data were collected in the 10th grade. The Swedish 9th grade was comparable to the Bulgarian 10th grade in terms of age as the Bulgarian students started school one year earlier than their Swedish counterparts.

The Bulgarian schools in the first data-collection represented a broad sample of schools in Sofia organised within the same Practical Technical Centre, an educational centre for all upper secondary school students in Sofia where the students were taught additional technical skills and handicrafts. According to Professor Atchkova from the Children and Adolescent Psychiatric Clinic, Medical Academy, Sofia, the study population was deemed representative in sociodemographic terms for the Bulgarian society at the time. The two Swedish schools were situated in Västerås, a middle-sized city with a population of around 120,000 individuals in 1990. The schools were chosen from different areas of the city in order to obtain a representative study sample from all social groups, verified through a prior study on socioeconomic status of the boroughs of Västerås [18]. The second data-collection was constructed to be as similar as possible to the first data collection. The locations were therefore schools in Västerås,

whereof one was the same and the two others had the same SES as at T1. The Practical Technical Centre in Sofia no longer existed when the second data collection was being done so the data was therefore collected in six different upper secondary schools to follow the original data collection as close as possible. By choosing participants from cities, rather than rural areas, we included a population that represents the largest part of the world's population as more than 60% of the world's population live in urban areas [19].

The questionnaires were collected in an unidentified manner. Exclusion criterion§ for this study was inability to read and write the national language. In both countries, no student was excluded for failing to meet the language criteria.

The Swedish participation rate at the first data-collection varied slightly between classes (range 63–79%) and of 155 Swedish students, 111 participated (72%). Reasons for non-response were refusal from the parents to participate, illness, absenteeism or fulfilling some of the exclusion criteria mentioned above. In Bulgaria, the non-response rate was unknown at the first data-collection, but no flu epidemic was reported during the data collection. Non-response was therefore deemed to be low in Bulgaria. At T2 the participation rate for the Swedish adolescents was 70%, which is close to the 72% at T1. In Bulgaria there was a participation rate of 77% at T2.

The psychometric questionnaire 'I Think I Am'

The 'I Think I Am' scale (ITIA) is a self-reporting questionnaire measuring self-esteem with the original name in Swedish "Jag Tycker Jag Är". The ITIA was developed by the Swedish psychologist Pirjo Birgerstam in 1981 and is validated for the age group 9–18 [11]. We used the MH-version of the scale, which was developed for the age group in our study population [20]. The ITIA global scale is a four-level, 72-item, Likert questionnaire (score for each item – 2 to + 2, without zero) divided into five sub-scales that includes items that previously have been shown to be central for self-esteem: "Physical characteristics", "Talents and skills", "Psychological well-being", "Relations with the family", and "Relations with others". The questionnaire consists of both positive (i.e. "I have often good ideas") and negative (i.e. "I don't like my body") items randomly ordered in order to avoid negative item bias in intercultural studies [12]. A high score reflects a high self-esteem and a low score reflects a low self-esteem.

The reliability of the global scale has been analysed with Cronbach's alpha with $\alpha = 0.91$ to 0.93 on the ITIA-total [11]. According to Birgerstam, the sub-scales and individual items in the scale also have good reliability. Test-retests results show good reliability over time [11].

The validity of the scale is high and was initially analysed through correlation tests between psychological interviews with children where the interviewer was blinded to the result of the questionnaire. A high correlation was also found between interviews with the schoolteachers and the ITIA-scale [21]. A low score on the ITIA scale has been shown to be significantly correlated with a range of negative psychological traits as well as with psychiatric and somatic disabilities [11]. Furthermore, the validity of the ITIA-scale has been evaluated with respect to correlation to other psychometric scales such

as Becks Depression Inventory, Beck's Anxiety Inventory, and Beck's Youth Inventories [11] The ITIA-scale has previously been used to investigate differences in self-esteem between cultures, i.e. between different immigrant groups in Sweden (Finnish and Yugoslavian) and ethnic Swedes [21] as well as in a study from Mexico City where children from ordinary schools were compared with children from orphanages and those living on the streets [22]. The questionnaire is the second most used scale in terms of number of clinics using it in child and adolescent psychiatry assessments in Stockholm County Council (Greater Stockholm area)[23].

The process of translation of the questionnaire has previously been published [7].

No remuneration was given to any participant.

Statistical analysis

Data were clustered as the data-collection took place in classes. To account for this clustering we used generalised estimating equations (GEE) in all regression models.

All analyses were repeated for the total score (ITIA-scale global) and for the five sub-scales. The number of individuals and sex distribution are presented as numbers and percentages and the scores are presented as means and SDs, stratified by country and time (Table 1).

To examine our primary aims, self-esteem in adolescents and differences between Sweden and Bulgaria and differences over time, we used linear regression models; the first model was univariate and the second was adjusted for sex (Table 2 and Table 3).

