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REVIEW ARTICLE

Income Inequality and Subjective Wellbeing: Trends, Challenges, and Research Directions

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Abstract Research findings on the consequences of income inequality for subjective wellbeing (i.e. life satisfaction and happiness) remain inconclusive. Some researchers report a positive spill-over from income inequality, others report negative effects, and still others find no significant outcomes whatsoever. Therefore, it remains unclear whether people living in areas of high income disparity feel better off or less well off than people living in environments where everyone is more equal. This paper provides a critical discussion of recent research on the inequality-wellbeing link and suggests strategies for social scientists seeking new insights into the consequences of income inequality for subjective welfare.

Keywords Review · Inequality · Distribution · Wellbeing · Life satisfaction · Happiness

1 Introduction

Income inequality and its consequences for human welfare are of general concern (Neckerman and Torche 2007; Wilkinson and Pickett 2009). A widening of the income gap reported for most developed countries around the globe (McCall and Percheski 2010; Piketty 2014; Piketty and Saez 2014) and the recent popularity of subjective welfare measures (Diener and Tov 2012; Layard 2010; Stiglitz et al. 2009) underline its salience. Therefore, it is not surprising that researchers are increasingly concerned with the relationship between income inequality and subjective wellbeing (SWB) (i.e. life satisfaction and happiness).

But what do these empirical studies find? Do individuals in more equal surroundings indeed feel happier and more satisfied than those in more unequal settings—as often

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implicitly assumed in egalitarian arguments? This paper reviews research on the consequences of income inequality for SWB. It starts with past findings and potential explanations for the inequality-wellbeing link (Sect. 2) and outlines their theoretical and methodological limitations (Sect. 3). It then suggests strategies for social scientists seeking new insights into the consequences of income inequality (Sect. 4).

2 The Inequality-Wellbeing Link

The first study to explicitly investigate the influences of income inequality on people's wellbeing was conducted by Morawetz and colleagues in 1976. The researchers compared the wellbeing of members of two Israeli Kibbutz communities who were most different in their income structure. The Isos Kibutz had a strongly egalitarian social structure; its members were happier and evaluated their lives more positively than members of the Anisos community, a Kibbutz with a more hierarchical income structure. The authors concluded that the findings "appear to be consistent with the hypothesis that the more unequal the income distribution the lower the individual's self-rated happiness" (Morawetz et al. 1977, p. 522). But studying only two communities limits the explanatory power of their empirical findings. Because they could not determine whether other unobserved characteristics caused the observed differences in wellbeing, the authors encouraged future research to dig deeper into the topic and to analyze SWB across different income structures.

Given the number of articles published over the past three decades on income inequality and SWB, it seems Morawetz and his colleagues were successful in the call for more research. A thorough literature search identifies 24 articles specifically targeting the *contextual* relationship between income inequality and SWB (see Table 1): that is, the interrelationship of the macro-phenomenon *income inequality* observed at a larger contextual level (e.g. the community, region, or country) and the micro-phenomenon *subjective wellbeing*.[1] Eighteen studies focus explicitly on the contextual relationship of the inequality-wellbeing link, while six address income inequalities as one out of several contextual influences on SWB.

2.1 What do Studies on the Inequality-Wellbeing Link Find?

Studies on the inequality-wellbeing link have produced mixed results (see Table 1, for overview). Researchers disagree on whether people living in contexts of high income disparity report more or less SWB than those in more equal environments. Some researchers find an overall *positive* effect of income inequality on SWB (Berg and Veenhoven 2010; Clark 2003; Haller and Hadler 2006; Helliwell and Huang 2008; Ott 2005; Rözer and Kraaykamp 2013; Schyns 2002); others report *negative* effects (Alesina et al. 2004; Blanchflower and Oswald 2003; Delhey and Dragolov 2014; Diener et al.

[1] Clark (2003) and Blanchflower and Oswald (2003) are the only studies that, to the best of my knowledge, have not yet been published in a peer-reviewed journal. They are significant for research into income inequality and subjective welfare, however, and merit inclusion here. Studies examining the *variance* in subjective wellbeing as an outcome variable (e.g. Delhey and Kohler 2011) are not considered in this overview; nor are classical studies on relative income, often measured by the distance between an individual income and the income of a larger aggregate (e.g. Dittmann and Goebel 2010; Luttmer 2005; Shields et al. 2009) or studies that tackle the relationship between income inequality and other outcome variables (e.g. Costa and Kahn 2003; Lynch and Kaplan 1997; Wilkinson 1999, 2000).

Table 1 Summary of studies on income inequality and SWB (see Schneider 2014)

Study	Data	Region	Time	SWB	Inequality	Methods	Inequality-wellbeing link
Alesina et al. (2004)	GSS	United States	1981–1996	Happiness	Gini	Ordered logit, CL, FE	*Total effect*: Gini negative and signif., sensitive to CV; *Subgroup effects—by income*: Gini negative and signif. only for upper income group; *by pol. orientation*: Gini negative and signif. only for political left, sensitive to CV
Alesina et al. (2004)	EuroBa	Europe	1975–1992	Life satisfaction	Gini	Ordered logit, CL, FE	*Total effect*: Gini negative and signif., robust to CV; *Subgroup effects—by income*: Gini negative and signif. only for lower income group, robust to CV; *by pol. orientation*: Gini negative and signif. only for political left, robust to CV
Berg and Veenhoven (2010)	WDH	Worldwide	1993–2004	Life satisfaction, mood, contentment	Gini	Correlation	*Total effects—life satisfaction/contentment*: Gini correlates negatively (without CV), positively (with CV/GDP); *mood:* Gini correlates positive, robust to CV; *Subgroup effects—by region*: Gini correlates negatively in Western countries (with CV/GDP); positively in Eastern Europe, Asia, Latin America, (robust to CV/GDP); no effect in Africa
Blanchflower and Oswald (2003)	GSS	United States	1976–1996	Happiness	p75/p25	Ordered logit, OLS, FE	*Total effect:* p75/p25 negative and signif., sensitive to CV in FE analysis; *Subgroup effects—by gender, age, education, status:* p75/p25 negative and signif. for women, individuals of under 30 years of age, workers and those of low education, robust to CV
Clark (2003)	BHPS	Great Britain	1991–2002	GHQ-12, life satisfaction	Gini, p90/p10	Ordered probit, FE, RE	*Total effect:* Gini positive and signif., robust to CV; *Subgroup effects—by social mobility experience/variance in income*: effect steeper for those with high pay rise/income variability, robust to CV; [results for p90/10 similar but not reported]
Delhey and Dragolov (2014)	EQLS	Europe	2007	Index: life satisfaction-happiness	Gini	ML mediation	*Total effect*: Gini negative and signif., robust to CV, full mediation by trust and status anxiety, partial mediation by perceived conflicts; *Subgroup effects—by GDP*: in affluent countries full mediation by trust, in less affluent countries full mediation by status anxiety

