Journal of Research in Personality 45 (2011) 186–197

Contents lists available at ScienceDirect

Journal of Research in Personality

journal homepage: www.elsevier.com/locate/jrp

Stability and variability in the relationship between subjective well-being and income

Maike Luhmann [a,*], Ulrich Schimmack [b], Michael Eid [a]

[a] Department of Education and Psychology, Freie Universität Berlin, Habelschwerdter Allee 45, 14195 Berlin, Germany
[b] Department of Psychology, University of Toronto Mississauga, 3359 Mississauga Road North, Mississauga, Ontario, Canada L5L 1C6

ARTICLE INFO

Article history:
Available online 21 January 2011

Keywords:
Affective well-being
Cognitive well-being
Life satisfaction
Income
Structural equation modeling
Latent state–trait models
Trait–state-occasion models

ABSTRACT

Empirical studies typically find a moderate positive correlation between subjective well-being (SWB) and income. In the present paper, we examined stable and transient determinants of the relation between affective well-being and income in the British Household Panel Survey (BHPS; $N = 37{,}041$) and the relation between cognitive well-being and income in the BHPS ($N = 31{,}871$) and the Socio-Economic Panel (SOEP; $N = 43{,}565$) with bivariate latent state–trait models. The results show that the relation between SWB and income is primarily driven by stable individual differences whereas transient changes in income are weakly related to transient changes in SWB. It is therefore important to consider stable dispositional and stable situational variables in studies on income and SWB.

1. Introduction

For centuries, people have wondered about the relationship between income and subjective well-being (SWB), and extensive theoretical debates and numerous empirical investigations on this topic have been initiated (for reviews, see Biswas-Diener, 2008; Cummins, 2000; Diener & Biswas-Diener, 2002; Frey & Stutzer, 2002; Howell & Howell, 2008). Two main findings have been replicated repeatedly: First, the cross-sectional correlation between income and SWB is typically small to moderate (e.g., Diener & Biswas-Diener, 2002; Diener & Oishi, 2000; Dolan, Peasgood, & White, 2008; Lucas & Schimmack, 2009). In the World Values Survey, the mean correlation between income and life satisfaction across 19 nations was $r = .18$ (Diener & Oishi, 2000). This coefficient might seem small in comparison to other effects typically found in psychological research. However, even small correlation coefficients can reflect significant mean-level differences between people (Diener, Horwitz, & Emmons, 1985; Lucas & Schimmack, 2009). Second, the shape of the relationship tends to be non-linear, a phenomenon named "diminishing marginal utility" in the economic literature (e.g., Easterlin, 2005): The association between income and SWB is stronger in the low-income range and weaker in the high-income range. In the cross-cultural study by Diener and Oishi (2000), the correlation between income and SWB was somewhat higher in poorer nations. In a recent meta-analysis, the average correlation between income and SWB was $r = .28$ in low-income developing countries and $r = .13$ in high-income developing countries (Howell & Howell, 2008).

In sum, these findings provide convincing evidence that income and SWB are related: Most researchers agree today that at a given moment in time, richer individuals tend to be happier than poorer individuals. However, it is crucial to keep in mind that this finding only describes the relation between *momentary* SWB and *momentary* income. This relation can be interpreted in at least two ways, and with cross-sectional data, it is impossible to evaluate which interpretation is more appropriate: (a) Richer people are generally happier, for instance because *stable* dispositional variables affect both income and SWB in similar ways. (b) Changes in income cause changes in SWB, that is, the positive correlation reflects *transient* fluctuations that co-occur in income and SWB. As we will discuss in the following sections, both stable and transient effects are plausible from a theoretical point of view, but longitudinal studies examining stable and transient effects simultaneously are still missing.

2. Are richer people generally happier?

The classic set-point theory of SWB assumes that the habitual level of SWB is mainly determined by stable, dispositional characteristics (e.g., Headey & Wearing, 1989; Lykken & Tellegen, 1996). According to these accounts, changes in external circumstances, including changes in income, should not have any long-term effects of SWB because of adaptation (but see Diener, Lucas, and

* Corresponding author.
E-mail addresses: maike.luhmann@fu-berlin.de (M. Luhmann), uli.schimmack@utoronto.ca (U. Schimmack), michael.eid@fu-berlin.de (M. Eid).

0092-6566/$ - see front matter © 2011 Elsevier Inc. All rights reserved.
doi:10.1016/j.jrp.2011.01.004

Scollon (2006), for some revisions of the classic set-point theory). This assumption is backed by two longitudinal studies where the effects of income changes on SWB changes were only very small or even non-significant (Marks & Fleming, 1999; Schyns, 2001). One explanation for this effect is that SWB judgments are based on a comparison of the momentary situation (e.g., current income) with specific standards (Biswas-Diener, 2008). These standards can be social (i.e., social comparison with people like me; Easterlin, 1974; Festinger, 1954) or temporal (i.e., comparison of my current income with my previous income; Parducci, 1995). Simply put, we are satisfied if our situation is better than the standard, and we are dissatisfied if our situation is worse than the standard. Importantly, these standards are not absolute but relative, that is, they are subject to change. For instance, a young researcher who is appointed as an assistant professor will experience a significant increase in income which might result in a significant increase in SWB. However, this person's standards are likely to shift because the current financial situation is not compared to the financial situation of graduate students anymore, but to the financial situation of other assistant professors or even senior faculty members. In short, relative standard theories support the first interpretation of the positive cross-sectional correlation between income and SWB, that is, richer people are generally happier not because of any recent changes, but because of more stable influences on these variables.

