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ABSTRACT

Studying the process of change becomes tricky from a methodological point of view if change has its origin in both the intrapersonal and societal spheres. This paper examines the problems which arise when discussions of change measure only changing means without considering the fact that constructs of change are continually redefined. For example, as a person ages, the contention that he or she becomes more conservative is as plausible as the assumption that in rich societies economic crises lead to a reorientation toward conservative values. To disentangle intrapersonal and societal origins of change, at least two multi-cohort panels have to be started at different points in time. Such longitudinal studies, however, also involve pitfalls when measuring change. Both the means of a value preference change over time as does the understanding of the value itself. Means of change are often artifacts, due to the fact that content-wise redefinitions of constructs are overlooked. In some cases, the latter are responsible for mean differences that would not have reached statistical significance had qualitative changes been treated properly in analytic strategies. In other words, researchers must consider that mean differences may be due to qualitative changes in meaning that the examined construct underwent. (Contains five tables which present statistical summaries.) (RJM)

The Measurement of Change in Longitudinal Youth Research: Continuity/Discontinuity, Stability/Instability, and Mean Differences in the Development of Individualism and Collectivism Among East and West Berlin Youth Between 1990 and 1992[1]

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Abstract

The question, how change can be studied in the social sciences becomes tricky from a methodological point of view if change has its origin in the intrapersonal as well as in the societal sphere. For value change this is the case. Assumptions of an age-relatedness of value change are equally plausible as are assumptions of societal change reasons. 'The older the person gets, the more conservative he or she becomes' is as plausible as the assumption that 'in rich societies economic crises lead to a reorientation toward conservative security values'. All research that intends to study both aspects of change has to be organized as a panel study. If it is deemed important to disentangle intrapersonal and societal origins of change, at least two multi-cohort panels have to be started at different points in time. Longitudinal studies, however, bring about the pitfalls of the measurement of change. The most important one is that not only the means of a value preference can change over time, but also the understanding of a value itself. Considering data from the East-West Youth Study Berlin, the paper discusses problems that are caused by the custom that usually only changes in means are interpreted. Such changes are often--in a certain sense--artefacts, due to the fact that contentwise redefinitions of constructs are overlooked. In certain cases the latter are responsible for mean differences that would not have reached statistical significance, had qualitative changes been treated properly in analytic strategies.

The Measurement of Change in Longitudinal Youth Research: Continuity/Discontinuity, Stability/Instability, and Mean Differences in the Development of Individualism and Collectivism Among East and West Berlin Youth Between 1990 and 1992

Discussions of social change belong to the most multi-faceted discussions in the social sciences. Usually these discussions focus on societal change processes. The current discussions of the ever so popular value change are an example for this. Empirical value change research, however, is usually based on individual data, so that all problems of the measurement of latent constructs over time become important. Often these problems are simply left aside. Most commonly it is said that a certain value has become more--or less--important over time. Klages et al. (1992), for example, forward the hypothesis that, by the eighties at the latest, youth in West as well as East Germany has become more hedonistic then youth in earlier generations. Put into technical terms, they postulate that the sample means of two independent samples (East and West) are in the same way discrepant from means of samples drawn at an earlier time.

Two assumptions are implicit in such postulates concerned with mean differences. The first assumption is that the meaning of hedonism (or, in fact, any other value orientation) is identical in the East and in the West. The second assumption is that the value orientation under scrutiny has not changed its definition over time. The question of latent variables having a different meaning in two cultural or socio-political contexts is discussed in the emic versus etic debate of cross-cultural psychology (see, e.g., Boehnke & Merkens, 1994). The current paper will primarily deal with the consequences of not taking changes of meaning into account when interested in mean differences over time.

The question which kind of change one deals with is one of the most important conceptual questions of studies concerned with change processes. Is one interested in intraindividual development or interindividual change? Per definition, developmental psychological studies are concerned with intraindividual variation over time. Sociological studies usually are concerned with interindividual variation among independent samples. If we disregard extraordinary designs as longitudinal studies with N=1 or aggregate data analyses of independent time samples, the two aspects of change are always interconnected.