Since we were interested in both differences between countries and over time, we also examined interactions. We did this by adding an interaction term between time and country, i.e. whether the possible country differences in self-esteem differed by time, or similar, whether the possible time differences in self-esteem differed by country. We examined this for all individuals as well as stratified for sex (Fig. 1). We also tested interactions between sex and time in both countries separately.

If a participant had less than 50% of the data missing from ITIA global or any of the sub-scales the missing items were imputed with the mean of the non-missing items of that scale, if more than 50% of the items were missing, the person's score for that scale was excluded from the study. We also examined whether influential observations and outliers affected our results.

We used a significance level of $p < 0.05$.

STATA version 14 (Stata Corp LP) was used for all statistical analyses.

Time-Lag study

In order to analyse the possible influence of governance on self-esteem in adolescents, we decided to use a time-lag study as time-lag studies separate age and cohort effects and are best at examining generational changes as historical events and cultural trends, which are found to have the greatest

impact on the attitudes of adolescents [24]. We used the same questionnaire, in the same locations, with the same age-group at two times. In this study design, Sweden, being a stable and unchanged democracy during two generations, will function as a control to Bulgaria where two generations have had opposed forms of governance. Thus if we see differences in the Bulgarians in scales where the scores of the Swedish adolescents are unchanged, we can conclude that those changes are related to the country at the specific time and therefore possibly, as a proxy, to the form of governance. The time between the measurements are approximately one generation in order to both avoid the tumultuous after-effects of a revolution [25].

Results

Table 1 shows descriptive data on the participants with the 'I Think I Am' global self-esteem scale and its subscales divided on country, time period and sex. In the material from time-point 1 (T1) (1988–1991) 111 adolescents (65 boys and 46 girls) from Sweden and 92 adolescents (44 boys and 48 girls) from Bulgaria were included in the study. In the material from time-point 2 (T2) (2015–2016) a total of 165 adolescents (96 boys and 67 girls) from Sweden and 467 adolescents (328 boys and 132 girls) from Bulgaria were included in the study.

At T1 none of the participants had more than 50% missing data but 18 Swedes (11 boys and 7 girls) and 28 Bulgarians (18 boys and 10 girls) had to be imputed. At T2 six Swedish participants had the ITIA-global set to missing because of more than 50% missing items and 73 had to be imputed (40 boys, 32 girls and 1 with missing on sex) in Sweden. In Bulgaria at T2, three participants had the ITIA-global set to missing and 169 had to be imputed (127 boys, 36 girls and 6 with missing on sex). One male adolescent was excluded in the 1988–1991 and one from the 2015–2016 material, both Swedish, due to being extreme outliers that were deemed to influence the results too much.

Table 2 shows the estimated mean differences in the ITIA global scale and its subscales between T2 and T1 using generalised estimation equations in each country. Whereas there were no significant differences in the ITIA global-scale between T1 and T2 in any of the strata in the Swedish material, there was a significant improvement in the Bulgarian adolescents both unadjusted (9.42 points, $p = 0.004$) as well as adjusted (8.41, $p = 0.007$) for sex. In Sweden the sub-scale 'Relations with others' had a non-significant slight decrease in scores whereas the Bulgarians significantly increased their scores. In the sub-scale 'Psychological well-being' there was a decrease in the scores in all Swedish adolescents both unadjusted (-3.18, $p = 0.005$) as well as adjusted (-3.08, $p = 0.008$). In Bulgaria, the unadjusted score was increased by 2.49 points ($p = 0.02$) but this was only borderline significant ($p = 0.07$) when adjusted for sex and non-significant when stratified by sex. In the sub-scale 'Relations with the family' both countries increased their scores by between 3.07 and 4.55 points. This increase was significant in all strata except for Bulgarian girls where it was borderline significant ($p = 0.06$).

Data are being shown both unadjusted and adjusted, as well as stratified, for sex. The adjustment was made as there was a different proportion of boys and girls between the countries, and the norm data

shows differences between the sexes [11].

Table 3 shows the estimated mean differences in the ITIA global scale and its subscales between Sweden and Bulgaria using generalised estimation equations at each time-point. Data are being shown both unadjusted and adjusted as well as stratified for sex. The large, significant differences between the countries in 1988–1991 in self-esteem measured by the ITIA global scale in all adolescents, both unadjusted (11.5 points, $p < 0.0001$) and adjusted for sex (10.9 points, $p = 0.0002$) as well in the girls stratum, has levelled off in the recent material in all strata and no significant differences are seen in the second wave (1.51 points, $p = 0.60$, unadjusted). In the sub-scale ‘Relations with others’, the Swedes at T1 had significantly higher scores than Bulgarians in all strata but this difference had levelled out in all strata in 2015-16. In ‘Psychological well-being’ the Swedes had a previous higher result that was significant in the Swedish total, both adjusted and unadjusted for sex, but in T2 the Swedes had a significantly lower score in all strata compared to Bulgarians in a diametrically opposed shift. In the ‘Relations with the family’ the Swedes have significantly higher scores in all strata compared to the Bulgarians at both time-points.