Table 1 continued

Study	Data	Region	Time	SWB	Inequality	Methods	Inequality-wellbeing link
Diener et al. (1995)	WDH	Worldwide	various time points	Calibration of SWB measures	Gini	Correlation	*Total effect*: Gini correlates negatively and signif.
Diener et al. (1995)	Student sample	Worldwide	1984–1986	Life satisfaction, happiness	Gini	Correlation	*Total effect*: Gini not signif.
Fahey and Smyth (2004)	EVS	Europe	1999/2000	Life satisfaction	Gini	ML, OLS macro	*Total effect*: Gini negative and signif. (controls for GDP) in multilevel-analysis; Gini not signif. in OLS macro-analysis
Graham and Felton (2006)	LatinoBa	Latin America	1997–2004	Life satisfaction	Gini	Ordered logit, CL	*Total effect*: Gini not signif. [results described in text, not displayed in table]
Hagerty (2000)	GSS	Unites States	1989–1996	Happiness	Max., min, skew, p80, p20	OLS	*Total effect*: max. income and p80 negative and signif.; skew and p20 positive and signif.; min. and mean income not signif.
Hagerty (2000)	WB, ILO, WDH	Western countries	1972–1994	Life satisfaction, happiness	Gini, skew, 1st and 5th quintile	OLS, FE	*Total effect*: Gini, skew, 5th quintile negative and signif., 1st quintile not signif. (controls for GDP)
Haller and Hadler (2006)	WVS	Worldwide	1995/1997	Life satisfaction, happiness	Gini	ML	*Total effect*: Gini positive and signif.; *Subgroup effects—by region*: [descriptive results] southern American countries show high inequality but are very happy, post-communist countries show high equality but are very unhappy, these differences may confound analysis
Helliwell (2003)	WVS	Worldwide	1980–1997	Life satisfaction	Gini	OLS, robust, FE	*Total effect*: Gini not signif. [results described in text, not displayed in table]

Table 1 continued

Study	Data	Region	Time	SWB	Inequality	Methods	Inequality-wellbeing link
Helliwell and Huang (2008)	WVS, EVS	Worldwide	1980–2002	Life satisfaction	Gini	OLS, correlation	*Total effect*: Gini positive and signif. (controls for CV); *Subgroup effects—by region*: Gini correlates positively in Latin America, negatively in non-Latin countries [results described but not reported]; *by GDP*: Gini positive and signif. for poorer countries; *by governance*: Gini positive and signif. for bad governed countries
Layte (2012)	EQLS	Europe	2007/2008	WHO5	Gini	ML	*Total effect*: Gini negative and signif., sensitive to CV [status anxiety and social capital]; *Subgroup effects—by wealth/* GDP: Gini effect stronger in high GDP countries than low/ medium GDP countries
Morawetz et al. (1977)	Own collect.	Israel	1976	Happiness, evaluation of life	–	–	*Total effect* (2 case comparison): community with more inequality less happy than community with less inequality
Oishi et al. (2011)	GSS	United States	1972–2008	Happiness	Gini	ML mediation	*Total effect*: Gini negative and signif. (direct effect), full mediation by perceived fairness and general trust; *Subgroup analysis—by income*: effect and full mediation only reported for two lowest income quintiles
Ott (2005)	WVS, EVS	Worldwide	1999/2001	Life satisfaction	p80/p20	Correlation	*Total effect*: p80/p20 ratio correlates positively; *Subgroup effects—by GDP*: p80/p20 ratio correlates strongly positive in poor countries
Rözer and Kraaykamp (2013)	WVS, EVS	Worldwide	1989–2008	Index: life satisfaction – happiness	Gini	ML	*Total effect*: Gini positive and signif.; *Interaction effects*: the higher the Gini the lower the positive effect of social and institutional trust and the stronger the negative effect of egalitarianism on SBW
Sanfey and Teksoz (2007)	WVS	Worldwide	1981–2002	Life satisfaction	Gini	OLS, FE	*Subgroup effects—by transition-status*: Gini negative and signif. for transition countries (CV included); Gini positive and signif. for non-transition countries (CV included)

