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The Missing Link: Deficits of Country-Level Studies. A Review of 22 Articles Explaining Life Satisfaction

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Abstract To explain country differences in an analytical or structural dependent variable, the application of a macro–micro-model containing contextual hypotheses is necessary. Our methodological study examines whether empirical studies apply such a model. We propose that a theoretical base for country differences is well described in multilevel studies, but aggregate and individual data analyses fail to specify contextual hypotheses ex ante (in the theory section of an article) and instead elaborate on macro–micro explanations ex post (in the discussion section). To test our assumptions, we analyzed 22 studies published in journals cited in the Social Science Citation Index between 2007 and 2010, which compare countries with respect to life satisfaction. Results are in accordance with our expectations. We conclude that cross-country comparisons should apply a macro–micro-model theoretically and empirically, if possible, and include the meso level, if appropriate. In case of insufficient data (i. e. only individual level or aggregate level data), applying a macro–micro-model theoretically may prevent premature conclusions.

Keywords Life satisfaction · Happiness · Well-being · Macro–micro-model · Cross-country comparison · Methodological study

One of the major advances in sociology was to integrate macro and micro theories into a macro–micro model (Fig. 1), the best-known example being the reformulation of Weber's explanation of capitalist economy by protestant ethic (Coleman 1990; McClelland 1961). Sociological reasoning has for a long period been split by a macro (e.g. Durkheim; Parsons) and a micro (e.g. Homans; Simmel) approach. The macro–micro-model, as proposed by McClelland (1961), Blau (1977) and in particular, Coleman (1987, 1990) was a major step to overcome this divide. The model has allowed for more sophisticated and

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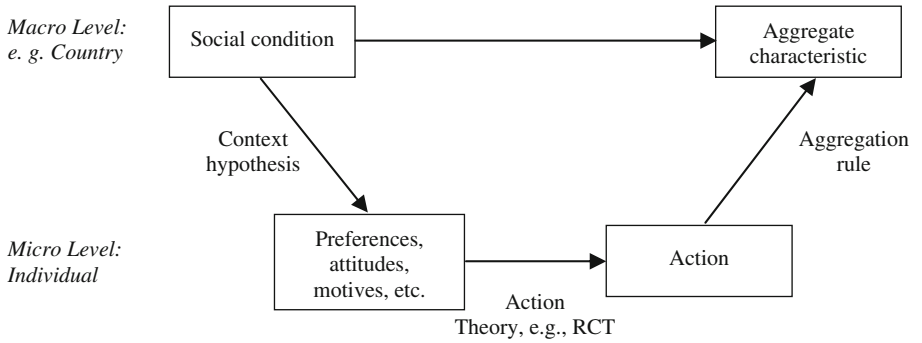

Fig. 1 The basic macro–micro-model

integrated theoretical and reasoning. In addition, statistical advances in multi-level modeling provide the tools to test hypotheses from the model.

The main methodological progress associated with the model is to explain a given macro-sociological phenomenon, the dependent variable, not by independent variable(s) on the macro level, but by propositions from the macro to the individual level (the context hypothesis in Fig. 1), an individual level hypothesis based on an action theory and a rule for aggregating the individual level outcomes to the macro level (the dependent variable). From this perspective, explanations restricted to the macro level are incomplete because they lack the crucial links between the macro and micro level; they show mere correlations. This in turn means that differences between countries, for example different divorce rates or GDPs, cannot be explained solely by macro theories, but have to be explained via the micro level "detour".

To specify multi-level models, we seem well-equipped with macro theories, such as division of labor and social differentiation (Blau 1977; Durkheim 1964), and micro theories, such as rational choice theory (Boudon 2003; Coleman 1990; Elster 1979; Hedström 2005; Opp 1999; Simon 1997). In contrast, we face more problems specifying the context and the aggregation effects. With reference to Fig. 1: How can a country's social conditions, e.g. the unemployment rate, the type of government, or cultural characteristics, have an influence on individual preferences, attitudes, or motives? (A further complication arises, if a meso level has to be introduced, e.g., school, networks, more generally: institutions, as shown in Fig. 2.)

Our aim is to examine to which extent empirical studies include reflections about this extended explanation. We will, however, limit our analysis to the context effect or the mechanisms linking the macro (country) to the micro (individual) level. Our research focus is the question if the authors specify context hypotheses (or mechanisms) linking the macro to the micro (or a meso) level, and if so, whether these arguments or propositions are given in the theory section or when discussing the results. Therefore, we focus on these two sections of the articles. If the authors' analyses are confined to the macro level, a multi-level explanation is not compulsory, but if, however, the aim is to account for a macro-level outcome, a micro-level foundation seems appropriate.

1 Theory

Since our analyses are based on this model's methodological implications, we briefly discuss the micro–macro-model. The macro level phenomenon (outcome) is to be

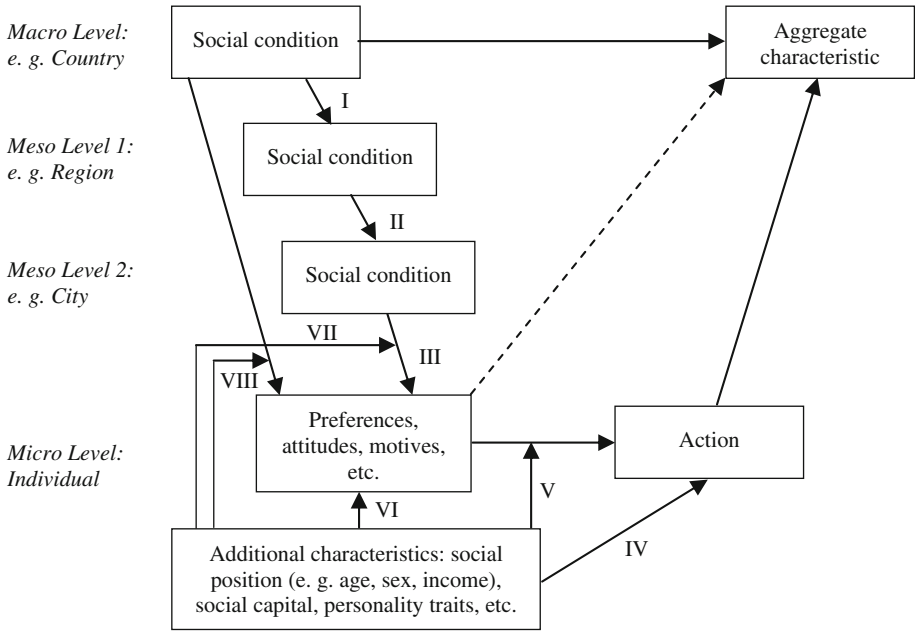

Fig. 2 Elaborated macro–micro model

explained. The independent macro level variables are supposed to explain (at least part of) the variation of the macro level outcome. Both macro level variables can either be "analytical", "global" or "structural" variables, following the terminology of Lazarsfeld and Menzel (1961: 427f., for a reformulation see Hox 1995). Analytical and structural variables are aggregate characteristics, constructed by a mathematical operation on individual data, e.g., average number of single-headed households, share of migrants (analytical) or network density (structural); global variables are aggregate characteristics not constructed from "properties of individual members", e.g. the question whether a country allows for capital punishment.