From Table 2 and Table 3 we suspect that the differences between countries has changed over time, or similarly, that the time has affected the countries in different ways. In Fig. 1 we wanted to examine this and added an interaction term in the regression models used in the tables to statistically test the differences. Figure 1 shows the difference in score between Sweden and Bulgaria separately for the both time-points. The p-values under the bars is from the test between countries, and the p-value centred above the bars is from the interaction test, i.e. a test on whether the possible country differences in self-esteem differed by time. We found a significant interaction between Sweden and Bulgaria in the ITIA-global scale when both sexes were included but not when stratified by sex. The same pattern was found in ‘Relations with others’ with a borderline significant interaction for the boys ($p = 0.08$). Thus the time at measuring influenced the difference in global self-esteem between the countries. There was a significant interaction between all three groups in ‘Psychological well-being’ meaning that the difference between countries in this sub-scale is modified by time.

No significant interaction between sex and time was found in Sweden or in Bulgaria in either ITIA global or any of the sub-scales. However, the previous significant differences between boys and girls at T1 in Bulgaria in ‘Talents and skills’ were no longer significant at T2. The significantly lower scores found in Swedish girls at T1 in ITIA-global, ‘Physical characteristics’, and ‘Talents and skills’ were no longer significant at T2. The significant differences with lower scores in ‘Psychological well-being’ at T1 in girls compared to boys in both countries remained significant at T2 (data not shown in figures or tables).

Discussion

Main Findings

Our main finding is that the significant differences in global self-esteem that existed between the communistic dictatorship Bulgaria and the Western democracy Sweden before the fall of the Berlin Wall in 1989 had disappeared when re-examined with the same method, in the same locations, and by one of the same investigators 25 years later. This was found to be mainly related to larger similarities between countries in the sub-scale 'Relations with others' where Bulgarian adolescents had significantly increased their score, whereas the Swedish scores decreased (non-significant) as well as the improvements in Bulgaria in 'Psychological well-being' over time. The score from the sub-scale, 'Relations with others', was suggested in our previous study to be significantly lower in Bulgaria related to dictatorship governance [7]. Both global self-esteem as well as 'Psychological well-being' and 'Relations with others' were found to have a significant interaction between time and country, indicating that the country differences in self-esteem were modified by time, i.e. our proxy for governance.

The difference in score between the countries in the sub-scale 'Psychological well-being' has changed, which also has affected the global self-esteem. The previous difference where the Swedes had significantly higher results than the Bulgarians has now changed to the diametrically opposed. The interactions between country and time in this sub-scale were significant in all strata. The significant difference between the sexes in global self-esteem, as well as the sub-scales 'Physical characteristics' and 'Talents and skills', which existed in Sweden at T1 were no longer significant at T2. We interpret this as that the difference between the sexes decreased over time.

The girls in both countries had lower results in the sub-scale 'Psychological well-being' than the boys at both waves. Thus the pattern with girls reporting lower levels of psychological wellbeing that we are used to seeing in western democracies over decades [9, 11, 26] was also found in Bulgaria at both times, with different governance.

Previous studies

We were only able to find one previous study comparing self-esteem between a democracy and a dictatorship of the two cold-war blocs [27].

This study based on a sample of deflected Soviet citizens and conducted on a rather small sample with vague methodological descriptions reported differences in self-esteem when compared with American citizens matched for age, sex, occupation and education where the Soviet Russians showed rather high and secure self-esteem and little self-evaluation and doubt of their inner selves. The authors found that the collective dependence and the mutual surveillance systems as well as the arrogance of the élite and the dissolving of social structures put great strains on the relations. This may have had a strong effect on both relations to authorities as well as relations to others as the loyalties between family and other groups, such as the komsomol, could alter interchangeably. The Soviet society also included an official shaming strategy that might have led to a general desensitization from shame.

According to the authors of that study, a non-striving tendency is supposed to have been formed through an ever-present call from the authorities for action that, however, never led to much positive reinforcement

and thus to a complacent fading of activity. The authors also stated that the evidence for their statements were vague and that more studies were needed.

Other related studies

Closely related studies on adolescent developmental psychology related to dictatorship in the Soviet-bloc, albeit not studying self-esteem, are studies on Jewish adolescent immigrants to Israel from the (former) Soviet Union compared with Israeli born adolescents in Israel, which in itself might constitute a selection bias. The authors describe the Soviet regime's style of education as characterised by harsh punishment and control [28]. The child-rearing in the families was equally described as harsh following Soviet child-rearing literature, which recommended isolating or ignoring the child as well as withdrawing of love and privileges as a method of punishment after misbehaviour [28–30]. Parenting like this, based on harsh punishment with little reinforcement, has been linked with behaviour disorders [28] and the adolescents showed high rates of conduct disorder, violence, antisocial behaviour, and a higher alcohol consumption [28, 30].