In developmental psychology we are familiar with this question from the 'Baltes-Schaie Controversy'. Baltes and Schaie (1973) show that different aspects of change are regularly confounded in many research designs. In pure panel studies individual development is always inseparable from societal change. Mean differences over time can always be caused by intraindividual as well as societal change. In sociology studies comparing independent samples from different historic points in time are very popular (see, e.g., Allerbeck & Hoag, 1986). In such studies independent representative samples are surveyed at two or more different instances using the same instrument. Intraindividual variation is not--and cannot be--taken into consideration. A phenomenon for which an age-related

change assumption is plausible, should thus not be studied in a pure sequential design. Even if studies use independent multi-cohort samples, intraindividual change can at best be simulated through within-sample cross-sectional comparisons. The pitfalls of that strategy are, however, well known.

Problems of value change are prototypical for research questions where intraindividual as well as interindividual change is at stake. Societal as well as age-related change may play a role. 'The older a person gets, the more conservative he or she becomes' is a well known stereotype assuming an age-related value change. 'In earlier times people used to be concerned with achievement and doing their duties, today they only look for pleasure' is a stereotype of similar attractiveness. It is concerned with cohort-related, interindividual change. Stereotypes like this in mind, Chancellor Kohl called Germany a 'collective leisure park' last year. Inglehart's (1977) more complex assumptions are concerned with interindividual change as well. He postulates that the generation which experienced World War II at an early age will have materialistic value orientations, due to this experience. In contrast, the post-war generation that grew up in relative wealth will--according to Inglehart--show a postmaterialistic orientation.

The question of how to deal with the different forms of change scientifically is decisive for the design of empirical research. If we attempt to 'catch' all (two or three, cf., the so-called Baltes-Schaie controversy) aspects of change in a value study, we--ideally--have to study several age-heterogeneous panels at different historic time-points. Unfortunately such studies will hardly ever be fundable, especially when one takes into consideration that is does not make sense to start panels interspersed with only a few years. Hardly ever will societal change show consequences for individual value orientations within one or even a few years.

When designing their research, social scientists have to make numerous compromises. What is necessary is to become fully aware of the consequences of these compromises. If, for example, the East-West Youth Study Berlin (EWYS-B) starts age-heterogeneous panels at a yearly interval, this has certain consequences. Cohort effects in value change may technically be testable, conceptually they are, however, difficult to imagine. Only in very rare cases will one year make a difference. Why should values of adolescents born in 1976 differ from values of adolescents born in 1977, for example. Simple panel studies with age-heterogeneous samples can attempt to deconfound societal and intraindividual change by statistically partialling out the age variable. However, they can never substantiate cohort effects. As a principle, societal and intraindividual change are inseparably confounded in single-cohort panel studies--to enumerate just a few consequences of the usual design compromises in the social sciences.

To have confounded change effects may be acceptable in many instances. When one is interested in the question if there is value change at all in the new states of Germany, it does not really matter in the first instance what kind of change it is. Is there a change from the old--ideologically favored--values of collective conformity toward the 'typical capitalist' values of self-determination? When dealing with such a research question, it is of lesser importance whether change is societal or

intraindividual. Nevertheless one should not loose sight of the different sources of change (if change is incurred).