The basic model shown in Fig. 1 has two important characteristics: First, it is only applicable in cases in which the macro level outcome (the "aggregate characteristic" in Fig. 1) is the result of an aggregation of individual actions. This would be the case if countries are compared with regard to their divorce rates or voter turnout, for example. The individual action—divorcing or voting—would in turn be explained by individual preferences, attitudes, motives etc., depending on the action theory applied. Of course, it is possible to compare macro units like countries not only with regard to aggregate actions, but to aggregate preferences, attitudes or motives as well.

From this perspective, it is evident that the macro–micro-model's most important feature is the assumption that individuals are affected by their social or socio-spatial contexts (the macro units) and that differences between those contexts have to be explained via a context hypothesis. To illustrate that not only aggregated actions can be of interest in cross-country comparisons, but other individual characteristics as well, Fig. 2 includes the broken arrow.

Second, the basic model assumes a direct connection between the macro and micro level. This means that, in our example, a specific social condition in the country (the

unemployment rate, social inequality, a social norm, etc.) is supposed to have a direct influence on individual preferences, attitudes, motives etc. Such a hypothesis can be questioned: It may not be obvious, how this effect materializes, because in many cases, not the entire country will be perceptible or relevant for the individual. For example, preferences for a specific vocational training may be more influenced by the local or regional employment market than the entire country's. This means that in some cases, socio-spatial meso level units like regions, cities or neighborhoods or social meso level units like social networks, institutions etc. have to be accounted for. Therefore, a further problem is to specify the context effect or more precisely: the social mechanism, linking two levels. A social mechanism "is a constellation of entities and activities that are linked to one another in such a way that they regularly bring about a particular type of outcome" (Hedström 2005: 11; cf. Demeulenaere 2011; Mayntz 2005; Opp 2004).

The probably most instructive example of macro–micro models is the extensive research on neighborhood effects (Blasius et al. 2009). Scholars list several mechanisms linking levels, the two most important are collective socialization and role models (Dietz 2002; Galster 2008; Sampson et al. 2002). If we study neighborhood effects, we also may have to account for effects on the meso level, such as schools or peer groups (e.g. Haynie 2001; Jencks and Mayer 1990; Robertson and Symons 2003; Thrupp et al. 2002). Moving to the higher level of countries makes it even more complicated to specify the links. As shown in Fig. 2, we may think of a direct path (or effect), and in addition indirect ones, e.g. via region and/or city.

So far, our extension of the basic macro–micro-model in Fig. 1 comprises a number of hypotheses, some of which may be necessary to account for a given outcome, but not all. In the lower left corner the model includes only individual characteristics which are affected by macro or meso-level conditions, may they be preferences, attitudes, motives etc. The action, in turn, is influenced solely by these individual attributes. In contrast to this assumption, many theories and even more empirical studies include additional individual level variables to explain an action. The Theory of Planned Behavior (e. g. Ajzen 1991; Armitage and Conner 2001), for example, posits that in addition to a behavioral attitude, subjective norms and perceived behavioral control are necessary to explain behavior (mediated through intention). Moreover, empirical studies usually incorporate variables which are not central to a theory, but whose effects are controlled for. All in all, over and above the central variables in the lower left corner, additional individual variables have to be introduced in the model.

In Fig. 2 we present an elaborated macro–micro-model. Compared to Fig. 1, it comprises several additional hypotheses (indicated by roman numerals):

I to III: As described above, if individual preferences, attitudes, motives, etc. are not influenced by macro level conditions directly, but these effects are mediated by meso level units, the relationship between macro and meso level 1 level conditions (I) has to be explained. In some cases, it will be necessary to explain the effect of meso level 1 on meso level 2 conditions (II), and in all cases, meso level influences on the individual are to be explained (III).

VI: Over and above preferences, attitudes, motives, etc., which are in turn influenced by macro or meso level conditions, additional characteristics may also affect the action (as described in the previous paragraph).

V: Additional characteristics may moderate the causal link between preferences etc. and action. For example, the Subjective Expected Utility Theory includes such an interaction

effect between individual level variables (the product of subjective utilities and subjective probabilities).
VI: Over and above macro or meso level conditions, other individual characteristics may also affect preferences, attitudes, or motives. For example, fear of crime is affected by neighborhood conditions like racial composition or physical and social disorder, but also by ethnicity, age, sex and income (e.g. Chiricos et al. 1997; Taylor 1997).
VII and VIII: Alternatively, individual characteristics may moderate the causal effects of meso level (IV) or macro level (V) conditions. For example, Ross and Jang (2000) show that informal social ties with neighbors reduce the effect of neighborhood disorder on fear of crime.

The elaborated macro–micro-model shows that differences in the aggregate characteristics of macro level units, like countries, can be due to several causes: different social conditions, different unconditional effects of identical social conditions on individual preferences, attitudes and motives, different conditional effects, moderated by additional individual characteristics etc. If we observe country differences which cannot be accounted for by the macro condition, we have to find explanations on other levels or relations between levels. To give an example: If a high female employment quota results in a positive valuation of female employment in one country and a negative one in another country, the macro level explanation would not be valid and we have to find an alternative explanation. We posit that explanations of macro level phenomena by macro laws are insufficient and, instead, should be multilevel. Thus, country level differences are the result of a causal chain or mechanisms. The crucial element in this chain is the assumption that individuals are influenced by social and/or socio-spatial contexts.

The same holds for empirical studies which focus on explaining individual outcomes which are influenced by meso or macro level conditions and do not take the last step (the aggregation to the macro level). For these cases, the full macro–micro-model also shows that not only country differences, but also differences between individual preferences, attitudes, motives etc. or actions can be the result of a complex chain of single causal steps, some of which may require multilevel hypotheses.

The first question, therefore, is to what extent multilevel hypotheses are explicitly stated in the studies we examine. We assume the answer to vary by type of study: aggregate, individual or multilevel. Aggregate level studies compare macro level units with respect to the aggregate characteristic, i.e. they "stay" on the macro level. This analytic strategy leads to two problems. Suppose we find a strong positive correlation (or an effect) of a macro level variable on the aggregate characteristic. The first problem is that between-country effects can be different from within-country effects, or put differently: Even if we find a positive correlation on the country level, it is possible that the correlation on the individual level is negative (for a graphic illustration, see Snijders and Bosker 1999: 14). Therefore, macro level results cannot be transferred to the micro level—the well-known ecological fallacy –, which leaves the macro–micro-model's greater part in a black box. The second problem is, even if there are good reasons to assume that macro and micro level effects have the same direction, with aggregate data analysis it is not possible to separate individual and aggregate level influences (the same problem arises in multilevel analyses, if they do not include variables on all theoretically relevant levels of analysis). Due to these problems, we do expect aggregate level studies to not separate context hypotheses from micro level hypotheses—in other words, we do expect these studies to not apply the macro–micro-model ex ante. If the model is applied, we expect it to be given ex post, while or after interpreting and discussing the results.