These studies comparing Israeli and former Soviet adolescents in Israel claimed that there was a huge difference between the societies; in the western democratic societies there was an emphasis on self-actualisation and individualism whereas the Soviet society focused on the needs of the collective in the communistic society and personal needs were neglected [28]. Geert Hofstede, a Dutch social psychologist, has also discussed the differences between individualism and collectivism where individualism can be defined as a preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families whereas collectivism represents a preference for a tightly-knit framework in society in which individuals can expect their relatives or members of a particular ingroup to look after them in exchange for unquestioning loyalty [31].

Rational self-control and the cultivation of self-discipline for the higher goal of society was the basis for the paedagogical ideology based on the doctrines of the main Soviet paedagogical theoretician Antonin Makarenko [32, 33]. This paedagogical theory severely influenced child-rearing in the family in the Soviet-bloc, amongst others Bulgaria [34].

The change in macro-environmental stressors in Bulgaria

It is very plausible that the macro-environmental stressors in the two countries have equalised as Bulgaria has lost many large stressors that were intimately related to the communistic dictatorship [7]. This loss could be suggested as an explanation for the increased global self-esteem as well as the self-esteem in the sub-scale 'Relations to others' in the Bulgarian data at T2. Our suggestion, in this article, was that the macro-environmental stressors in the first wave of data-collection, when Bulgaria was a communistic dictatorship, could be attributed to as 'Dictatorship damage'. This being mainly related to the repression from the governing system, which was suggested to decrease global self-esteem, primarily in the sub-scale 'Relations to others'. The cross-sectional design of this study made it impossible, however, to deduce any causality and there were many other differences between the countries.

The system of mutual surveillance facilitated a repression of the people in the communistic dictatorship has been referred to as a cornerstone of the communistic society [2]. Hiding and suppressing non-authorized viewpoints, thoughts and emotions due to the fear of being labelled as an enemy of the state might particularly have influenced self-esteem in relation to others. It could be theorised that lower self-esteem in relation to others was related to the fear of being considered an unwanted element by anyone from the ever-present system of mutual surveillance. Hiding one's inner thoughts from the world creates difficulties in assessing other's perceptions of oneself as well as realising one's own strengths [35]; both may lead to lower self-esteem [8]. When undesired facts about oneself are disconnected from the persona through dissociation, which may be a suitable way for survival, dissociation may occur as another strong stressor [35].

The normative 'correct' views on different subjects were mostly delivered by the dictatorship's propaganda system and circulating rumours often replaced open information because open information was always censored [2]. Censorship led to difficulties in distinguishing true facts from propaganda and inability to source criticism. This combined with the repression and lack of freedom could thus theoretically lead to a sensation of lack of control, lack of sense of coherence and low self-esteem in totalitarian societies [36]. The presence of in- and out-groups in Bulgaria may be another potential explanation why the scores for the sub-scale 'Relations to others' was higher in the democratic Sweden in 1989 although other differences between the countries may have influenced the differences in results between Sweden and Bulgaria [7].

Condition for social support

The overall goal of production in the communistic dictatorship [2] could be seen as a condition for the social support of the individual and thus as something that would diminish relational self-esteem and, in continuation, global self-esteem. Harter states that the perception of support does not need to be consistent with objective ratings and that the conditionality of the perceived level of social support, e.g. achieving a good academic result, is inversely correlated to self-esteem. The conditionality of the perceived level of social support may have been more pronounced in a communistic dictatorship than in a Western democracy and it is important to keep in mind that the perception of support, rather than the actual support, may be more important in developing high self-esteem [8].

The insatiable demand of ever-higher production in combination with the communistic pedagogical system with pre-fabricated truths and goals could be non-negotiable in terms of decision latitude, defined as a constraint to the freedom to take action in a stressful situation. This lack of decision latitude in totalitarian systems would give more adverse effects of stress, or strain symptoms, such as depression, loss of self-esteem and physical illness [37].

Relations to family

It seems more likely that there should be more changes in the stressors that influenced the differences in relations outside the family as the country differences in the sub-scale 'Relations to others' has equalised and 'Relations to family' still has differences in the second wave of data-collection. The increases in the

sub-scale 'Relations to family' is, however, very interesting as it is the only sub-scale where we see improvement in both countries over time.

A partial mechanism for the increase in Relations to family in Bulgaria could be that in the post-communistic era the state by itself no longer acts as a new 'ideological family' as it was supposed to in the communistic dictatorship [4] but this could not account for the increase in Sweden.