Besides having a cohort-based, socio-historic or intraindividual source, change can also have different facets when one turns to measurement. First, a value can change its meaning over time. To put it into technical terms, a construct can change its factor loading pattern or even its factor structure. Methodological publications discuss that kind of change under the keywords continuity and discontinuity (see, e.g., Rudinger et al., 1991). A continuous development is a development where the understanding of the construct at stake remains unchanged over time. In discontinuous development the meaning of the construct changes over time. For value orientations it has been shown that they tend to develop discontinuously during adolescence. What is understood as self-determination by a 14--year-old is structurally different from what an 18-year-old means when he or she speaks of self-determination (Boehnke, 1988). If we can show that a construct develops continuously over time, there still are two more aspects of change we have to take into consideration. One is the question if preferences are stable over time or instable. The other is if preferences of a construct change over time or remain unchanged. Both aspects of change are by no means identical. The question of stability focuses on the problem if a person (or unit of measurement) gives similar or dissimilar ratings over time. It is independent of the question which ratings--high or low--are given. Self-reported religiosity, for example, is fairly stable during adolescence. One-year stabilities, i.e., retest correlations of measures taken in a yearly interval, are at about 0.65 (Boehnke, 1988). This means that those subjects who report high religiosity in Year 1 usually will report high religiosity in Year 2 as well. One-year stabilities for postmaterialistic value orientations (Ingleharts, 1977), however, are as low as 0.23 for adolescents. This means that--totally independent of the preference of such values--different youth will prefer such values in Year 1 and Year 2. The two aspects of change described so far usually play a minor role in discussions of value change or are even totally ignored. A third aspect, namely that of changes in means usually stands in the foreground. Has a certain value become more popular over time or has it not? This focus would be unproblematic if the three change aspects were independent of each other, but they are not. If I ignore discontinuous change in analyses of stability versus instability and of mean differences, I may reach different conclusions about value change than had I taken this aspect into consideration.

In the remainder of the paper I will try to support the above statements by presenting empirical material from the East-West Youth Study Berlin (Boehnke & Merkens, 1990, 1991). In doing so, I will refer to value orientations in the theoretical framework originally forwarded by Hofstede (1980). Hofstede sees the dimension of individualism versus collectivism as the primary source of inter-individual and inter-societal differences in value orientations. Individualism is defined as an orientation aiming at self-determination, pursuit of individual interests and personal happiness. Opposed to this, collectivism is defined by a subordination of individual interests under the interests of a collective (family, work group, industrial firm, etc.), an 'in-group' in social-psychological terminology. Opera-

tionalizations of both concepts have mostly come from the work of Triandis and his collaborators (e.g., Triandis et al., 1988; Hui, 1988; Hui & Villareal, 1989).

The focus of the following presentation of different statistical analyses is on showing that a preoccupation with mean differences can have substantial consequences for comparative value studies in rapidly changing societies.

METHODS

Sample

The description of the sample on which analyses are based can remain fairly short. It is not really decisive for the plausibility of the arguments forwarded in this paper for exactly what kinds of samples analyses are calculated. A more detailed description of the sample can be found in Steiner, Boehnke, Kirchhöfer and Merkens (1993). The East-West Youth Study Berlin (EWYS-B) commenced in 1990 as a cooperative project of the Center for European Research in Education (ZEB) and the Department of Education of the Free University of Berlin. The ZEB is a private organization that has grown out of the now dissolved Department of Sociology of Education of the Academy of Pedagogical Sciences of the GDR. The design of the EWYS-B is that of a modified cohort sequential design. In each of four years of the main study (1991-1994) students from Grades 7 to 10 are surveyed. They are re-surveyed for a maximum of three more years (seventh-graders). In 1990 a pilot study was conducted. Students who reach Grade 10 drop out of the study and are substituted, so-to-speak, by a new cohort of seventh-graders in the following year. Figure 1 sums up the design of the Study.

(Figure 1 about here)

Samples are socially heterogeneous without being fully representative for Berlin. Also, one has to keep in mind that in many respects West Berlin does not compare to the former Federal Republic, nor does East Berlin compare to the former GDR. Social heterogeneity was achieved by selecting one district each from East and West Berlin, which--according to social indicators--(Statistisches Landesamt, 1991) has the widest range of social strata among all districts of the respective part of the city. Within the districts a random sample of schools stratified according to school-type ('Hauptschule', 'Gesamtschule', 'Realschule', and 'Gymnasium'[2]) was selected. Analyses reported in the present paper are based on data from the pilot study and the first two waves of data gathering in the main study. A three-wave panel study of two age-heterogeneous student samples of seventh to tenth graders is thus reported.