3. Are income changes and SWB changes related?

Economic as well as some psychological theories propose a causal effect of income on SWB which means that changes in income should have a direct effect on changes in SWB. In most economic textbooks, it "seems obvious that income and happiness go together" (Frey & Stutzer, 2002, p. 73; but see Frey & Stutzer, 2002, or Layard, 2006, for more differentiated views). Standard economic theory predicts a causal effect of income on utility (as happiness is usually termed in the economic literature) because money provides individuals with more opportunities to maximize their SWB through the consumption of goods and services. A similar perspective is taken by psychologists who emphasize the role of goals on the relation between income and SWB. For instance, Maslow (1954) proposed that certain basic needs such as food or housing have to be fulfilled before people can strive for higher goals such as making friends or self-actualization. Money provides people with a means to fulfill these basic needs. Today, researchers differentiate between different types of goals. For instance, it has been shown that the effect of experiential spending (e.g. going on vacation) on SWB lasts longer than the effect of material spending (e.g. buying a new TV) on SWB (Carter & Gilovich, 2010; Van Boven & Gilovich, 2003). Moreover, people who generally pursue materialistic goals have been shown to be less happy than people who pursue less materialistic goals (Kasser & Ryan, 1993, 1996; Schmuck, Kasser, & Ryan, 2000; Solberg, Diener, & Robinson, 2004). In short, these accounts converge in the assumption that changes in income should have an effect on SWB because they allow people to pursue and attain more life goals. Empirical support for this assumption comes from a recent study on lottery winners. Using data from the British Household Panel (BHPS), Gardner and Oswald (2007) found that on average, lottery winners reported a significant increase in affective well-being 2 years after their win as compared to 2 years before the win. This finding suggests a causal effect of income on SWB. However, studies on lottery winners examine large on–off gains and cannot be generalized to sustained income changes. In sum, there is probably a causal effect of income changes on SWB changes, but previous empirical findings are not sufficient to estimate the relative strength of this effect.

4. Integrating stable and transient effects in latent state–trait models

Previous theoretical and empirical work suggests that both stable and transient effects affect the relation between income and SWB. However, although some previous theories acknowledge that stable differences between individuals might affect the income-SWB link (e.g., individual values and goals, Kasser & Ryan, 1993, 1996; Kasser, Ryan, Couchman, & Sheldon, 2004; Schmuck et al., 2000; Solberg et al., 2004), an integrative model that considers both stable and transient effects is still missing. Specifically, it is unclear which of these effects contributes more to the overall correlation between income and SWB. To answer this question empirically, it is necessary to analyze stable and transient effects simultaneously. This can be achieved with special structural equation models that are applied to longitudinal data. In these latent state–trait (LST) models (Cole, Martin, & Steiger, 2005; Eid, 2008; Eid & Diener, 2004; Steyer, Schmitt, & Eid, 1999), the total observed variance is decomposed into variance components reflecting the long-term stability of the construct ("trait"), variance components reflecting moderate autoregressive stability, occasion-specific variance components reflecting the variability of the construct ("state"), and measurement error. The technical details of LST models will be presented in the method section.

How can these components be interpreted with respect to SWB and income? For SWB, the stable variance component represents the proportion of variance in SWB that is stable over long time spans (i.e., habitual SWB), the autoregressive variance component represents moderate stability that can be observed from one measurement occasion to the next, but not necessarily over very long time spans, and finally, the occasion-specific variance component represents short-term fluctuations in SWB (i.e., deviation of momentary SWB from habitual SWB). The interpretation of the variance components for income is quite similar: The stable variance component reflects long-term stability in income, the autoregressive variance components reflects moderate stability that carries over from one measurement occasion to the next, and the occasion-specific variance component reflects short-term income gains or losses.

Decomposing the observed variance into different components permits further analyses. First, it is possible to calculate the proportion of variance explained by each of these components (Eid, 2008). For instance, Lucas and Donnellan (2007) applied LST models to data from the British Household Panel Survey (BHPS) and the German Socio-Economic Panel (SOEP) and found that 34–38% of the variance in SWB ratings was due to stable variance and 29–34% of the variance was due to autoregressive effects. Second, it is possible to relate each of these variance components to other variables. These bivariate models are useful for both methodological research objectives (e.g., to assess to construct validity of a construct as done by Eid & Diener, 1999) and substantive research objectives. For instance, Eid and Diener (2004) showed that the correlations between the stable components of life satisfaction and mood were much higher than the correlations between the occasion-specific components of these constructs, suggesting that the effect of mood on judgments of life satisfaction might be much smaller than previously assumed (Schwarz & Strack, 1999). Using data from the SOEP, Schimmack, Krause, Wagner, and Schupp (2010) examined the correlation between aggregated domain satisfaction ratings and a single global life satisfaction rating. Both the correlations between the stable components and between the transient components were very high, suggesting that these variables are affected by the same determinants.

In the present paper, we will examine the correlation between the stable components of income and SWB, and the correlations