Parental roles have been shown to have an effect on self-esteem and, secondary, on psychological well-being and expression of psychological symptoms in European adolescents [38]. According to a Swedish study examining three cohorts of adults in 1958, 1981, and 2011, a more authoritative and less authoritarian parental role has evolved in Sweden, and in democracies worldwide, over the last decennia [39]. An authoritarian parenting style forms a hierarchically structured family where the parents, mainly the father, demands obedience and unquestioning acceptance of authority and where disobedience usually is met with punishment. The parenting style is characterised by harshness, low warmth and inconsistency [40]. Almost all the changes from authoritarian parenting roles occurred between the 1981 and 2011 cohorts. The trend towards egalitarianism and democracy in Sweden over the last decennia with an amalgamation of social, economic, legal, and political factors is suggested to have influenced the family roles towards a more authoritative and less authoritarian and hierarchal parenting role challenging the traditional authority of the father with a less gender-stereotypical model. We presume that these changes in social, economic, legal, and political factors that also took place in the former Soviet-bloc might have had an impact on their previous harsh, over-protective, and punishing parenting style [28–30]. This could possibly be a reason why we see a significant increase in 'Relations to family' in both countries as parental styles are related to psychological well-being and self-esteem in adolescents. Adolescents with parents conducting an authoritative parenting role, i.e. patterns of warmth, non-punitive discipline, and consistency, had significantly higher self-esteem, than those being treated with an authoritarian parental style and the relation to parents and peers in adolescence have additive and complementary roles [40]. Although it is possible that peers are the most important relations for adolescents, the two subscales on relations did not measure peers specifically.

The deterioration of psychological well-being in Sweden

The deterioration of 'Psychological well-being' in Sweden follows other studies in Western democracies over in the whole post-war period [26, 41–43]. Many hypotheses concerning the genesis of this have been formed. The status anxiety could increase with a comparison not just on the local level but also nationally and globally through social media. An increased distance between expectations and possibilities in life has also been proposed to increase deteriorating psychological well-being although living conditions have improved [26]. This could also become exaggerated by the global comparisons in social media, which could lead to even higher and more improbable expectations. We have no reason to believe that these comparisons with others should be less expressed in Bulgaria than in Sweden but a protecting factor towards this might be a feeling of improvement over time in the last generations that arguably should be higher in the former dictatorship Bulgaria where the improvements both in macro-

environmental stressors as well as living conditions have improved greatly in the last decades in a way that should be very tangible to the adolescents.

Other areas of inequality

It would seem that great inequalities in child well-being in such areas such as material well-being, health and safety, Educational well-being, behaviours and risks, housing and environment should lead to differences in self-esteem measured with a multi sub-scale questionnaire such as ITIA would produce better self-esteem in the less deprived countries. The fact that there is no difference in self-esteem, despite the differences in the above mentioned areas of well-being between Sweden and Bulgaria as reported by UNICEF in 2013, could possibly also be attributed to the amelioration in Bulgaria compared with the inequality in the times of dictatorship rather than in comparison with other countries today [44].

Differences between the sexes

Since there were no significant interactions between sex and time in either country for the scores in ITIA global or any of the subscales, we have no evidence that the sex differences in self-esteem has changed over time. In spite of this, we see a pattern that sex differences at T1 were larger than at T2 in several of the scales. Today, there is a significant difference between the sexes only in the sub-scale 'Psychological well-being' and this is the same in both countries. This could account for a change to equal forms of governance in both countries. This change seems mainly driven by an equalisation between the sexes in Sweden as the difference between the sexes in Sweden has decreased and where the data has changed we see a decrease in the boys' scores and an increase in the girls' scores in ITIA global scale, 'Physical characteristics', and 'Talents and skills', although without any significant interaction between sex and time. This follows the changes in parental roles and the development of a more gender equal society in Sweden and elsewhere in the Western democracies [39].

Strengths and Limitations

The possibility to find causal evidence between governance and self-esteem in this study is limited due to the fact that we analyse a proxy (country) for the variable that we seek to examine (governance) [24]. The change from dictatorship to democracy is, however, an immense change for everyone in society and as time-lag studies have been reported to be the best study design for examining generational changes as historical events and cultural trends, which are found to have the greatest impact on the attitudes of adolescents [24].

Changes between late 1988-91 and the world 25 years later were the cultures of both countries had closed the gap between them by being more connected through the Internet and social media. Both countries have since joined the European Union and globalisation leads to an equalisation of cultures. This could be seen as factors that are watering down the findings of this study. However, those changes would not have happened if Bulgaria continued being a communistic dictatorship as censorship was, and still is, a hallmark of dictatorships where information-exchange and social media are controlled and

censored by the governing dictator and the EU is a union of democracies with market economies. So the changes are essentially an effect of the change in governance.