An alternative way of examining country differences is an individual level study with indicator (dummy) variables representing countries. With this strategy, it is not possible to analyze specific contextual effects (all country characteristics are implied in the dummy variable). We expect the theory section of an article to give only general hints for potential reasons explaining country differences, and specific reasons to be given ex post in the Discussion section. For multilevel studies, which are a possible way to a) separate between- and within country influences and b) test specific contextual hypotheses, we assume context hypotheses to be specified ex ante.

A second question refers to all three types of studies: Are social mechanisms—causal chains—explored, that is to say: is the role meso level units play referred to? Meso level units may be socio-spatial, like regions, cities or neighborhoods, or they may be social, like peer groups or the family. To be able to compare the aim of the empirical studies, we focus on one specific dependent variable: life satisfaction, in some studies named subjective well-being (SWB), which can be defined as "global judgment that people make when they consider their life as a whole" (Diener 1994: 107). Since it is a broad and somewhat fuzzy concept, we assume to find several theories to explain its variation.

Before turning to our empirical analyses of studies, we wish to sum up our reasoning. Macro-level explanations require a complex chain of propositions on both the macro and the micro level contributing to explain a given macro phenomenon, life satisfaction in our case. As Diener (1994: 107) states: „People with high subjective well-being are those who make a preponderance of positive appraisals of their life events and circumstances. People who are „unhappy "are those who appraise a majority of factors in their life as harmful or as blocking their goals". A poor educational system may result in less opportunities for upward social mobility, this, in turn, will lower the life satisfaction. Low social cohesion or bad health may as well lead to low life satisfaction.

Across the studies, a comparatively common pattern of theory emerges, which can formally be stated:

$$\mathrm{SWB}_j = \beta_0 + \beta_1 Z_{1j} + \beta_2 Z_{2j} + u_0$$

with Z indicating country level variables, and j (1, …, J) indicating country j. In a number of studies, not mean life satisfaction but individual life satisfaction is the dependent variable, which can formally be stated accordingly:

$$\mathrm{SWB}_{ij} = \beta_0 + \beta_1 X_{1ij} + \beta_2 X_{2ij} + \beta_3 Z_{1j} + \beta_4 Z_{2j} + u_{0j} + \varepsilon_{ij}$$

with X denoting individual and Z country characteristics and j (1, …, J) indexing country j and i (1, …, I) individual i.

In many studies, Z_{1j} is the GDP, GDP per capita or GDP standardized to purchasing power parity; other variables are social inequality (Gini-Index), indicators of political conditions, e.g., democracy or corruption, the Human Development Index (HDI), social capital. The reasons given for the inclusion of specific variables are either that other authors have convincingly shown that the variable explains variance or new arguments—which are propositions. Some of theses variables are included in the extended model (Fig. 3). Broken arrows indicate hypotheses which are not assumed in the studies we analyzed (mainly those parts of the macro–micro-model which are not applicable in this case because life satisfaction, the dependent variable, is not an action). Figure 3 also includes micro level variables that are supposed to impact life satisfaction, e.g. age or social network. Moreover, some studies we examine include hypotheses about meso level effects, for example parenting styles or peer group effects.

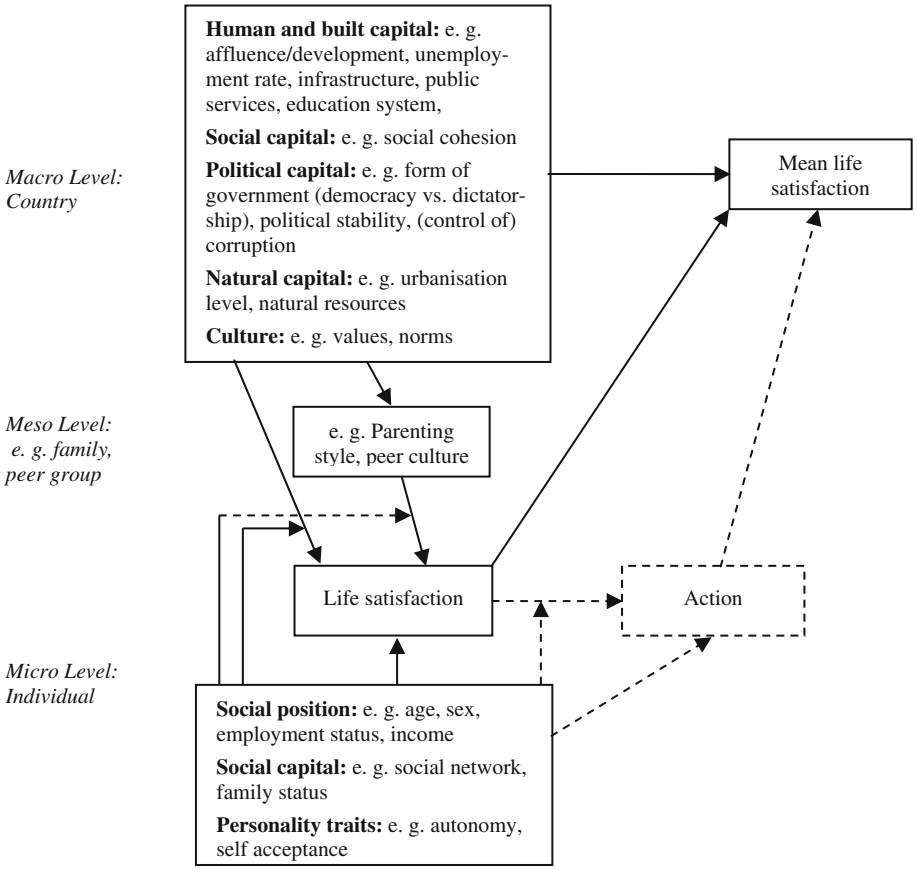

Fig. 3 Applied macro–micro-model

2 Sample and Method

Our analysis pertains to studies which are based on quantitative cross-country data explaining life satisfaction or happiness. It is confined to articles published between 2007 and 2010; the selection was drawn from the Social Science Citation Index, using the key words: cross-country and life satisfaction, cross-cultural and life satisfaction, cross-national and life satisfaction, international & life satisfaction, comparative and life satisfaction. If the study pertained to several dependent variables, we confined our analysis to life satisfaction. Studies in which the dependent variable is named "happiness" were also included if the concept is operationalized in the same way as "life satisfaction". We excluded studies comparing countries only for the purpose of validating an instrument. Table 1 informs about the 22 studies included in the analysis.

