

# **Subjective and objective well-being. Testing the adaptive preferences hypothesis with Uruguayan panel data**

*Preliminary draft – please do not quote*

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## **Abstract**

The purpose of this paper is to assess the relation between subjective and objective indicators of well-being over time. In order to do that, we investigate the hypothesis of adaptive preferences testing whether present subjective indicators are correlated with past and present objective well-being trajectories and with the outcomes of reference groups.

Most of the empirical work on adaptation and adaptive preferences has been carried out with data from developed countries due to the scarcity of panel data from developing countries. In this paper we present econometric evidence for Uruguay using two waves of a panel survey carried out in 2004 and 2006/07 containing information on life satisfaction in a wide set of domains and socio-economic information.

Our main findings show that the present levels of life, income and housing satisfaction are positively correlated with the corresponding contemporary objective indicators but past trajectories are not significant. Contrary to the findings from previous research, we reject the hypothesis of adaptive preferences for income and work and find weak evidence for housing.

Meanwhile, the average subjective well-being of the peer group was significant, indicating a positive relation between the subjective well-being of respondents and the one of their reference group while the objective well-being of the reference group was not significant. These findings indicate that adaptation might operate through the interaction with the peer group rather than in relation to the past history of deprivation.

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## I. Introduction<sup>1</sup>

The purpose of this paper is to assess the relation between subjective and objective indicators of well-being, exploring adaptive behavior at the individual level in developing countries. Most of the research carried out on adaptation has been based on information from developed countries mainly due to the lack of data from developing countries (Clark). In order to contribute to this debate, we investigate the adaptive preferences hypothesis in relation to income using a rich panel data-set from Uruguay.

As Clark (2012) points out, adaptation has been addressed by many disciplines and can be understood in many ways, ranging from adapting to climate change to aspirations and household behavior. According to Jon Elster (1988), adaptive preferences are generated as a result of an adaptation process that reduces the frustration of wanting what cannot be achieved. Thus, the present state is perceived as a good result and therefore all desires to change it are frozen. This frustration arises from the experience of cognitive dissonance, a concept developed by Leon Festinger (1975), which has had a major influence in the social sciences. The most important underlying assumption is that every individual seeks to achieve coherence or internal consistency of their opinions and attitudes. If that is the case, then exceptions to the rule, i.e., inconsistencies will be fought in order to restore the lost coherence. These inconsistencies are named as "cognitive dissonance". When being psychologically uncomfortable, those affected by this try to suppress them. As a result, the person will also seek to avoid situations and information that could increase this feeling.

In his criticism of utilitarianism and subjective metrics of well-being, Sen (2009) states that adaptive behavior is one of the main draw-backs of the evaluations based on this space.

In what follows we first discuss adaptive preferences and relate them to the economic analysis of well-being (section I). After that, we present the methodology and data used in this paper (section II). Section III contains our main results and section IV gathers some final comments.

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<sup>1</sup> This paper is part of the work of a research program that gathers economists and philosophers. The full details and results of this investigation can be found in Burstin et al (2010).

## I. Adaptive preferences

Under utilitarianism there have existed at least three main ways of assessing well-being: achieved happiness, satisfaction of desires and observed choices. The first two are subjective interpretations according to which people carry out the assessment of their situation. According to this view, utility is related to the achievement of a particular mental state, and these states are not an expression of data drawn exclusively from the market. As Jevons wrote: "each and every one of the minds are inscrutable to each and every one of the other, and it is impossible to have a common denominator of feelings" (quoted in Sen, 1999).

In recent decades, the utilitarian literature shifted from those approaches based on the subjective metrics to objective measures, following the theory of revealed preference (Samuelson, 1948). However, in recent years there have proliferated empirical studies assessing reported happiness and life satisfaction (Clark and Oswald 1994, Blanchflower and Oswald 2000, Easterlin, 1995, Frey and Stutzer, 2007). In this work the analysis has been focused on the determinants of happiness. Lelkes (2006) performs a complete systematization of the main findings of this literature.