The East Berlin panel sample encompasses data from 101 students, the panel from West Berlin includes 154 student. The lower number of participants in East Berlin is due to the fact that a major restructuring of the school system took place in East Berlin after the school year 1990/91. These structural changes meant that higher number of students changed schools and could not be tracked down any more by the research group

Instrument

A short version of the individualism-collectivism scale by Hui (1988), Hui and Villareal (1989), and Triandis et al. (1988) was used for surveying. It contained six items which remained unchanged over time. The items are documented in Table 1. They had to be answered on a four-point rating from 'completely disagree' (0) to 'completely agree' (3).

(Table 1 about here)

RESULTS

The documentation of results follows well-known traditions of the social sciences. In a first step means and standard deviations of the six items used in the study are reported separately for East and West Berlin for all three waves of measurement.

(Table 2 about here)

The table shows that all collectivism items gain higher approval than the individualism items.

The second step attempts to validate the formation of individualism and collectivism scales. This is done by conducting two times three (=six) separate principle component factor analyses and analyses of reliability. It means that the waves of measurement and the two aspects of value orientations were kept apart. To use the combined East-West sample for these analyses implies that--for the time being--an equivalence of meaning between the two subsamples was assumed. Table 3 reports factor loadings and consistency coefficients (Cronbach's Alpha).

(Table 3 about here)

The table shows that--with one exception--all loadings are above .50, a usual threshold value for acceptable loadings of a homogeneous factor. Consistencies of the two three-item scales are low. One has to take into consideration, however, that Cronbach's Alpha depends strongly on the length of a scale. Had we, for example, used ten items with similar item-total correlations instead of three, the scale would have had a consistency of about 0.75 (see Kranz, 1979). Low consistency is thus owed to the shortness of the scale, not to double-barreled items or the like. Of course, to know this does not make our measurement any more reliable per se, it only says that one cannot ask for much more with three-item scales.

In a next step scale means for individualism and collectivism for the three waves of measurement are calculated. In East Berlin means for individualism were 0.94 in 1990, 0.79 in 1991, and 0.73 in 1992. In West Berlin the respective values were at 0.77 in 1990, at 0.74 in 1991, and at 0.87 in 1992. Means for collectivism in East Berlin were at 2.49 in 1990, at 2.43 in 1991, and also at 2.43 in 1992. In West Berlin scores varied from 2.49 (1990) and 2.35 (1991) to 2.28 (1992).

In order to test for mean differences the usual next steps are analyses of variance. East versus West and wave of measurement serve as independent variables. The question of what is going to be the dependent variable does, however, need discussion. One option is to use the two scale means for individualism and collectivism and treat them as multivariate dependent variables first, followed by separate univariate analyses. A second option is to use factor scores and treat them as multivariate

dependent variables first, followed again by separate univariate analyses. If we conduct the latter kind of analyses we do have to keep in mind the necessity of adding the so-called intercept term to the individual score. Factor scores are defined as having a mean of '0' and a variance of '1'. If we did not add the intercept term, we would not be able to test the repeated measures effect. It would automatically be '0' as factor scores originate from factor analyses done separately for the three waves of measurement. The best estimate for the intercept term is, of course, the 'wave-specific' sample mean.