Our first research question refers to the elaboration of theoretical arguments linking social conditions on the country level to (individual or aggregated) life satisfaction. Furthermore, we ask if these arguments or propositions are given in the Theory section or when discussing the results. To evaluate the extent of theory elaboration, we examine

Table 1 Sample of studies on life satisfaction, in alphabetical order

Acronym	Author(s), Year	Countries	Level*	Central indep. Variables	Dep. Var.**
ATM 08	Abdallah et al. (2008)	100	A	Human and built capital (5); natural capital (8); social/political (9)	L
BDF 08	Bjørnskov et al. (2008a)	70	M	Political factors (9); economic factors (15); institutional factors (13); (human development/cultural factors (11)	L
BDF 10	Bjørnskov et al. (2010)	62	M	Political factors (8)	L
BO 08	Blanchflower and Oswald (2008)	72	I	Country dummies	L
B 08	Bonini (2008)	63	M	Human Development Index; GDP per capita; Environmental Sustainability Index	L
D 10	Delhey (2010)	48	M	Personal autonomy; job creativity; income satisfaction; GDP per capita	H
DFKS 07	Dorn et al. (2007)	28	M	(Change in) democracy; subsistence income; relative income; language (culture)	H
DBP 10	Drobnič et al. (2010)	9	I	GDP per capita; country dummies	L
EH 09	Elliott and Hayward (2009)	65	M	Government regulation; dominant religion	W
E 09	Engelbrecht (2009)	58	A	Natural capital; GNI per capita; social capital; gini coefficient; inflation; unemployment rate; region dummies	W
GS 10	Gaymu and Springer (2010)	10	I	Country dummies	L
I 09	Iannotti et al. (2009)	10	A	(separate analyses for regions)	L
K 09	Katz (2009)	5	I	Country dummies	W
LKG 07	Lowenstein et al. (2007)	5	I	Country dummies	L
R 09	Ram (2009)	64	A	GDP per capita; government consumption; generalized trust; price of investment goods; international openness; transition economy; high-income OECD country; country dummies	L
R 10	Ram (2010)	76	A	GDP per capita; generalized trust	L
R-S 09	Ravens-Sieberer et al. (2009)	41	I	Country dummies	L
SK 09	Soons and Kalmijn (2009)	30	M	Institutionalization of cohabitation; GDP per capita	W
SD 07	Sujoldžić and De Lucia (2007)	6***	I	Country dummies	W
TFI 10	Tokuda et al. (2010)	29	M	Social capital	H
WP 09	Wallace and Pichler (2009)	19	M	Civic participation	W
W 08	Welsch (2008)	47	A	Corruption; GDP per capita	H

* *A* aggregate data analyses, *I* individual data analyses with country dummies, *M* multilevel analyses

** *L* life satisfaction, *H* happiness, *W* well-being

*** Including ethnic groups in a country

every sentence in which reasons for testing a specific country level variable or for comparing the countries which are analyzed are given, either by stating the relevant reason explicitly or by referring to the respective authors who describe the theoretical base. Further, we separate theoretical arguments made in the Theory and in the Discussion section. Theoretical reasoning in the Theory section includes any explanation given before the results are presented (ex ante). This allows us to include every single argument in our analysis, independent of the articles' structure (some do not have an explicit Theory section). Theoretical arguments made while or after describing the results, from ad hoc explanations of specific findings to the summary of theoretical arguments and findings usually found in the last chapter, are subsumed to the Discussion section.

3 Results

We present the results of our methodological review in four steps. We first examine aggregate data studies comparing countries with reference to mean life satisfaction (Sect. 3.1), then turn to studies which rely on individual data and use dummy variables to model country differences (Sect. 3.2). In Sect. 3.3, we turn to multilevel analyses.

3.1 Analyses of Aggregate Data

3.1.1 Theory in the Theory section

Out of the six studies comparing countries pertaining to mean life satisfaction (ATM 08, E 09, I 09, R 09, R 10, W 08), two studies do not present any theoretical arguments at all in the Theory section (E 09 and R 09). Instead, the authors refer to the research question's political relevance or deficits and inconsistent findings in former research, for example:

> …very few scholars have considered the role of government expenditure relative to the happiness or subjective well-being of the population. Of the two recent cross-country studies, Bjørnskov et al. (2007) stated that life satisfaction decreases with higher government consumption. Kacapyr (2008), on the other hand, indicated no significant association between a measure of life satisfaction and the ratio of government spending to GDP. (R 09: 483)

The other four studies (ATM 08, I 09, R 10, W 08) present theoretical arguments, usually very briefly in a few sentences. Because aggregate data analyses are not able to distinguish between contextual and individual level effects (see chapter 1), we expect to find that theoretical assumptions about effects on life satisfaction are not specified as well. The following quotes show that our expectations are met: None of the studies clearly indicated the level of reference, because no clear distinction between macro level and individual level variables is made. In some cases, the variables assumed to influence life satisfaction suggest the intended level, but explicit hypotheses are not supplied.

One example for variables which cannot be attributed well-defined to the macro or micro level is "differences in welfare", which may imply a context hypothesis (an influence of the country's welfare level onto individual life satisfaction, irrespective of individual affluence), or an individual level hypothesis (personal affluence affects life satisfaction):

> Fahey and Smyth (2004) have argued that a good deal of international variation in subjective indicators can be explained by absolute differences in welfare, … (ATM 08, p. 36)

This holds for the most often used explanatory macro variable, GDP (or GDP per capita) and its explanatory power. E 09, for example, does—as many others—not discuss whether GDP is related to individual life satisfaction or whether it is the individual income, which, in turn, is correlated to GDP. Ultimately, the "true" cause for life satisfaction may be individual income, GDP, or both at the same time.

> A major 'explanatory' variable is GNI per capita, which is a proxy for the general standard of living. This variable is included because it is known from numerous studies to be strongly correlated with subjective well-being in low and middle income countries (Diener and Suh 1999; Frey and Stutzer 2002; Kroll 2008). (E 09, p. 382f.)

Similarly, "individualistic ideology" and "political freedom", may be macro or micro level characteristics, implying an individual or a contextual hypothesis:

> …, most leave unanswered the question of whether it is income per se that drives life satisfaction, or any of a broad range of its correlates: health, education, individualistic ideology, political freedom and rights, and so on… (ATM 08, p. 40)

The effects of health and education in the above mentioned quote, in contrast, most probably refer to individual level effects on life satisfaction, and do not propose contextual effects of a country's mean health or educational level. Another example for implied individual level hypotheses are "culture"-arguments, i. e. arguments referring to some kind of cultural differences as a reason for differences in life satisfaction. Although "culture" is a macro level variable, it is conceivable that the individual adherence to culturally mediated norms, values etc. is thought to affect life satisfaction. Put differently, it is improbable that culture-arguments should include an influence of norms and values on those individuals who do not adhere to those norms and values:

> …, differences in cultural norms and values influence how people report feeling about their lives. (ATM 08, p. 36)

> …, research on the relationship between SBM and social and behavioural health indicators is characterized by noticeable gaps or inconsistent findings. Differences in findings may represent cultural differences in the samples studied. (I 09, p. 192)