Table 1 continued

Study	Data	Region	Time	SWB	Inequality	Methods	Inequality-wellbeing link
Schwarze and Härpfer (2007)	SOEP	West Germany	1985–1998	Life satisfaction	Gini, Theil, Atkinson	OLS, robust SE, CL; ordered probit, robust SE, CL, FE	*Total effect*: Gini and Theil, [Atkinson] (net and gross) negative and signif.; *Subgroup effects—by income*: Gini (net), Theil (net), and Atkinson (net) negative and signif. for lowest income tercile; Gini (gross) negative and signif. for all terciles, Theil (gross) negative and signif. for lowest and highest tercile; Atkinson (gross) negative and signif. for the lowest tercile
Schyns (2002)	WVS	Worldwide	1990	Life satisfaction	Gini	ML	*Total effect*: Gini positive and signif. (controls for GDP) [results described in text, not displayed in table]
Senik (2004)	RMLS	Russia	1994–2000	Life satisfaction	Gini	Ordered probit, robust SE, CL	*Total effect*: Gini not significant
Tomes (1986)	QLS	Canada	1970	Life satisfaction, happiness	Bottom 40 %, top 10 %	OLS, max. likelihood probit	*Total effect—bottom 40 %*: negative and signif. for life satisfaction (OLS) and happiness (probit); *top 10 %*: not signif. for life satisfaction (OLS), negative and signif. for happiness (probit); *Subgroup effects—by gender*: bottom 40 % negative and signif. (at 10 % level) for men only
Veenhoven (2005)	WDH	Worldwide	1990	Life satisfaction, life expectancy	Gini	Correlation	*Total effect*: Gini not signif. correlated, sensitive to CV (GDP) [results described in text, not displayed in table]
Verme (2011)	WVS	Worldwide	1981–2004	Life satisfaction	Gini	Ordered logit, CL (yes/no); robust SE (yes/no); FE (yes/no);	*Total effect*: Gini negative and signif., positive and (mostly) significant if fixed effects are removed; *Subgroup effects—by income* : Gini negative and signif. for poor and non-poor; *by geographic region*: Gini negative and signif.; [all subgroup-effects sensitive to sample-size and estimation technique]

BHPS British Household Panel Study, *CL* cluster, *CV* covariates, *EQLS* European Quality of Life Survey, *EuroBa* Eurobarometer, *EVS* European Value Survey, *FE* fixed effects, *GHQ* General Health Questionnaire, *GSS* General Social Survey, *ILO* International Labor Organization; *LatinoBa* Latinobárometro, *ML* multilevel, *OLS* Ordinary Least Squares, *QLS* Quality of Life Survey, *RE* random effects, *RMLS* Russian Longitudinal Monitoring Survey, *SE* standard error, *SOEP* Socio-Economic Panel (Germany), *WB* World Bank, *WDH* World Database of Happiness, *WHO5* WHO-Five Well-being Index, *WVS* World Value Survey

1995; Fahey and Smyth 2004; Layte 2012; Oishi et al. 2011; Schwarze and Härpfer 2007; Tomes 1986; Verme 2011) or *no significant* outcomes whatsoever (Graham and Felton 2006; Helliwell 2003; Senik 2004; Veenhoven 2005).

Subgroup-specific analyses add more detail. Cross-country comparisons point to interesting differences in the kind and strength of the inequality-wellbeing link, most often by geographic region, economic prosperity, and quality of governance.

Geographic region: Studies report a negative relationship between inequality and SWB in Western, mostly European, societies (Alesina et al. 2004; Delhey and Dragolov 2014; Fahey and Smyth 2004; Layte 2012), with a positive link observed in other parts of the world. Berg and Veenhoven (2010) observe, for example, that income inequality and life satisfaction are positively correlated in Eastern Europe, Asia and Latin America. Helliwell and Huang (2008) report a positive effect of inequality on life satisfaction for Latin American countries, but a negative one for all non-Latin American countries. Others have challenged these findings and find opposite effects: differences between transition and non-transition countries are reported, for example, by Sanfey and Teksoz (2007) who find income inequality decreases life satisfaction in transition countries and increases it in non-transition countries. Verme (2011) differentiates between Western and non-Western countries and finds a negative effect of inequality for both. His results are, however, sensitive to the sample in use and sometimes turn insignificant. In a study on Latin American countries only, Graham and Felton (2006) do not find any significant effects of inequality on SWB.

Economic prosperity: The inequality-wellbeing link differs according to a country's economic prosperity as well. Some studies report that income inequalities raise the average wellbeing of poor countries (Helliwell and Huang 2008; Ott 2005), but reduce it in wealthy ones (Helliwell and Huang 2008). For European countries, Layte (2012) reports an interesting interaction effect of inequality and economic growth: the strongest decline in wellbeing is observed for those living in high GDP countries, while income inequalities reduce SWB in low and medium GDP countries less strongly.

Quality of governance: The quality of governance moderates the inequality-wellbeing link. Helliwell and Huang (2008) find a positive relationship between income inequality and life satisfaction in badly governed countries; they find no significant effects for well-governed countries. For their part, Rözer and Kraaykamp (2013) find interesting interaction effects, whereby income inequality reduces the positive effect of social and institutional trust on SWB at the macro and micro level.

Problematically, findings from cross-country comparisons are often sensitive to covariates, such as economic growth and unemployment rate. Alesina et al. (2004), for example, find the negative effect of income inequality on happiness in the US turns insignificant when unemployment is controlled for. Similar effects are observed by Blanchflower and Oswald (2003). Berg and Veenhoven (2010) observe a negative correlation between inequality and life satisfaction and contentment that turns positive when they control for GDP. A positive turn is also found by Veenhoven (2005) when he includes wealth of a nation and correlates it with happy life years.

Finally, some studies point to inter-individual variation in the inequality-wellbeing link by income, income mobility, gender, and political orientation, but often these results remain country specific.

Income and Income Mobility: For the US, Oishi et al. (2011) find income inequality to reduce SWB of lower income groups, while Alesina et al. (2004) report income inequality to reduce SWB of higher income groups only. In a cross-country comparative study of European societies, Alesina et al. (2004) find lower income groups suffer most from

income inequality. Schwarze and Härpfer (2007) confirm this finding for West Germany on inequality generated from post-governmental (net) income. Life satisfaction of all income groups is reduced by inequalities of pre-governmental (gross) incomes. Results are, however, sensitive to the measurement of inequality. In his international cross-comparative study, Verme (2011) finds the wellbeing of both poor and non-poor individuals to be reduced by income inequality. Interestingly, the findings on poor individuals are sensitive to the kind of inequality data and the sample in use and sometimes turn insignificant.