The key strength of this study lies in its unique data from both sides of the Iron curtain. All of the data were collected by a single bilingual physician, specialised in child and adolescent psychiatry, in a familiar classroom situation for the children. Data from the first wave from Bulgaria were collected before the fall of the Berlin Wall in November 1989 and the last collected Swedish first wave data were acquired only one and half years later in a stable democratic society, i.e. a time difference that should not have had an effect upon the results. The survey was made with a reliable, well-validated scale previously used in comparisons between countries and with translations to other languages. The Bulgarian version of the scale was made in a thorough process of translation and re-translation performed by bilingual physicians.

The choice of schools in relation to socioeconomic levels was designed in an attempt to nullify social differences within the countries and thus to get a sample that could be deemed representative for the country.

All data-collection was effectuated when the states of governance had had a long time (a generation) to influence the adolescents and were at the times deemed as stable and was made in the same way with the same well-validated questionnaire by the same investigator. Getting an opportunity like this to study such a topic is thus very rarely encountered in a world where there are many dictatorships, and the debate on how a nation should be governed from a psychological point of view is too seldom discussed on a scientific basis. All opportunities to study dictatorships from within are of great value and should, therefore, be carried out to be able to further understand the psychology of dictatorships.

Conclusion

In conclusion, we have found that the prior differences in self-esteem between a democracy and a communistic dictatorship have partly disappeared over a generation with democracy in the earlier dictatorship. We suggest that the amelioration of the global self-esteem in the former dictatorship may be due to a decrease of social stressors, such as mutual surveillance, and the following increase in self-esteem in relation to other persons. A lower self-esteem related to others could partly be a result of 'Dictatorship damage'. It is also possible that the increase in income inequality may be less important than the change from dictatorship to democracy for the self-esteem. Although the changes in both societies are complex and causality cannot be inferred, we believe that the opportunity to use previously collected data from former dictatorships in combination with recently collected data using the same instruments are rare. The data presented are thus, despite the shortcomings, of great value in examining personality development in previous dictatorships.

Declarations

Ethics approval and consent for participate

For the first data-collection we acquired the legally required permission for the study from the local ethics committee (*Etikprövningsnämnden*) in Lund, Sweden (reference no. LU 60-1989). The necessary authorization and ethical permission for the Bulgarian part of the study was acquired from the Bulgarian Academy of Science.

For the second data-collection an additional permission was acquired from the local ethics committee (*Etikprövningsnämnden*) in Lund, Sweden (reference no. 2014/429).

All participants agreed to participate and gave written consent to publication. Consent from parents was not legally needed according to the local ethics committee as the participants in the study was aged 15 and above.

Availability of data and materials

Data can be provided upon reasonable request but are not publicly available due to legal reasons.

Competing interests

None of the authors have any competing interests to declare.

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Author's contributions

CA drafted the manuscript and CA, FT and KS developed the manuscript.

RB collected the data at T1 and RB, MM, and NK collected the data at T2.

KP did the statistical analysis.

The statistical interpretation was made by KP, CA, FT, and KS.

The original design of the study was made RB and developed into a time-lag study by CA, FT, KS, JS, RB and KP.

The final draft was approved by all authors.

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Tables

Table 1. Descriptive data on participants and the ‘I Think I Am’-scale (ITIA) and its subscales divided by country and sex in 2015-2016 and 1988-91.

	Sweden		Bulgaria	
	T1	T2	T1	T2
Included in the study, number (%)				
<i>All</i>	111	165	92	467
<i>Boys</i>	65 (58.6)	96 (58.2)	44 (47.8)	328 (70.2)
<i>Girls</i>	46 (41.4)	67 (40.6)	48 (52.2)	132 (28.3)
ITIA-scale global ^a , mean (SD)				
<i>Number</i>	110	148	92	464
<i>All</i>	58.2 (27.3)	57.5 (37.0)	46.6 (24.1)	56.0 (30.1)
<i>Boys</i>	62.6 (28.9)	59.7 (38.0)	47.9 (24.1)	57.9 (29.5)
<i>Girls</i>	52.0 (24.0)	54.9 (36.0)	45.4 (24.2)	52.4 (31.1)
Subscales^b				
Physical characteristics, mean (SD)				
<i>Number</i>	110	151	92	463
<i>All</i>	11.7 (8.2)	11.8 (8.6)	11.4 (6.5)	12.0 (7.4)
<i>Boys</i>	13.4 (8.1)	12.7 (8.7)	12.7 (6.4)	12.3 (7.2)
<i>Girls</i>	9.4 (7.7)	10.7 (8.5)	10.2 (6.3)	11.2 (7.7)
Talent and skills, mean (SD)				
<i>Number</i>	110	153	92	461
<i>All</i>	8.9 (8.8)	8.7 (8.6)	8.4 (6.7)	8.3 (7.8)
<i>Boys</i>	10.2 (8.2)	9.2 (8.9)	7.1 (7.1)	8.1 (7.9)
<i>Girls</i>	7.0 (9.3)	8.0 (8.3)	9.6 (6.2)	9.0 (7.5)
Psychological well-being, mean (SD)				
<i>Number</i>	110	148	92	463
<i>All</i>	12.4 (8.1)	9.2 (11.5)	9.6 (9.3)	12.1 (10.0)
<i>Boys</i>	14.3 (8.3)	11.0 (11.2)	11.9 (8.8)	13.5 (9.1)
<i>Girls</i>	9.9 (7.0)	7.0 (11.6)	7.5 (9.4)	9.1 (11.4)
Relations with the family, mean (SD)				
<i>Number</i>	110	149	92	464
<i>All</i>	13.6 (8.5)	17.3 (9.5)	10.0 (7.5)	13.9 (8.1)
<i>Boys</i>	13.0 (9.0)	16.7 (9.6)	9.6 (7.0)	14.1 (7.9)
<i>Girls</i>	14.4 (7.9)	18.0 (9.6)	10.3 (8.0)	13.5 (8.8)
Relations with others, mean (SD)				
<i>Number</i>	110	148	92	459
<i>All</i>	11.5 (7.1)	10.5 (8.0)	7.2 (7.7)	9.6 (7.9)