Another example for implicit micro level assumptions is "age structure" (see below), which most probably implies a micro level hypothesis assuming a relationship between individual age and life satisfaction. The alternative context hypothesis would assume an influence of the country's age structure over and above individual age, e. g. the higher a country's mean age, the more satisfied are its residents with their lives, irrespective of their individual age. It is of course possible to assume this hypothesis, but since the relationship between individual age and life satisfaction is well established in the literature, it is more probable that "age structure" refers to individual age:

> Another source of cross-national heterogeneity may be the age structure. (W 08, p. 1842)

In rare cases, assumptions about contextual effects are made, but only implicitly. For example, R 10 refers to income equality's (a macro level variable) influence on a sense of relative deprivation (an individual level variable), which is in turn thought to affect (individual) life satisfaction. Income inequality clearly is a country level variable, and sense of relative deprivation is an individual characteristic, Hence, the following quote implies a contextual influence:

> In general, greater income inequality may be predicted to generate more dissatisfaction due to a stronger sense of ''relative deprivation'' and may lower the population's happiness. (R 10, p. 412)

Another example is W 08, proposing "a general climate of unlawfulness" on the country level results in "psychological costs" for the individual:

> Moreover, there may be psychological costs, associated with a general climate of unlawfulness [created by corruption, AN/JF]… (W 08, p. 1839)

References to the meso level are scarce in the Theory section. We found one example in W 08:

> In addition to this indirect effect, however, corruption may affect SWB in a more immediate way. As noted by Lambsdorff (2003), corruption includes many different types of behaviour. Some of these, like artificial bottle-necks created by public officials, may entail substantial time and effort to be expended by citizens in order to attain public services. (W 08, p. 1839f.)

3.1.2 Theory in the Discussion Section

R 09 and W 08 do not present any theoretical arguments in the Discussion section, but sum up the research question and results briefly. The other four explicate theoretical arguments, but the extent of theoretical reasoning is still limited to a few sentences. Among the explanations given for country differences, we found two main lines of reasoning: "culture"-arguments and explanations implicitly referring to the meso level.

"Culture"-explanations are used to explain this part of the variance (of between-country life satisfaction) that could not be explained by the independent variables (e. g. GDP), or as a general reference to an unspecific bundle of factors that may impact life satisfaction:

> Finally, we are aware that cultural factors of the kind discussed earlier are absent from our model and we note several authors who have demonstrated their importance (e.g. Diener and Suh 2000; Diener et al. 1995a, b). (ATM 08, p. 46)

> … natural capital provides immaterial and often intangible functions that are nevertheless important for the quality of human life, i.e. 'socio-cultural functions', but that are usually excluded from the valuation of natural capital. (E 09, p. 387)

Explanations referring to causal chains the meso level address a variety of social meso level units. I 09 propose an influence of the degree of institutionalization of physical activity (PA), peer groups, and the family; R 10 refers to families, communities and social capital:

> For example, higher-than-predicted happiness in Latin America may partly reflect some latent dimension of social capital embodied in the structure of families and communities. (R 10, p. 415f.)

To sum up the six studies analyzing aggregate data: Theoretical arguments are usually not elaborated extensively. The Theory sections contain a few sentences; in some cases, the explanations given there are elaborated in the Discussion section, but still only briefly. It is possible that this is at least partly due to space limitations, since some journals accept only a limited number of words for a submission, or the usual length of articles serves as a reference point for submitting authors. Out of our 22 studies, the mean length of the six articles analyzing aggregate data is 10 pages, while analyses of individual level data (Sect. 3.2) cover 17 pages on average, and multilevel analyses (Sect. 3.3) are 22 pages long (18 pages if BDF 08 are omitted, whose 55 pages study can be seen as an outlier). The number of pages of our 22 studies, in turn, correlate strongly with the mean length of all articles published in the respective journal between 2007 and 2010 ($r = .54$, $r = .71$ if BDF 08 are omitted). Because not all journals give explicit instructions for authors with regard to maximum manuscript length, we were not able to include this information in our analysis, but nonetheless our results indicate the relevance of strategic considerations: If a manuscript is to be submitted to a specific journal, the journal's usual article length may affect theoretical elaboration due to space restrictions.

According to our expectations, the arguments made in studies analyzing aggregate data do not explicitly distinguish between macro and micro level variables, i.e. between contextual effects and individual level effects. In some cases, it suggests itself to assume that individual level effects are addressed because of the variables which are proposed to affect life satisfaction, e. g. age and health. In other cases, implicit context hypotheses are assumed, e. g. between income inequality and a "sense of deprivation". There are variables, however, which do not allow a clear distinction. A prominent example is a country's welfare (most often operationalized as GDP per capita), which may have an effect onto life satisfaction irrespective of individual affluence, e.g. because of a better infrastructure or better educational system in more affluent countries. However, it may also be that correlations between GDP and life satisfaction "hide" an individual level effect on life satisfaction by personal affluence, which in turn correlates with GDP.

Theoretical reasoning in the Discussion section does usually not differentiate between macro and micro level variables either. References to the meso level are an exception, the macro–micro relationship is at least implied. The "culture"-arguments set forward in the Discussion section, though, are not pertinent to disentangle the levels of reference to which propositions refer. Moreover, because "culture" is not defined, the term seems to be used as a container for unspecific differences between countries which cannot be explained by the variables which are tested for their effects on life satisfaction.

3.2 Analyses of Individual Data

3.2.1 Theory in the Theory Section

In seven studies, between-country differences are modeled by introducing dummy variables in the analyses of individual level data, or separate analyses for the countries/regions are conducted (or both): BO 08, DBP 10, GS 10, K 09, LKG 07, R-S 09, and SD 07. Due to their analytic strategy, these studies are able to make statistically significant statements about the occurrence of country differences,—but not about their causes. In other words: Contextual hypotheses assuming a specific country effect on life satisfaction (its wealth,

social cohesion, etc.) can not be tested.[1] Germane to the analytic strategy, we expect that such hypotheses and their theoretical base are not stated in the Theory section. In most cases, our expectations were met, with exceptions described below.

Three studies list macro indicators, but in the course of the statistical analyses do not refer to these and their potential effects (DBP 10, GS 10, R-S 09). Macro variables are either listed to supply a plausible set of relevant country level conditions, or possible macro level influences are hinted at, but precise assumptions on macro level effects are not given, for example DBP 10 and R-S 09:

> Due to different levels of economic development, differences in sectoral composition, and the extent of public policies, working conditions vary significantly across countries and can be expected to influence life satisfaction in a variety of ways. (DBP 10, p. 208)

> Between country-differences in the national socio-economic situation (e.g. absolute level and magnitude of inequalities), social support mechanisms, the educational system and the health service system are potential sources for subjective health inequalities. (R-S 09, p. 152)

Because not only country differences, but the interplay between countries and immigrant groups have to be described, SD 07 are more detailed, but still rest on listing macro variables without specifying their impact:

> Within this culturally anchored ecological framework the study design contrasts two culturally different groups of Albanian and Bosnian-origin adolescents in their home countries (Kosovo and Bosnia and Herzegovina) and as refugees/immigrants in receiving countries (Italy, Austria and Croatia). The groups indicate not only different nationalities and cultures of origin but also different degrees of cultural similarity with receiving societies. In addition to socioeconomic differences related to various transition stages toward democracy and market economy, each of these countries is situated on a cultural continuum ranging from high traditionalism and collectivistic values to individualism. These orientations are directly linked to changes in family systems, socialization values, parenting styles and childrearing orientations. (SD 07, p. 124)

In the last sentence of the above quote, we find some hints to the meso level, i.e. phrases indicating the relevance of social phenomena mediating country level effects on the individual: family systems, socialization values, etc. We use the term "hints" because the variables cannot be placed at the meso level without doubt; they may be located both at the macro or individual level.