The choice of either of the options needs some discussion. If we choose Procedure (1), i.e., if we use scale means as dependent variables, this implies that we make the classical assumption that measurement error per item is randomly distributed around the item mean. At the same time, this choice implies that we assume complete structural equivalence of the measured construct over time! Per definition, unspecific variance does not exist, all variance is seen as reflecting variation in the latent variable. A choice of Procedure (2), i.e., using factor scores plus intercept term as the dependent variable does not make this assumption. On the contrary, the value of a person is determined by the position of that person on the time-specific factor. Structural change from one wave of measurement to the next, in other words discontinuity, is reflected in the dependent variable. Admittedly, however, discontinuity is accounted for only in the boundaries of changes in loadings of the presupposed factor. Changes in factor intercorrelations are ruled out here conceptually. Results of analyses conducted for both options are documented in Table 4.

(Table 4 about here)

Procedure (1), i.e., using scale means as dependent variables, shows the following results: An East-West difference is neither found in multivariate nor in univariate analyses for either of the scales. There is a significant interaction of East versus West with wave of measurement. First and foremost the differential change in individualism seems to be the source for this interaction. In East Berlin individualism decreased between 1990 and 1992, whereas it increased in the West. Mean changes over time are also significant. Especially collectivism declined from 1990 to 1992. A partially different picture comes out, when Procedure (2) is chosen, i.e., when factor scores plus intercept term are used as dependent variables. Here too, East-West differences are insignificant. The repeated measures effect, however, is found to be insignificant as well in this analysis. Only the interaction of East versus West and wave of measurement remains significant. A look at the factor scores shows that a differential development of individualism scores in East and West Berlin is responsible for this significance. In 1990 factor scores are higher in East Berlin, in 1991 scores are almost equal, whereas West Berlin youth have higher factor scores for individualism in 1992.

How can we evaluate the results of both analyses in the light of the methodological arguments forwarded above? First of all, there does not seem to be a mean difference either in individualism or in collectivism between East and West Berlin youth in the early nineties. Such findings have been reported by other researchers who have published comparative data (e.g., Sydow, 1993). What

about the differences with regard to the repeated measures effect that become obvious when comparing the too testing procedures? First, one again has to stress that the factor scores used for Procedure (2) originate from factor analyses calculated separately for the two aspects of value orientations and for the three waves of measurement. This means that a factor-immanent restructuring of the loading patterns is reflected in the factor scores. When using scale means, measurement errors are, however, automatically set to zero. This means that there is no room for an inclusion of discontinuity effects in the development of the constructs under scrutiny. The difference in the results gained from Procedure (1) as opposed to Procedure (2) becomes explicable on those grounds. Procedure (2), dealing with 'pure' constructs per definition, shows that no change in the substance of individualism and collectivism over time has to be assumed. In Procedure (1) those portions of the variation that are accounted for by discontinuity are retained as part of systematic variation. If an effect is significant in Procedure (1) and insignificant in Procedure (2) it seems admissible to assume that mean differences reported by Procedure (1) are an outflow of discontinuous development. A substantive mean shift in individualism and/or collectivism, on the contrary, is improbable.

The interaction of East versus West and wave of measurement is significant in both types of analyses. Shortly after unification with the West, East Berlin youth showed higher individualism scores than adolescents from West Berlin. In the course of two years individualism scores have declined in East Berlin. In the West an opposite trend is obvious. After having had considerably lower individualism scores in 1990, scores went up substantially between 1990 and 1992 in the West. This result cross-validates a study by Stöss (1993). In a study with independent samples, he reported stronger right-wing extremism in East Berlin in 1990 as opposed to stronger such attitudes in West Berlin in 1992. Sydow (1993) sees values as basic components of political orientations and the differential change found in individualistic value orientations in the present study does indeed correspond 'nicely' with Stöss' findings.

But, let us leave the field of speculations again. One problem remained untouched up to now, namely that there might be sample-specific understandings of individualism and collectivism in East and West Berlin. It might indeed be that the significant interaction found in both ANOVA procedures is an outflow of a different understanding of the two constructs, not of differential development. This is the question of possible 'culture-specific' discontinuity being an explanation for a significant interaction term. To take this to a test, factor analyses were now calculated over again using the separate East and West Berlin subsamples as the basis. Of course, when entering factor scores from these analyses into the ANOVA calculations, we have to use the sample- and time-specific intercept terms as the additive constant. Results of this third analysis of variance are documented in Table 5.