Gender and Political Orientation: Gender specific analyses reveal that inequality reduces the life satisfaction of Canadian men (Tomes 1986) and US women (Blanchflower and Oswald 2003). The effect varies with the political orientation; in Europe and the US, inequality usually reduces the wellbeing of the political left (Alesina et al. 2004).

In sum, studies on income inequality and SWB have produced mixed results. It remains unclear whether inequalities matter to an individual's wellbeing, which subgroups are more responsive to income inequality in the larger context, which institutional arrangements accelerate/compensate for the positive/negative effects of income inequality, and how the co-variation with other economic and societal conditions alters the inequality-wellbeing link.

2.2 Why Should Inequality Affect SWB?

Researchers posit various explanations of why and how income inequality affects an individual's wellbeing: for one, externalities produced by inequality, such as crime and social conflict, may constrain an individual's behavior and, thus, affect his/her life satisfaction; for another, internal channels may mediate the inequality-wellbeing link according to people's preferences for equality, social comparisons, and/or perceptions of social mobility.

2.2.1 Institutional and Infrastructural Externalities

Assuming externalities of income inequality to influence life satisfaction, Haller and Hadler (2006, p. 181) say income inequality "may lead to additional social problems and conflicts (e.g. high levels of crime and violence, sharp industrial and political conflicts)". Diener et al. (1995, p. 853) argue equality provides a place of social justice and harmony in which it is more likely that "a greater percentage of individuals will be able to achieve their goals". In other words, income inequality is assumed to produce social conflict that decreases life satisfaction, while equality creates states of social harmony and justice that increase it.

The argument is analogous to the *livability hypothesis* introduced by Veenhoven (1995). This hypothesis assumes SWB is driven by objective living conditions within specific institutional settings. The degree of livability is defined by the fit between individual needs and institutional provision. High livability is provided by an institutional and infrastructural setting that satisfies human needs; livability is low if institutional arrangements do not serve the individual and satisfy his/her basic needs. The question is, therefore, whether equality raises livability or makes no difference to it.

The argument also ties in with the *social capital hypothesis* discussed in the literature on income inequality and health. Kawachi and colleagues (Kawachi and Kennedy 1999; Kawachi et al. 1997) argue income inequality affects the individual by lowering the social capital in a community; with increasingly fragile social support systems outside the family, including social services that suffer from cut-backs, rates of civic participation decrease,

along with interpersonal trust, making deviant behavior a likely outcome. By way of contrast, people living in more equal communities are expected to receive more social support through institutions and the social community, are comforted by higher levels of institutional trust, and can rely on an active civic community (see e.g. Brush 2007; Choe 2008; Costa and Kahn 2003; Hsieh and Pugh 1993; Kelly 2000; Savolainen 2000).

2.2.2 *Social-Psychological Mechanisms*

Economists often argue for a general *distaste for inequality*, what sociologists usually call an egalitarian belief/ideology (see Senik 2009 for an excellent overview of the topic), whereby people show an intrinsic dislike for inequality, judging it "a social evil" (Alesina et al. 2004, p. 2010). Thurow (1971, p. 327) calls this tendency an aesthetic taste for equality or inequality that is "similar in nature to a taste for paintings". If individuals show lower life satisfaction with rising income inequality, this proves the general dislike of inequality; positive relations between life satisfaction and inequality show the contrary, namely that individuals are "inequality lovers" (Tomes 1986, p. 435). This general preference for equality serves as a precondition for the model of *interdependent preferences* (Becker 1976; Duesenberry 1967; Tomes 1986). The model formalizes the assumption that utility is not only produced by the material conditions of the individual but also by others living in a specific context. Thus, inequality directly enters the individual's utility function (see e.g. Schwarze and Härpfer 2007; Thurow 1971; Tomes 1986). In this respect, income inequality lowers wellbeing if preferences for equality are violated.

Social comparisons are another central mechanism linking incomes to SWB (Hopkins 2008). Others' incomes provide one of the referential standards by which people evaluate their own income position and place themselves in a social hierarchy. Researchers find others' income to influence SWB tremendously, an effect comparable to and sometimes even stronger than absolute levels of income (Easterlin 1973, 1995, 2001; see also Ball and Chernova 2008; Card et al. 2012; Ferrer-I-Carbonell 2005; Wolbring et al. 2013). People who earn less than a specific referential group usually feel less happy than those who earn comparatively more. This finding is discussed in economics as the *relative income hypothesis*, in sociology as the *relative deprivation effect* (Verme 2011).

The argument is closely related to the *status anxiety hypothesis* in the discussion of income inequality and health (Wilkinson and Pickett 2009). Social disparities in society are assumed to be steeper with larger income inequalities. Social disparities push social competition and social class differentials. As a result, individuals from lower social classes feel worse if they reflect on their place in the social hierarchy. Shame and distrust are potential consequences, with negative implications for health and increased risk of deviant behavior.

Feeling left behind by those who climb the social ladder may, however, be only one of the possible reactions to an increase in income inequality (Grossfeld and Senik 2010; Verme 2011). The *tunnel effect* introduced by Hirschman and Rothschild (1973) predicts a positive relationship between income inequality and SWB. In the early stages of a country's economic development, often accommodated by a political transition process, rapid economic growth and a widening of the income gap, individuals, on average, feel good about themselves. This feeling evolves from the expectations people form about their future living conditions as they watch others climb the social ladder. Instead of feeling left behind—as assumed by the relative income hypothesis or relative deprivation theory—they assign others' gratification to themselves in the near future. If expectations are not met,

however, their feelings will turn into anger and disappointment. Thus, the tunnel effect is only temporary and leads to social conflict if expectations are not met in the long run.

The argument on the *perception of social mobility and social risks* highlights subgroup specifics in the interpretation of inequality effects. Inequality can either signal social opportunities for those at the bottom or indicate social risks for those who reach the top rung of the social ladder. Alesina et al. (2004, p. 2011) explain differences in the reactions towards inequality between Europeans and Americans in terms of mobility perceptions: "Americans belief that their society is mobile so the poor feel that they can move up and the rich fear falling behind. In Europe, a perception of a more immobile society makes the poor dislike inequality since they feel 'stuck'". The authors speculate these global differences in perceptions of social opportunity structures and social risk explain their finding that the poor in Europe are more strongly affected by income inequality, while the rich in the US show the lowest levels of happiness when income inequality is high.