In a fifth study (K 09), several macro level indicators are reviewed to rank the countries. In contrast to the studies described so far, it is possible to assume specific hypotheses about the ranking order of regression coefficients with this strategy:

> The study deals with cross-cultural and cross-national comparisons of five countries that belong to both different and similar welfare policy and services to older people and family traditions. A comparative approach with a strategic choice of countries may add insights that single country studies lack. For welfare-state regimes the

[1] DBP 10 is an exceptional case because additional to country dummies and separate analyses, the effect of the GDP is tested as well. Because GDP is the only macro level variable and because it is not central to the reasoning, DBP is categorized as a study using individual data.

> well-known typologies of Esping-Andersen (1990, 1999) were adopted: social democratic (Norway), conservative (Germany and Spain), liberal (England), with Israel as a ''mixed'' model. Other indicators were also included. One of these was family legislation, that is, whether adult children have any legal responsibility towards their older parents: those in Norway and England had no legal obligation to help their older parents, whereas those in the other three countries did. A second indicator was the role of the state, expressed, for example, by the level of community services provided, in particular home-based services that might alleviate the burden on families: the level of services was high in Norway and Israel, medium in England and Germany, and low in Spain. […] It is expected that a significant effect of cross-cultural differences on subjective well-being and a significant effect of intergenerational family solidarity on well-being beyond cross-cultural differences will be found. Specifically, stronger connections between family solidarity and subjective wellbeing will be found in the more traditional countries regarding family norms and patterns of behavior. Also, in the more welfare developed countries weaker associations will be found between family relations and subjective well-being because services are available through public support system. (K 09, p. 80f.)

In the two remaining studies analyzing individual level data, hypotheses assuming country differences are either suggested, but not substantiated in the Theory section (LKG 07), or we find no theory at all (BO 08).

3.2.2 Theory in the Discussion Section

In two of the seven studies we find no (additional) theory in the Discussion section, resulting in no theoretical reasoning at all (BO 08) or in a restriction to general "culture"-arguments in the Theory section (SD 07, see quotation above). The other four studies catch up in the Discussion section, which is more detailed than the Theory section. It is noteworthy that the Discussion section mainly comprises potential explanations for the results, i.e. for statistically significant differences between countries. More specifically, these are hypotheses about specific macro–micro influences, assuming country differences in the socialization of women and men, selection effects of the prevalent household structure onto preferred living arrangements, and the influence of family norms (GS 10), consequences of a modernization process (K 09), a country's "recent history and geopolitical situation" (LKG 07, p. 879), tight working deadlines and an increasing awareness of the work-life balance (DBP 10), or an unspecified list of possible factors of influence, ranging from gender role traditions to per capita expenditure on social protection (R-S 09), e. g.:

> Israel's higher rates of balanced exchange patterns may be also closely related to the country's recent history and geopolitical situation. Israel is still a familistic country, as reflected, for example, in the total fertility rate (2.8 children per family), relatively low divorce rate, more traditional gender roles, and a large traditional cultural heritage in family lifestyle. Israeli families live close to each other and have frequent daily contact (Katz and Lavee 2005). In Spain, a mixed picture of high rates of balanced exchange patterns combined with relatively low rates of emotional support in parent–child relationships emerged. This may be due to a rapid modernization process in a traditional cultural context (reflected, for example, in the low fertility rates of the younger generations). The younger generations are more exposed to this

> process, are better educated, and are better off than their parents. This could result in a significant generation gap. (LKG 07, p. 878f.)
>
> With economic prosperity and increasing welfare state provision, work dimensions that most powerfully impact on people's quality of life seem to change and new determinants of life satisfaction become salient. […] Tight deadlines may be more present in affluent societies with an extensive service sector and less present in manufacturing. Also, the meaning and importance of the work-home interface is stronger in Nordic and Western European countries than in Southern and Eastern European countries. Although the reported conflict between work and home is in effect weaker in Nordic/Western societies, its negative effect on quality of life is stronger. We term this an ''affluence work-home paradox'': although the tension between work and home is lesser in richer countries, it has a stronger negative impact on life satisfaction, perhaps due to increasing awareness and sensitivity towards the issues of work-life balance or less access to extended family support networks. (DBP 10, p. 222)

Compared to studies analyzing aggregate data, individual data analyses with dummy variables present more elaborated theoretical reasoning, especially in the Discussion section, but these studies still face two interrelated problems: First, the Theory section does in many cases not supply specific assumptions about country differences, but only the general proposition that there should be some. Differences that have been found in the course of the analyses then have to be explained ex post. Second, the ex post explanations can only be hypotheses which have to be tested in the future, giving these studies exploratory value, but they do not test theoretically based hypotheses.

Because the ex post explanations are driven by the effects of country dummies, it is not surprising that they usually contain contextual hypotheses, even if implicitly. Causal chains referring to the meso level, though, are not mentioned. We found one phrase that may refer to the meso level, but no elaborated arguments, neither in the Theory nor in the Discussion section.

3.3 Multilevel Analyses

In contrast to aggregate data analyses and analyses of individual data with country dummy variables, multilevel analyses allow to test the effects of country level and individual level characteristics simultaneously, which means that only multilevel models are suitable for testing macro–micro propositions. Correspondingly, we expect studies conducting multilevel analyses to explore the theoretical base for contextual effects more thoroughly.