(Table 5 about here)

The table shows that no change regarding the significant interaction term is incurred when using sample-specific factor scores. Other than in the judgment of the general mean shift over time,

the differential development of individualism in East and West Berlin is not an outflow of (differential) discontinuity. In the two parts of Berlin there obviously is a differential shift in the 'true' preference of individualism. Individualism of East Berlin youth decreased since 1990, whereas the individualism of their West Berlin age-mates increased.

Although societal and intra-individual change are inseparably confounded in the present data set, it seems appropriate to interpret this as a sign for some sort of short time social change and not as a sign for culture-specific intraindividual development. Value orientations of adolescents have relatively low one-year stabilities. On the item level one-year retest-correlations vary from 0.16 (Item 1 90/91) to 0.32 (Item 6 91/92) for individualism items, and from 0.13 (Iter. 5 90/91) to 0.36 (Item 3 91/92) for collectivism items. One-year stabilities for all the three operationalizations of the two latent variables vary from 0.29 (for all three operationalizations of individualism for 1990→1991) to 0.38 (for the sample-specific operationalization of collectivism for 1991→1992).

DISCUSSION AND CONSEQUENCES

When dealing with phenomena for which hypotheses of intraindividual as well as socio-historic change are plausible, social scientists regularly have to invest into panel studies. One-shot studies will never suffice. For a conceptual separation of both types of change, however, more complex designs have to be carried out, for example, the so-called cohort-sequential designs.

Implicitly change over time is often understood as a change in means. DER SPIEGEL (Nov. 22, 1993) recently postulated that--at least in Germany--a drop in intra-societal solidarity has taken place during the last couple of years. In the light of psychological value theory this hypothesis can be reformulated as reflecting an upward shift in mean preferences of individualistic value orientations. Interpreting mean differences as true increases in the preference of a certain construct does, however, presuppose that the meaning of what was measured did not change over time. In comparisons of two or more subsamples (here of East and West Berlin youth) there is another prerequisite for a valid interpretation of a mean shift. One has to ensure that the construct measured has the same meaning in all subsamples. If those two problems are ignored, portions of variation that are due to a change in meaning over time or to a sample-specific understanding of the construct under scrutiny remain in the data. This creates is a danger that time-related differences in the means of a latent construct are ascribed to a change in the preference of that construct, whereas truly they reflect changes in meaning over time.

What are the consequences of the model calculations that were presented in the current paper? Time-related mean differences found in panel studies should never be interpreted prima face. This is even more so true for cross-culturally comparative studies. Of course, only significant differences are referred to in this context. Statistically random mean differences have to be disregarded from the very beginning. Even statistically significant mean differences, however, can have sources other than those overt when looking at raw item or scale scores. Put into the terminology of testing theory, there is a danger of progressively false decisions. One has to consider that mean differences may be

owed to qualitative changes in meaning that the examined construct underwent. Let me give an example. Let's say we studied a sample of 55-year-olds from the GDR and the FRG in 1985. The research question was preference of coffee. The item 'Do you like coffee' had to be answered on a five-point rating scale ranging from 'no, not at all' (0) to 'yes, very much' (4). In such a case it is very obvious that the preference of coffee is massively influenced by the quality of the coffee available in the two countries. In psychological terms this means that ratings largely depend on differences in cognitive conceptions of coffee. Had we surveyed the same sample again in 1990, we probably would have found a highly significant interaction. The preference of coffee would presumably have increased considerably in the GDR, whereas in the FRG it would have remained unchanged. The mean difference in the East, however, should not be interpreted as an epochal change in coffee preference in a sense that coffee per se is more popular in the nineties than in the eighties. Higher means in coffee preferences in the GDR are--at least partially--a consequence of a cognitive shift in what is meant by coffee. During GDR time coffee that could be bought by everybody in East Germany was coffee that did not pass regular export quality controls in the countries of origin. After 1989 this changed. People could buy the same coffee as people in West Germany could. To further the example, one could now plan another wave of measurement in 1995. If then a drop in coffee preferences is incurred, it is again possible that this shift does not stand for an epochal change, but that it reflects intraindividual development. In 1995 the sample would be 65 years of age. Age-related thoughts of negative health consequences of coffee drinking might be a reason for a decline in coffee preference.