By and large, research remains speculative as to the validity of its theoretical assumptions, rarely testing the proposed mechanisms with empirical data. One exception is a study by Oishi et al. (2011) testing the social capital hypothesis by empirically examining how perceptions of fairness and trust mediate the relationship between income inequality and life satisfaction in the US. The authors hypothesize people perceive more unfairness and feel less trust in periods of high income inequalities. Based on data of the US General Social Survey, they examine changes in income inequality and life satisfaction over a 36-year period (1972–2008). When they apply multi-level mediation analysis, they find people's perceptions of fairness and trust explain the relationship between income inequality and life satisfaction, but group-specific analysis shows this to be valid only for the two lowest income groups.

In a more recent study, Delhey and Dragolov (2014) test empirically whether perceptions of social trust, status anxiety, and social conflicts function as mediators to explain the inequality-wellbeing link in Europe. They apply multilevel-mediation analysis to data of the European Quality of Life Survey of 2007 and find income inequality decreases social trust and increases status anxiety. This, in turn, lowers people's life satisfaction. Country differences are found to be crucial: while social trust is the important mechanism in more affluent European societies, social anxiety is more relevant in less affluent ones.

With the exception of these two studies, there has been little effort to investigate the processes that might explain how and why income inequality affects people so differently. Do women in the US and men in Canada simply show a stronger interest in equality and, thus, suffer more from inequality? Do lower income groups in Europe feel more deprived when income inequality is high, while higher income groups in the US simply fear the risk of moving down the social ladder? And does income inequality only inspire those who have experienced social mobility? Large variation in effects of cross-country comparative studies pose an even bigger interpretative challenge. Why do poor and badly governed countries show a positive relationship between income inequality and SWB? Why are results mixed among Western countries? Is the heterogeneity in findings produced by inter-individual and inter-cultural variations in the psychological processes, or does income inequality increase the livability of individuals dependent on other societal circumstances?

2.3 What Methodologies do Researchers Apply when Studying the Inequality-Wellbeing Link?

A closer look at the literature reveals studies on income inequality and SWB vary in their methodology, including, amongst others, the selection of the source of data, the focal

indicators, the units of analysis, the covariates and the estimation techniques (see Table 1, for overview).

Researchers interested in cross-country comparisons often use the World Value Survey (WVS) or the World Database of Happiness (WDH). Cross-country comparisons within the European context use the Eurobarometer, the European Value Study (EVS), or the European Quality of Life Survey (EQLS). Graham and Felton (2006) use the Latinobarometro to investigate differences between Latin American countries. Researchers making within-country comparisons use the German Socio-Economic Panel Study (SEOP), the British Household Panel Study (BHPS), the Russian Longitudinal Monitoring Survey (RLMS), the US General Social Survey (GSS), and the Canadian Quality of Life Survey (QLS).

Depending on the source of data, researchers are restricted in their choice of SWB indicators. Most research on the inequality-wellbeing link use *life satisfaction* measures as the main outcome variable. The measures vary only slightly in the wording: respondents are typically asked how satisfied they are with their life in general. Scales vary, however, from an 11-point scale in the SOEP, to a 10-point scale in the WVS and the EVS, a 7-point scale in the BHPS and a College Sample used by Diener et al. (1995), a 6-point scale in the RLMS, and a 4-point scale in the Latinobarometro. Sometimes life satisfaction outcomes are also recoded (Alesina et al. 2004) or calibrated (see Diener et al. 1995) to make them comparable to other survey studies. *Happiness*, the affective component of wellbeing, is used by studies based on the US GSS. Respondents are asked on a 3-point scale: "Taken all together, how would you say things are these days would you say that you are very happy, pretty happy, or not too happy?" Happiness outcomes are said to be comparable to reports on life satisfaction (see Alesina et al. 2004). Diener et al. (1995) and Tomes (1986) use both happiness and life satisfaction as wellbeing outcomes and find very similar effects of income inequality on both measures. Rözer and Kraaykamp (2013) compose a new outcome variable using the mean of both life satisfaction and happiness, and test it on data of the WVS. They recode the 4-point happiness scale into a 10-point scale to make it comparable with the life satisfaction measure.[2]

Other outcome variables are used by researchers to study the consequences of income inequality on people's SWB. Veenhoven (2005), for example, uses *happy life years* as an outcome variable that mixes life expectancy with life satisfaction. Layte (2012) draws on the *WHO-Five Well-being* (WHO5) sum-score, a psychometric scale consisting of five items on positive mood, vitality, and general interest. Researchers analyzing more than one outcome variable (other than those mentioned above) include Berg and Veenhoven (2010) who study the life satisfaction (10-point scale), mood (sum-index) and contentment (11-point scale) using the WDH. Clark (2003) analyzes the impact of income inequality on life satisfaction (7-point scale) and general health (GHQ-12, sum-index) provided by the BHPS. In general, the availability of data seems to explain the researchers' use of specific items.

Variability is also observed in the selection of the inequality measure and the type of income used for its calculation. The Gini coefficient is a popular indicator used by researchers to study the inequality-wellbeing link. A few employ other indices, such as the Theil Index and the Atkinson measure (Schwarze and Härpfer 2007), income dispersion ratios (Blanchflower and Oswald 2003; Ott 2005), and/or simple inequality statistics, e.g.