<i>Boys</i>	11.6 (7.5)	10.1 (8.4)	6.6 (7.5)	9.8 (8.0)
<i>Girls</i>	11.3 (6.5)	11.0 (7.4)	7.9 (7.8)	9.8 (7.3)

^aIf more than 50% missing, the scale was set to missing. If less than or equal to 50% missing, the missing items were imputed with the mean of the non-missing items.

^bIf more than 50% missing on the subscale, the scale was set to missing. If less than or equal to 50% missing, the missing items were imputed with the mean of the non-missing items for each subscale.

T1 = Timepoint 1, i.e. 1988-89 in Bulgaria and 1989-91 in Sweden.

T2 = Timepoint 2, i.e. 2015 in Bulgaria and 2016 in Sweden.

^aIf more than 50% missing, the scale was set to missing. If less than or equal to 50% missing, the missing items were imputed with the mean of the non-missing items.

Table 2. Estimated mean differences between 2015-2016 and 1988-91 for Sweden and Bulgaria in the 'I Think I Am'-scale (ITIA) global and its subscales using generalised nation equations, unadjusted and adjusted for sex as well as stratified by sex.

	2015-16 vs 1988-91					
	Sweden			Bulgaria		
	Diff.	p	95% CI	Diff.	p	95% CI
ITIA-scale global						
<i>unadjusted</i>	-0.40	0.90	-7.00; 6.19	9.42	0.004	3.02; 15.8
<i>adjusted for sex</i>	-0.24	0.94	-7.11; 6.62	8.41	0.007	2.25; 14.58
Social characteristics						
<i>unadjusted</i>	-3.18	0.55	-13.5; 7.18	9.29	0.08	-0.98; 19.6
<i>adjusted for sex</i>	3.13	0.59	-8.09; 14.3	6.95	0.07	-0.51; 14.4
Personality characteristics						
<i>unadjusted</i>	-0.06	0.95	-1.95; 1.84	0.57	0.50	-1.07; 2.21
<i>adjusted for sex</i>	0.05	0.96	-1.88; 1.97	0.31	0.71	-1.35; 1.97
Skills						
<i>unadjusted</i>	-1.06	0.40	-3.51; 1.40	-0.68	0.62	-3.31; 1.96
<i>adjusted for sex</i>	1.33	0.37	-1.55; 4.21	0.70	0.12	-0.18; 1.58
Attitudes and skills						
<i>unadjusted</i>	-0.30	0.63	-1.54; 0.94	-0.04	0.96	-1.53; 1.45
<i>adjusted for sex</i>	-0.19	0.76	-1.42; 1.04	0.18	0.80	-1.26; 1.62
Self-esteem						
<i>unadjusted</i>	-1.09	0.42	-3.71; 1.54	1.22	0.27	-0.95; 3.38
<i>adjusted for sex</i>	1.55	0.27	-1.23; 4.34	-0.55	0.67	-3.08; 1.98
Psychological well-being						
<i>unadjusted</i>	-3.18	0.005	-5.41; -0.95	2.49	0.02	0.39; 4.60
<i>adjusted for sex</i>	-3.08	0.008	-5.36; -0.81	1.46	0.07	-0.12; 3.04
Relationships						
<i>unadjusted</i>	-3.30	0.052	-6.63; 0.03	1.55	0.29	-1.33; 4.42
<i>adjusted for sex</i>	-3.01	0.06	-6.16; 0.14	1.37	0.33	-1.40; 4.14
Relationships with the family						
<i>unadjusted</i>	3.75	0.0004	1.67; 5.83	3.95	< 0.0001	2.05; 5.85
<i>adjusted for sex</i>	3.73	0.0003	1.72; 5.73	3.92	< 0.0001	2.01; 5.83
Relationships with others						
<i>unadjusted</i>	3.74	0.006	1.06; 6.42	4.55	0.0002	2.18; 6.92
<i>adjusted for sex</i>	3.62	0.01	0.83; 6.40	3.07	0.06	-0.07; 6.21
Relationships with others						
<i>unadjusted</i>	-1.05	0.31	-3.09; 0.99	2.36	0.04	0.15; 4.56
<i>adjusted for sex</i>	-1.02	0.33	-3.06; 1.02	2.35	0.04	0.11; 4.58
Self-esteem						
<i>unadjusted</i>	-1.49	0.27	-4.14; 1.16	2.55	0.14	-0.80; 5.90
<i>adjusted for sex</i>	-0.45	0.77	-3.43; 2.54	1.68	0.02	0.31; 3.04