Before closing, let me once more reflect the statistical procedures employed in this paper. Of course, experts in quantitative methodologies will, rightfully, argue that all analyses presented in the current paper could have been conducted much more elegantly in the framework of such programs like LISREL or EQS, since recently the option to work with structured means has been introduced to these programs. Indeed this is the case, but deplorably enough not very many researchers know their way around handling these programs correctly, especially when they have to work with structured means. The current paper wanted to show that there is no excuse for not dealing with the problem of continuity and discontinuity in panel studies, even if one only is familiar with procedures that have now been available for some 30 years. In spite of this long-time availability of the pertinent statistical programs, numerous mean shifts reported from panel studies presumably are not really mean differences. Especially in value research they often reflect a change in meaning over time not in preferences. Values are changing among adolescents in East and West Berlin, but predominantly the cognitive structure of values is changing over time, not their overall preference. Only the inverse mean trends in the change of individualism in East and West Berlin can be understood as a true shift in means.

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Table 1

Items Used in the East-West Youth Study Berlin in 1990, 1991, and 1992 to Measure Individualism and Collectivism[a]

(1)	To go on a trip with friends makes one less free and mobile. As a result there is less fun. (Hui, 1988: F6).
(2)	I would help, within my means, if a relative told me that he (she) is in financial difficulty. (Hui, 1988: K1).
(3)	I can count on my relatives if I find myself in any kind of trouble. (Hui, 1988: K8).
(4)	We would all be better off if everyone would just look after themselves. (Hui & Villareal, 1989: Item 7 (34) self-reliance vs. interdependence)
(5)	I like to live close to my good friends. (Hui, 1988: F3).
(6)	To be superior a man must stand alone. (Hui & Villareal, 1989: Item 12 (50) self-reliance vs. interdependence).

[a] References from which items originate are given in parentheses

Table 2

Means and Standard Deviations

Item	Year	East/West	$\bar{x}$	s
(1) Trip with friends less fun	1990	East Berlin	0.47	0.74
	1990	West Berlin	0.48	0.73
	1991	East Berlin	0.39	0.61
	1991	West Berlin	0.52	0.74
	1992	East Berlin	0.37	0.60
	1992	West Berlin	0.60	0.75
(2) Help relatives in financial difficulty	1990	East Berlin	2.29	0.73
	1990	West Berlin	2.31	0.70
	1991	East Berlin	2.23	0.66
	1991	West Berlin	2.12	0.77
	1992	East Berlin	2.23	0.73
	1992	West Berlin	2.19	0.73
(3) Count on relatives if in trouble	1990	East Berlin	2.34	0.78
	1990	West Berlin	2.41	0.80
	1991	East Berlin	2.31	0.70
	1991	West Berlin	2.28	0.83
	1992	East Berlin	2.27	0.82
	1992	West Berlin	2.21	0.82
(4) Everyone should look after themselves	1990	East Berlin	0.56	0.77
	1990	West Berlin	0.41	0.78
	1991	East Berlin	0.43	0.60
	1991	West Berlin	0.50	0.70
	1992	East Berlin	0.34	0.52
	1992	West Berlin	0.65	0.76
(5) Live close to good friends	1990	East Berlin	2.87	0.34
	1990	West Berlin	2.80	0.47
	1991	East Berlin	2.75	0.50
	1991	West Berlin	2.66	0.64
	1992	East Berlin	2.80	0.50
	1992	West Berlin	2.51	0.72