[2] I view the re-coding procedure of the authors as problematic. The transformation of a lower scale (4-points) into a larger scale (10-points) does not guarantee comparability with a question originally asked on the larger scale as the authors assume.

the skewness or the minimum and maximum income (Hagerty 2000; Tomes 1986). Sadly, few report the type of income used for the calculation of inequality. Those who do often choose disposable/net incomes (Alesina et al. 2004, for the US; Senik 2004), gross incomes (Clark 2003, of fully-employed), or a mix of the two (plus consumption measures) (Alesina et al. 2004, for Europe; Verme 2011). Schwarze and Härpfer (2007) use a pre-governmental income measure that subsumes gross earnings, capital income, and private transfers across all household members, as well as a post-governmental income measure that subsumes the pre-government income minus income tax and payroll tax payments plus public transfer payments.

Many researchers select different geographic units to explore the relationship between income inequality and life satisfaction. Some investigate cross-country variations (e.g., Alesina et al. 2004; Berg and Veenhoven 2010; Diener et al. 1995; Fahey and Smyth 2004; Graham and Felton 2006; Haller and Hadler 2006; Helliwell and Huang 2008; Layte 2012; Sanfey and Teksoz 2007; Schyns 2002); others compare within-country variations across time (Oishi et al. 2011;Senik 2004) or across lower regional units, such as federal states (Alesina et al. 2004; Blanchflower and Oswald 2003; Tomes 1986), policy regions (Schwarze and Härpfer 2007), or cities (Hagerty 2000). To the best of my knowledge, Clark (2003) is the only researcher to consider inequalities in a social aggregate characterized by the region, time and respondent's gender.

Researchers employ a variety of estimation techniques as well. Methods range from simple correlation analysis, to linear and ordinal regression models, fixed time and year effects and multi-level regression models. Schwarze and Härpfer (2007) and Verme (2011) use multiple estimation techniques. Oishi et al. (2011) and Delhey and Dragolov (2014) are, to the best of my knowledge, the only researchers in the field to apply multi-level mediation analysis to empirically test the mechanisms bridging the gap between the macro-phenomenon, income inequality, and the micro-level outcome, life satisfaction.

Briefly stated, researchers choose among a plethora of methodologies to study the link between income inequality and SWB, thereby limiting the comparability of their findings. Based on the previous methodological overview, no clear pattern arises that would legitimate any conclusion as to what methodological choices produce the mixture in inequality effects. It remains unclear whether the heterogeneity in findings is produced by the methodological choices of the researcher, thus making his/her work an empirical artifact, or whether inter-individual variations in the psychological processes (or institutional externalities caused by inequality) are responsible for the mixed results reported on the inequality-wellbeing link.

3 Theoretical and Methodological Limitations

Dealing conceptually, theoretically, and empirically with phenomena positioned at different analytical levels is demanding—to say the least! Whereas the distribution of resources is located at the regional or societal level, reports on life satisfaction are the product of individual experiences and cognitive evaluations. While methodological tools are rapidly advancing and new software programs can simplify model specification and statistical analysis, the theoretical understanding of how to link two concepts at different analytical levels lags behind. Despite some efforts to understand the consequences of income inequality on human welfare, research remains in its infancy. We know little about the empirical validity of relational patterns and even less about the driving forces behind

them. That said, a thorough understanding of the theoretical and empirical challenges of past research is necessary before we attempt to overcome them.

3.1 What Theoretical Limitations does Research on the Inequality-Wellbeing Link Face?

Neckerman and Torche (2007, p. 349) criticize research on the consequences of income inequality as "premature theoretical closure". They claim researchers limit themselves to a few theoretical streams (relative deprivation and social capital), neglecting other promising paths and significant mechanisms. Although research on the inequality-wellbeing link has increased steadily over the past years, and various *new* mechanisms have been proposed (see Sect. 2.2), researchers have rarely studied the mechanisms while following a strict economic rationale. They usually adhere to what Simon (1985) calls *objective* or *substantive* rationality and consider only the organism's goals (SWB of individuals) and the characteristics of the situation (income inequality within the region).

Under this rationale, individuals are expected to have *full knowledge* of the world around them, in this case, income inequality. However, income inequality is a social phenomenon, an aggregate of people's incomes in a particular area. Inequalities of any kind are difficult to grasp, and it seems unlikely that they are grasped equally well by all people (e.g. Hochschild 2001; Kelley and Zagorski 2004; Norton and Ariely 2011). Income inequalities at the national level are an even more abstract phenomenon. Therefore, it is hard to imagine inequality as an external factum equally well understood by people living in the same country or region, as previous studies assume when they look at *actual* income inequalities. Some researchers acknowledge it is not the factual but the perceived inequality to which individuals respond (Alesina et al. 2004; Schwarze and Härpfer 2007). However, none tests empirically for the influence of perceptive inequalities or variations across individuals.

Another hidden assumption in previous research is the *self-interest maxim*, whereby individuals try to maximize their own wellbeing independently of others. For example, research on social comparison often claims people are more satisfied if they feel better off than others or if they see prospects of being better off in the future. Equally limited is the argument addressing risk and opportunity structures. Inequality hurts people at the top of the social ladder if they feel a risk of sliding down, and it affects those on the bottom if they see no chance of climbing up. These arguments ignore the fact that the unequal allocation of scarce resources can evoke *normative* concerns of equity or social justice not necessarily tied to economic self-interests (Crosby 1976; Hegtvedt 2006; Ringen 2006; Sen 1997). One exception is certainly the argument on preferences for equality. But since preferences are treated by researchers as exogenous and are rarely modeled within the analysis, information about people's preference structures and variations among individuals is missing. The desire for equality is, then, expected to be universal. Occasionally, it is assumed to be stronger for specific subgroups, such as the political left (Alesina et al. 2004), and weaker for subgroups experiencing social mobility (see Clark 2003). The study of Rözer and Kraaykamp (2013) is the only exception, treating preferences for equality as endogenous.