3.3.1 Theory in the Theory Section

Out of our 22 studies, nine conduct multilevel analyses (including four studies which use individual level data with clustered standard errors): BDF 08, BDF 10, B 08, D 10, DFKS 07, EH 09, SK 09, TFI 10, and WP 09. One of them, B 08, does not present any theoretical arguments. The aim of the study is to show which of the so far used macro indicators exhibit the strongest correlation with life satisfaction, in order to find the variable which best indicates a country's progress. The other eight studies vary significantly with respect to the elaboration of theoretical reasoning, from detailed descriptions of the theoretical base and the application to the question of country differences in life satisfaction (see D 10

below) to Theory sections describing the proposed contextual effects briefly (see DFKS 07 below):

> It is growing affluence that leads people to operate at higher levels of the need hierarchy (Inglehart 1997: 34). It is claimed that the silent revolution has important consequences not only for politics and the economy, but for individual life strategies as well. Thus it may affect SWB in a twofold way. First, people in affluent societies might be better at developing strategies for increasing their quality of life (since they care about more than mere economic wellbeing), and hence tend to be happier (Inglehart et al. 2008). […] The second implication concerns the determinants of SWB. If value change is indeed fundamental, it should also effect what actually makes people happy: ''Economic security is still something that everyone wants, but it is no longer a synonym for happiness'', it is claimed (Inglehart 1997: 36). This implies that under the condition of affluence, happiness is increasingly derived from the fulfillment of post-materialist needs—what I call post-materialist happiness. At this point it is important to note that in the first place value change theory is about relative preferences: ''Postmaterialists are not non-Materialists, still less are they anti-Materialists'' (Inglehart 1997: 35). Yet materialist concerns should lose ground, relative to post-materialist concerns, in their capacity to make people happy—this is the prediction tested empirically in this paper. (D 10, p. 68)

> A more democratic system is likely to produce political outcomes that are closer to the preferences of the citizens than a system with less democratic elements Consequently, ceteris paribus, a greater exposure to democracy can be expected to raise individuals' well-being. Not only does such exposure lead to political results that are acceptable to a large part of a population, but citizens' well-being may also arise from their participation in the political decision-making process and from the perceived extent of procedural fairness of this process. In fact, such procedural utility might be even larger than the utility gained from a (democratic) political outcome. […] A particularly important determinant is culture: people in different cultures may value certain aspects of life differently and could, therefore, have different perceptions of their own individual wellbeing under the same objective circumstances. […] Besides democracy and culture, the economic situation of a country will also likely affect the well-being of its population. Economists have carefully studied the impact of income on happiness. As earlier papers by Abramowitz (1959) and Easterlin (1974) indicate, income growth may have a positive effect on personal happiness in the short run but not in the long run. […] On the other hand, differences in economic status within a country have a clear and consistent impact on personal happiness. Thus, to adequately control for the impact of income on happiness, it is necessary to distinguish between the income level within a society, and the relative economic position that an individual or family occupies in this society. (DFKS 07, p. 505f.)

These two examples show that the extent of theoretical elaboration (partly) depends on the number of independent variables tested: D 10 concentrates on one contextual effect, while DFKS 07 account for a number of independent variables; the detailed theoretical base leading to a rather lengthy Theory section. It is interesting to note that DFKS 07, although describing the theoretical base rather briefly, clearly differentiate between country and individual level effects of the "economic status". For aggregate data analyses, we

found no explicit differentiation between macro and micro level variables like GDP and personal affluence. DFKS 07, in contrast, specifically address the "income level within a society", an individual level variable. Another example for a precise differentiation of macro and micro level effects is WP 09:

> Whilst participation in society at an individual level could be seen as an aspect of social integration, i.e. a way of integrating the individual into their society through a range of social and associational bonds (Lookwood 1964), participation at an aggregate level, that is, the number of people participating in a society in general, could be regarded as an aspect of system integration since it is a way of linking the individual with political and social forces that regulate society or lead to social change (Hoskins and Mascherini 2008; Putnam 2000). (WP 09, p. 259)

With "social and associational bonds", WP 09 is at the same time an example for propositions referring to the meso level (without using this term). As shown in the model in Fig. 2, an elaborated multilevel model might include the meso level. Other examples are SK 09, BDF 10, and BDF 08 ("politicians … responsive to their citizens"):

> Political factors clearly affect peoples' lives and should thus be important determinants of individual life satisfaction across nations. In particular, not only (1) the political system, but also (2) the ideology and structure of the ruling government, as well as (3) specific historical experiences such as regime changes can arguably influence well-being. These political factors influence the extent to which the current allocation of goods and resources is in line with people's preferences. They equally determine whether and to what extent politicians are responsive to their citizens, which societal groups are favored or disfavored, and whether conflicting interests are integrated. Finally, political factors influence what people expect at least economically from the future, thereby contributing to people's well-being. (BDF 08, p. 122)

Finally, in contrast to the studies described in the previous chapters, we find specific hypotheses assuming conditional effects of country characteristics, may they be political institutions (BDF 10) or religious groups (EH 09):

> Institutions, broadly defined by North (1990) as 'the rules of the game', regulate public and private affairs and are thus expected to exert an important influence on individual well-being. For example, well-functioning legal systems provide and enforce property rights, ensuring protection of citizens against violence, theft and economic exploitation, while democratic institutions and government decentralization provide people with the means to feel that they influence the political process and resulting policy outcomes (Frey and Stutzer 2000; Bjørnskov et al. 2008b; Aidt and Gassebner 2010). […] Good democratic institutions may also create additional 'procedural utility' — the outcome-independent benefit from active political involvement, which has been shown to substantially exceed the contribution of the pure allocation effect to well-being (Stutzer and Frey 2003). […] Arguably, the impact of institutions will likely differ among these groups of countries, with institutions providing basic needs (food, shelter, health care and education) affecting more countries at lower levels of economic development. The effects of political institutions, conversely, are more likely to become important when a majority of the population has escaped material want. (BDF 10, p. 419f.)

3.3.2 Theory in the Discussion Section

In the Discussion section, multilevel studies usually summarize the theoretical base, the results and give possible explanations for unexpected findings (i.e. results not supporting the hypotheses). This is in contrast to studies testing country effects by introducing dummy variables into the regression models, in which brief descriptions of the theoretical base are explicated in the Discussion section (see Sect. 3.2.2), but not surprising because of the degree of theoretical explication already given in the Theory section. As a result, the Discussion section of multilevel studies is about as long as the Theory section. Nonetheless, we find some examples for explanations given in the Discussion section which we would have expected in the Theory section, for instance D 07:

> Theory section:
> It seems plausible to assume that these new democratic structures would not have the same impact on happiness as the structures already established a decade or more ago, i.e. before 1988. (D 07, p. 511)

> Discussion section:
> These estimation results are consistent with the notion that residents of these countries do not (yet) benefit as much from democracy as do residents of countries with longer democratic traditions. The reason may be that democratic institutions have not been in place long enough to permit substantial change toward more broadly accepted policies. Moreover, it has been observed in transitioning countries that the introduction of democracy may create overly optimistic expectations with regard to the future that later may not be fulfilled, thus resulting in decreasing happiness during at least a part of the transition process. (D 07, p. 514)

The separation of contextual and micro level effects we found in the Theory section is also apparent in the Discussion section, i.e. in the discussion of unexpected results, for example BDF 08 and SK 09:

> Similarly, governments' political ideologies do not appear to be influential, which might indicate that, in general, ideology and its induced policy changes are in line with the average citizen's preferences, both in the short-run ('current political ideology') as well as over a time span of ten years ('political ideology, 10-year'). (BDF 08, p. 145).