Diff. denotes difference in score between 2015-16 and 1988-91

Table 3. Estimated mean differences between Sweden and Bulgaria 1988-1991 and 2015-2016 in the 'I think I Am'-scale (ITIA) global and its subscales using generalised estimation equations, unadjusted and adjusted for sex as well as stratified by sex.

	Sweden vs Bulgaria					
	1988-91			2015-2016		
	Diff.	p	95% CI	Diff.	p	95% CI
ITIA-scale global						
<i>I unadjusted</i>	11.5	< 0.0001	6.02; 17.1	1.51	0.60	-4.10; 7.13
<i>I adjusted for sex</i>	10.9	0.0002	5.25; 16.6	2.21	0.43	-3.27; 7.69
<i>boys</i>	15.7	0.0003	7.20; 24.2	2.17	0.61	-6.11; 10.5
<i>girls</i>	6.53	0.16	-2.63; 15.7	3.10	0.44	-4.79; 11.0
Physical characteristics						
<i>I unadjusted</i>	0.35	0.73	-1.62; 2.33	-0.19	0.79	-1.58; 1.19
<i>I adjusted for sex</i>	0.008	0.99	-1.99; 2.01	-0.02	0.97	-1.43; 1.38
<i>boys</i>	0.99	0.43	-1.45; 3.43	0.60	0.56	-1.44; 2.64
<i>girls</i>	-0.84	0.52	-3.37; 1.69	-1.35	0.006	-2.32; -0.38
Intelligence and skills						
<i>I unadjusted</i>	0.87	0.11	-0.20; 1.94	0.37	0.56	-0.88; 1.63
<i>I adjusted for sex</i>	1.09	0.03	0.13; 2.05	0.32	0.62	-0.92; 1.55
<i>boys</i>	3.98	< 0.0001	2.23; 5.73	1.03	0.27	-0.79; 2.85
<i>girls</i>	-2.49	0.02	-4.61; -0.37	-1.30	0.32	-3.86; 1.27
Psychological well-being						
<i>I unadjusted</i>	2.82	0.03	0.28; 5.37	-2.88	0.001	-4.59; -1.16
<i>I adjusted for sex</i>	2.34	0.04	0.06; 4.63	-2.02	0.003	-3.33; -0.71
<i>boys</i>	2.33	0.17	-0.98; 5.63	-2.51	0.03	-4.85; -0.18
<i>girls</i>	2.36	0.25	-1.63; 6.36	-2.45	< 0.0001	-3.65; -1.26
Relationships with the family						
<i>I unadjusted</i>	3.56	0.0002	1.66; 5.46	3.31	< 0.0001	1.67; 4.96
<i>I adjusted for sex</i>	3.67	0.0002	1.76; 5.58	3.28	0.0001	1.63; 4.94
<i>boys</i>	3.39	< 0.0001	2.06; 4.73	2.53	0.01	0.50; 4.55
<i>girls</i>	4.05	0.007	1.11; 7.00	4.57	0.001	1.80; 7.34
Relationships with others						
<i>I unadjusted</i>	4.26	< 0.0001	2.27; 6.24	0.76	0.41	-1.04; 2.56
<i>I adjusted for sex</i>	4.31	< 0.0001	2.35; 6.27	0.78	0.40	-1.04; 2.61
<i>boys</i>	5.12	0.0003	-2.36; 7.88	0.58	0.65	-1.91; 3.07
<i>girls</i>	3.20	0.002	1.15; 5.26	1.43	0.15	-0.54; 3.41

Diff. denotes difference in score between Sweden and Bulgaria

Figures

p_i = p-value from interaction term between country and time (test in country differences between 2015-2016 and 1988-1991)
 p₁ = p-value from test between Sweden and Bulgaria 1988-1991
 p₂ = p-value from test between Sweden and Bulgaria 2015-2016

Figure 1

Differences between Sweden and Bulgaria in the 'I Think I Am'-scale (ITIA) and its subscales using generalised estimation equations, with an interaction between country and time, for all and separately for boys and girls.