Another problem in research on the inequality-wellbeing link is the common distinction between *contextual* and *relative deprivation* effects, as noted by Eibner and Evans (2004). Although relative deprivation theory explains the relative income effect on life satisfaction (that is: the individuals who are least well-off are less happy), it does not explain why all individuals feel less/more happy in more unequal surroundings. Thus, the use of social

comparison and relative deprivation theory, particularly to explain a contextual effect, is limited (Hopkin 2008). This becomes even more problematic when we consider that while individuals compare themselves to various reference groups (Schneider and Schupp 2010), they do not necessarily compare themselves equally frequently (Schneider and Schupp 2014). While empirical research on the relative income effect has focused so far on the distance between the *average* income of a reference group and a person's income (see Senik 2009), more research is needed on the influence of the *distribution* of incomes within the reference group on the comparison process.

In sum, judging research from a sociological perspective, previous reasoning falls short, as social-psychological processes follow systematic cognitive rules, which can (and usually do) vary across social groups and social environments. Perceptions and preferences, as well as comparison processes, are endogenous to the study of income inequality and SWB and must be addressed in more detail.

3.2 What Methodological Limitations does Research on the Inequality-Wellbeing Link Face?

Research on income inequality and life satisfaction exhibits a wide range of methodologies, as stated above. Almost certainly, the methodological choices of the researcher will have an effect on the findings. Evans et al. (2004) mention three methodological challenges (and potential pitfalls) in the study of income inequality: the level of aggregation, the measurement of inequality, and the estimation process. Differences between subgroups point to variations in responses to income inequality; this requires additional empirical and theoretical reflection.

From an empirical perspective, variation between different units of analysis is especially problematic if the value of the chosen indicator reacts sensitively. This is (sadly) the case for measures of income inequality. Like other aggregated indicators, the measurement of income inequality largely depends on the defined population and, by extension, on the geographic unit. This influences the *variation in inequality* between clusters and the *amount of inequality* within clusters; both have serious consequences on the estimation process of any empirical analysis based on inference statistics. Segregation effects caused by specific cohabitation practices lead to groupings of people with a similar socio-economic status (Durlauf 1996; Jencks 2002; Mayer 2001). Inequality measured at lower geographic levels may, therefore, be more homogenous, producing different estimations than at higher geographic levels (Watson 2009). In consequence, there may be, on average, higher inequalities at the national and federal state levels and lower inequalities at lower-level geographic units, particularly across neighborhoods. The selection of the geographic unit calls for strict adherence to and justification of the underlying theory. Methodologically speaking, we have to reduce the measurement error by keeping the noise to a minimum.

Similarly, the inequality indicator must be selected with care, following theoretical reasoning. Measures reflect different aspects of inequality that, in turn, have more or less severe consequences for the individual. The *Gini coefficient* is the most popular indicator used to study income inequality and life satisfaction. Its use is not always justified, however, and other inequality indicators may be more efficacious. According to social mobilization theory, it is the polarization of income which disturbs people (Sen 1972) and leads to hopelessness and a sense of immobility in the more disadvantaged that often causes anger and dissatisfaction. If so, polarization indices, such as the dispersion ratio that compares people at the top of the income scale with those at the bottom, will influence SWB more strongly than indices reflecting inequalities within the middle ranges, like the

Gini coefficient. Other measures grasp still other aspects of the income distribution, like the Theil index or the Atkinson measures (for a review of inequality indices, see e.g. Atkinson and Bourguignon 2000; Jenkins and van Kerm 2009). It is important to note that the significance of the choice of inequality indicators increases with smaller geographic units. Evans et al. (2004) report an interaction between inequality measures and level of aggregation: the smaller the geographic unit, the higher the variation in inequality between inequality measures. With a few exceptions (Clark 2003; Hagerty 2000; Schwarzer and Härpfer 2007), variations in the measurement of income inequality are seldom recognized in the literature on income inequality and SWB (see also Ferrer-i-Carbonell and Ramos 2012).

Making estimates about phenomena located at different analytical levels is difficult and may lead to severe biases if theoretical reasoning and statistical analysis diverge (see the discussion on the ecological fallacy in Robinson 1950; van de Vijver et al. 2008). Verme (2011, p. 130) addresses this problem, investigating differences in results by the estimation technique used and identifying an "interplay between multicollinearity, data structure, and sample size" likely to explain the empirical heterogeneity in the results. To reduce biases in the estimation processes, researchers must consider the nested data structure, multicollinearity of variables at the higher-order, and the availability of data. To avoid *omitted variable bias* (Evans et al. 2004) as well as biases caused by the multicollinearity of variables at the higher level (Neckerman and Torche 2007; Verme 2011), Evans et al. (2004) recommend fixed effects modeling or two-stage least square analysis if panel data are available, as these measure life satisfaction and income inequality across time and context equally well. Findings require a specific interpretation as they address changes in life satisfaction dependent on changes in income inequality, not level effects. If researchers are interested in the absolute impact of geographic characteristics, multi-level modeling techniques paired with structural equation modeling (Preacher et al. 2010, 2011) appear, in my opinion, especially worthwhile, considering the nested data structure, specifications of direct and indirect effects, and latent constructs used to measure intervening psychological mechanisms.

Psychological consequences of income inequality remain hidden if researchers omit significant features affecting responsiveness to income inequality. By and large, past research on income inequality and SWB does not capture differences, often restricting its focus to a particular country/region without differentiating between subgroups (Ferrer-i-Carbonell and Ramos 2012). Yet those working in the area have interesting findings and point to the significance of the subpopulation in empirical studies of income inequality and SWB within and across countries. Socio-political or cultural differences between countries are apparent when we look into differences between Latin American and non-Latin American countries (Berg and Veenhoven 2010; Helliwell and Huang 2008) or compare transition/post-communist with non-transition/Western democratic countries (Haller and Hadler 2006; Sanfey and Teksoz 2007). Economic growth, often perceived as an antecedent of income inequality, the quality of governance or the rate of unemployment, also correlate with income inequality, making them significant country characteristics to consider in the study of the inequality-wellbeing link (Layte 2012; Helliwell and Huang 2008; Ott 2005, 2011, 2014). Subgroup specifics deserve particular recognition in studies interested in exploring psychological mechanisms (Oishi et al. 2011; see also Schneider 2012 for status specific biases in the perception and justification of income inequality). To avoid random empiricism in the specification and empirical investigation of group-specific differences, theoretical reasoning on these differences appears recommendable.