> … perhaps that the union type is of greater importance in richer countries. There could be some kind of threshold effect: Union type matters more if people have a certain standard of living. When people are doing well financially, material resources may be valued relatively less, whereas nonmaterial resources, such as status and commitment may become relatively more important (Inglehart 1997). (SK 09, p. 1154)

References to the meso level are also frequent in the Discussion section of multilevel studies (e. g. TFI 10 below), even if not always specified (e.g., EH 09, "something specific to the regulation of individual liberties"):

> Although happiness seems to be related to aggregate social capital, the mechanism of how social capital at the societal level relates to individual happiness can be debated. It is easily understandable that persons with higher levels of individual social trust would receive some benefits to their happiness through active engagement in diverse

> social activities and integration in their communities. However, higher social trust does have a positive effect on the resources, securities, and friendliness of communities of individuals. (TFI 10, p. 2588f.)
>
> While in times of relative poverty or of war, we might expect to find that participation in organized religion to become more essential to well-being, the central finding in this paper supports the opposite point of view, at least in the case of government regulation. That is, in particularly repressive societies, where one would assume that citizens are under relative duress, participation in organized religion apparently reduces life satisfaction. Perhaps there is something specific to the regulation of individual liberties, including religious freedom, which changes the meaning and experience of participatory religious experiences. (EH 09, p. 305)

To sum up the nine multilevel studies, theoretical reasoning in the Theory section is on average more elaborated than in aggregate and individual data analyses. Contextual and individual effects are explicitly separated, and the meso level is referred to—at least theoretically: None of the nine studies tests moderating effects of meso level units. Also, although the theoretical base is more elaborated than in the studies previously examined, an extensive reasoning is given in only four studies (BDF 08, D 10, EH 09, and SK 09).

4 Conclusions

The primary purpose of this paper was methodological: To examine to which extent studies comparing countries take the macro–micro-model into account by specifying propositions linking these two levels or—in case of a meso level—three levels. We expected the level of elaboration to vary by study type: For aggregate data analyses, we expected no clear differentiation between contextual and individual level influences in the articles′ theory sections (i. e. between macro and micro level variables) because these effects cannot be tested separately. For individual level studies with indicator (dummy) variables representing countries, we expected the theory section of an article to contain only general hints to the reasons for country differences because with country dummy variables, it is not possible to analyze specific contextual effects. If references to the macro–micro-model are given, both types of analyses can be expected to elaborate on specific contextual effects ex post, in the discussion section. For multilevel studies, which are a possible way to avoid the problems described, we assumed context hypotheses to be specified ex ante.

To be able to compare empirical studies comparing countries, we focused on one specific dependent variable: life satisfaction, and on quantitative analyses. Because our aim was to examine the "state of the art", we confined our analyses to the most recent articles, published between 2007 and 2010 in journals which are cited in the Social Science Citation Index (22 papers).

In accordance with our expectations, we found that in aggregate level analyses, contextual and individual level effects are usually not separated theoretically. In the Discussion section, "culture"-arguments and references to the meso level are given to account for unexpected results, to explain this part of the variance (of between-country life satisfaction) that could not be explained by the independent variables, or as a general reference to an unspecific bundle of factors that may influence life satisfaction. All in all, aggregate data analyses do not refer to the basic macro–micro-model we introduced in chapter 1, let alone the elaborated model (chapter 2). Also in accordance with our expectations,

individual level studies with country indicator (dummy) variables do not specify contextual effects ex ante, but instead itemize country level conditions which may influence life satisfaction. In both types of studies, specific references to the macro–micro-model (including a reference to meso level units) are given ex post, either to explain unexpected results (e. g. to account for country differences that could not be explained by the independent variables) or to give an ex post-explanation for statistically significant effects of country dummies.

Our results may not be surprising, because it immediately suggests itself to *not* theoretically elaborate on propositions which cannot be tested. Aggregate level studies are not able to separate macro and micro level variables statistically, and so the authors do not separate their different effects theoretically. Studies introducing country dummy variables are not able to test specific contextual hypotheses, so the authors only provide a general theoretical base for country differences and provide possible explanations for country differences ex post. But this strategy may lead to problems: First, in aggregate data analyses, the missing differentiation between macro and micro variables (contextual and individual level effects) may lead to a naïve interpretation of results. For example, it would be wrong to take the well established correlation between a country's GDP and its residents mean life satisfaction at face value and conclude that living in a wealthy country increases life satisfaction—it is possible that only individual affluence is relevant (which correlates with GDP). In pointing to this difference, aggregate data analyses would provide a more informed base for further research. Second, individual level analyses with country dummy variables can have exploratory value because they can hint at possible explanations for country differences. But these ex post explanations, which are contextual hypotheses, are only valid if within-country differences are fully explained, or put differently: if all relevant individual level variables are introduced in a statistical (e. g. regression) model. If this is not the case, statistically significant country differences cannot be interpreted as a hint towards contextual effects and may lead further research in the wrong direction if done so.

Multilevel studies proved to separate contextual and individual level effects and to assume specific hypotheses. Nonetheless, even these studies varied in theoretical elaboration, and only four discuss the theoretical base for contextual effects on life satisfaction extensively ex ante. We are aware of the fact that especially for studies testing a larger number of effects, it is often not possible to discuss every effect extensively, but without a theoretical base informed interpretations of the results are not possible. Further, although the meso level is referred to in the Theory section of multilevel studies, none of the studies tests its significance for mediating country level influences. To increase the significance of multilevel studies and to approximate a complete explanation of country differences, it will be necessary to include the meso level, sufficient data provided.

To sum up, our study documents that both aggregate and individual level studies are insufficient for an explanation of either macro-sociological or micro-sociological characteristics, life satisfaction in this case. Instead, we have to specify and test multilevel models, often including a meso level. This requires, as the deficits in even the multilevel studies show, highly elaborated multilevel propositions and sophisticated statistical tests. Our major plea is that studies either on the macro or on the micro level should be more complex and specify a macro–micro model and propositions linking the levels. This pertains in particular to macro level studies, because multi-level studies have consistently shown that the variance explained on the macro level is much lower than by the micro level variables. We do not argue every aggregate analysis should test a macro–micro model, however, we advocate to propose such a model and interpret the macro level findings more carefully in the light of the extended model. Moreover, this might be the only

methodological adequate procedure to account for the inconsistent findings in a given research domain and is likely to advance better explanations. Therefore, our analysis can be generalized to other studies using macro-level dependent variables.

Since we are not part of this research domain, we can, presumably, be more critical of their methodology. However, we wish to state that our intention is to study deficits in macro-sociological research for which life satisfaction studies serve as an example. It should be reminded that we examined the studies under one specific aspect only: the theoretical reasoning presented for macro effects. Criticizing studies under this aspect does not imply to a judgment on the quality of the respective paper. Several studies have different principal aims, e.g., Bonini 2008 (comparison of the explanatory power of GDP and HDI) and Abdallah 2008 (integration of different datasets and test of several macro–micro effects). Our criticism refers to studies which are concerned with the explanation of country differences. If a study's main aim is to determine whether such differences exist, aggregate level or country dummy analyses are perfectly appropriate. However, if it aims at explaining (at least partially) macro level outcomes, then our recommendations are valid.

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