(Table 2 continued)

(6) Stand alone to be superior	1990	East Berlin	1.78	0.93
	1990	West Berlin	1.38	0.97
	1991	East Berlin	1.53	0.89
	1991	West Berlin	1.19	0.86
	1992	East Berlin	1.43	0.86
	1992	West Berlin	1.35	0.95

Table 3

Factor Loadings and Consistency Coefficients

Scale	Item	Loadings			Alpha		
		1990	1991	1992	1990	1991	1992
Individualism	trip with friends	0.58	0.59	0.58	0.49	0.34	0.35
	look after oneself	0.81	0.80	0.78			
	superior alone	0.72	0.58	0.62			
Collectivism	financial difficulty	0.74	0.75	0.79	0.31	0.39	0.51
	count on relatives	0.65	0.82	0.75			
	live close to friends	0.54	0.36	0.57			

Table 4

ANOVA Results for Individualism and Collectivism in East and West Berlin Between 1990 and 1992

Source of Variation	Mode of Testing	F	df	p	eta^2
Procedure (1): Scale Scores as Dependent Variables					
East/West	multivariate	1.67	2/252	.191	1.3%
	univariate (IND)	0.31	1/253	.579	<0.1%
	univariate (COL)	2.46	1/253	.118	0.1%
East/West by Wave of Measurement	multivariate	3.57	4/1010	.007	1.4%
	univariate (IND)	6.04	2/506	.003	2.3%
	univariate (COL)	2.01	2/506	.135	1.0%
Wave of Measurement	multivariate	5.21	4/1010	<.001	2.0%
	univariate (IND)	2.07	2/506	.128	0.8%
	univariate (COL)	7.34	2/506	.001	2.8%
Procedure (2): Factor Scores as Dependent Variables					
East/West	multivariate	0.89	2/238	.411	0.1%
	univariate (IND)	0.04	1/239	.837	<0.1%
	univariate (COL)	1.79	1/239	.182	0.1%
East/West by Wave of Measurement	multivariate	4.06	4/954	.003	1.7%
	univariate (IND)	7.78	2/478	<.001	3.2%
	univariate (COL)	1.18	2/478	.308	0.5%
Wave of Measurement	multivariate	1.56	4/954	.183	0.7%
	univariate (IND)	1.29	2/478	.276	0.5%
	univariate (COL)	1.34	2/478	.262	0.6%

Table 5

ANOVA Results for Individualism and Collectivism in East and West Berlin Between 1990 and 1992

Source of Variation	Mode of Testing	F	df	p	eta^2
Procedure (3): Factor Scores (Calculated Separately for East and West Berlin) as Dependent Variables					
East/West	multivariate	1.72	2/238	.311	1.0%
	univariate (IND)	0.32	1/239	.573	0.1%
	univariate (COL)	2.28	1/239	.132	0.9%
East/West	multivariate	3.78	4/954	.005	1.6%
by Wave of	univariate (IND)	6.92	2/478	.001	2.8%
Measurement	univariate (COL)	1.32	2/478	.268	0.1%
Wave of	multivariate	1.26	4/954	.284	0.1%
Measurement	univariate (IND)	1.11	2/478	.331	0.1%
	univariate (COL)	1.03	2/478	.357	<0.1%

Footnotes

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[2] The 'Hauptschule' is a type of school visited predominantly by lower class and immigrant students; the 'Gesamtschule' is a comprehensive school which compares to the American Junior High School, it is visited by students from various, but also predominantly lower social backgrounds and by immigrant students whose parents have a higher educational aspiration; the 'Realschule' is a type of school which is visited by students from various social backgrounds usually when they did not receive good enough grades to let them enter 'Gymnasium', the highest ranking school-type which allows students to enter universities if they succeed in passing the maturity exam (Abitur) after Grade 13.