These dimensions are by no means exclusive but from a sociological perspective are arguably the most salient. Others include differences in the specifics of the data, the validity and comparability of information on income and wealth statistics, the year of analysis, or the scaling of the dependent variable. Instead of theoretical reasoning, they require statistical expertise to reduce biases stemming from measurement errors or methods of application.

4 Research Directions

The ambiguity in empirical results leaves room for speculation, and encourages researchers to dig deeper into the analytic structure of past research, its use of methodology, and its theoretical explanations. Clearly, research on income inequality and SWB requires the expertise of sociologists familiar with the challenges of studying social phenomena, particularly the interrelatedness of events located at different analytical levels. Evans et al. (2004, p. 963) say, "Teasing out what is fact and what is fiction will take years and a variety of clever research designs".

One possibility is to unravel the processes that link inequality and wellbeing following the social mechanisms approach which enjoys growing popularity in the social sciences (Hedström and Ylikosko 2010). The approach assumes an understanding of an interrelation between two social phenomena is gained through the specification of mechanisms, i.e., processes that link these characteristics. Thus, it is not enough to simply discover a relationship between inequality and SWB; the relationship must be explained. Researchers should dig deeper into the fundamental structure of the inequality-wellbeing link to disentangle the various processes and shed welcome light on how inequality and wellbeing are connected. This will improve our knowledge of those subgroups particularly responsive to inequality, as well as the regional and country specifics that remain difficult to interpret. In this regard, it is fundamental to find answers to two broader questions (Schneider 2014): *how* is the social context tied to the individual and *why* does it affect life satisfaction? The first relates to *situational mechanisms* and how situational order, here income inequality, becomes significant for the individual. The second addresses *action-formation mechanisms* that are the emotional responses of the individual within these situational conditions (see Campbell and Alexander 1965; Hedström and Swedberg 1998).

Arguing from a cognitive perspective, perceptions of inequality and preferences for inequality form such mechanisms. Here, future research will certainly profit from the debate on the *procedural* (or *bounded*) rationality approach outlined by Simon (1985) which accounts for the incapacity of the human mind to perceive and process all information equally well. Individuals may not rationally consider all costs and benefits to arrive at an *optimal* outcome. Rather, they are more limited in their perceptions and use cognitive shortcuts, thus making predictions of individual outcomes based on goals and preferences at a given point in time and perceptions of the objective characteristics of the external environment equally problematic. To this point, research has not sufficiently considered the processes of information assessment, acquisition, and revision that may explain how income inequality is pictured in the human mind (Neckerman and Torche 2007).

If treated as endogenous psychological processes evolving from external and internal constraints, inter-individual variability in perceptions and preferences will contribute to the study of the inequality-wellbeing link. More research is warranted into people's knowledge of income inequality, their preferences for/against income inequality (processes and

outcomes), and their normative beliefs. Here, research into social cognition offers essential insights and helps us understand the various stages of perceptual processing. This field of research addresses how people make use of information about themselves, others, and their social environment (e.g. Fiske and Taylor 1991; Gigerenzer 2010; Gigerenzer and Gaissmaier 2011; Howard 1994; Tversky and Kahneman 1973, 1974). In addition, research on social justice may provide helpful insights into preference formation on issues of distributive matters (Schneider 2014), as it probes how individuals evaluate distributive matters and how emotional and behavioral reactions are provoked (e.g. Berger et al. 1972; Crosby 1976; Hegtvedt et al. 2008, 2009). As it offers valuable information on the conceptualization and measurement of preferences and attitudes of perceived injustices (Jasso 2008; Jasso and Wegener 1997), it can help categorize the various links between perceptions of inequality and SWB while paying attention to context-specific norms and value systems (Hegtvedt 2006).

At the same time, complementing the cognitive mechanism approach to inequality, a close examination of the emotions influencing the response behavior of the individual and his/her reported level of wellbeing seems essential. It is reasonable to think that the individual's emotional experiences directly respond to his/her immediate social circumstances, on the one hand, and influence the global state of wellbeing, on the other. Economic inequalities are said to lead to social conflict, both fueling political debate and triggering individual feelings of insecurity, fear, hatred, and envy. The simultaneous examination of contextual characteristics that are externalities of income inequality (e.g. crime rate and social capital) and institutional arrangements (e.g. welfare regulations, infrastructural services) and reports on emotional arousal is, therefore, a strongly recommended area of future research.

Methodological choices (e.g. the selection of the geographic unit, the measurement of inequality, and the estimation process) are important as well and require both theoretical care and methodological expertise. For example, fixed effects models studying the change in inequality should be complemented by multi-level approaches yielding insights into the absolute level effect. To investigate the underlying psychological mechanisms, multi-level mediation models, as used by Oishi et al. (2011) and Delhey and Dragolov (2014), are crucial. They provide insights into the cognitive processes that mediate the inequality-wellbeing link, allow the modeling of structural and cultural biases in perceptive and evaluative processes, and shed much-needed light on inter-individual variations in responses to inequality. Cross-country comparisons, in addition to within-country studies of smaller geographic units, will help to disentangle inter-regional differences. Here, multicollinearity and potential interaction effects (e.g. economic growth/prosperity, quality of governance, state regulation) deserve more critical attention, as do subgroup specifics, as these help explain inter-group variability in the responsiveness to income inequality.

If researchers take up these theoretical and methodological challenges, we can expect exciting new findings on the consequences of income inequality and the contextual dependency of SWB. When we add this research to that on the causes of inequality, we will be able to paint a comprehensive picture of income inequalities. By basing our findings on empirical facts, rather than simply slotting them into a particular ideological framework or making speculative scientific interpretations, we may even be able to give constructive policy advice on how to improve the welfare of vulnerable subgroups and enhance the social functioning of whole societies.

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