One of the criticisms made to this approach is that adaptation and mental conditioning of people when faced with adverse situations systematically affects their valuations (Sen, 1999). In these circumstances, utility measurement is affected and, therefore, renders it unjust and evaluative space of welfare. In terms of Elster (1988), adaptive preferences are an inherently present in the utilitarian theory.

In the famous Aesopus's fable "The fox and the grapes", later popularized by La Fontaine, the fox wants to eat some grapes that are out of her reach. Frustrated by the failure of her efforts, she finally exclaims: "*Oh, you aren't even ripe yet! I don't need any sour grapes*". As in the case of the fable, sometimes people adapt their preferences as a strategy to reduce frustration. Jon Elster named this type of behavior as "sour grapes" (Elster, 1985). According to Festinger the distance among desires and potential achievements can create cognitive dissonance. The adaptive preferences hypothesis postulates that cognitive dissonance is resolved through the adjustment of the volitions to real opportunities, adapting desires to what can be achieved through the degradation of what is desired and not achievable. However, adaptive preferences formation is not the only adaptive response that an individual has in situations involving cognitive

dissonance and therefore an increase in frustration. But adaptation to past experiences does not necessarily entail sour grapes. An alternative strategy is what Elster labeled as “character planning”, which is an adaptive response generated by conscious people adjusting wishes to real possibilities.

To differentiate adaptive preferences and character planning is key to note that the idea of adaptation can be understood both intentional and causally. The case of adaptive preferences is a causal process that occurs in a non-conscious way in the affected persons, while in the case of the character planning process is the nature of a deliberate adaptation of desires—that is, a conscious exercise. The two processes occur in response to a situation of tension or cognitive dissonance between what someone can actually do and what they might like to do (Elster, 1988; Pereira, 2009).

In many of his writings Sen’s criticism to utilitarianism explicitly resorts to the challenge to subjective well-being comparisons of deprivation posed by adaptation to current circumstances in order to “make life bearable in adverse situations” (Sen, 2009; pp. 282; Sen, 1987; Sen, 2008).

Comim (2005) also refers to the similarities between both approaches, for example, the distinction between means and ends and the consideration of the former as imperfect indicators of well-being, in one case attributed to human diversity and, on the other, the temporal dynamics of adjustment of expectations.

In turn, the recent literature on the economics of happiness acknowledges adaptation. In the same vein, it has been argued that happiness is a relative phenomenon, as people do not evaluate their circumstances as such, but in relation to their reference group. Likewise, it has been stated that people compare their current situation with the past, or adapt to circumstances over time. Lelkes (2006) responds to these criticisms, arguing that individuals do not completely adapt. In this regard he states that recent empirical evidence indicates that happiness is mainly relative. In this regard, he notes that there is not a complete adaptation to situations such as separation, unemployment and changes in income and people value these situations, despite their relation with the rest of the people.

In the case of subjective and objective indicators, differences may arise due to the development of adaptive preferences. However, in many cases, objective indicators do not improve and even worsen when income exceeds certain thresholds. For example, it may be difficult to change the levels of literacy and life expectancy after reaching a

certain level, higher levels of stress also can cause mental illness. Since the work by Easterlin, the recent literature developed in the framework of the economics of happiness has paid attention to the phenomenon of adaptation defined as the reaction of the levels of happiness compared to changes in objective indicators as income (Di Tella and Mc Culloch , 2008, Deaton, 2008).

Some authors have systematized the differences and similarities between the capability approach and subjective well-being approach in regard to adaptation. Clark (2009) distinguishes the causal mechanisms underlying both approaches. In the capabilities approach, the adjustment would be downwards, adjusting the aspirations to the possibilities, due to impoverished living conditions. In the utilitarian framework, the process is described as aspirations are set up "to reflect new opportunities and what others (notably the couple or group) have achieved".

Di Tella and Mc Culloch (2008) working with three different data sources found evidence of adaptation in all the cases. Deaton (2008) argues that adaptation research work have been made based on survey data where they are overrepresented in high-income countries. For this reason, he tested the hypothesis of adaptation based on information from the World Poll and it was rejected. Working in the adaptive preferences framework, Burchardt (2005) uses a ten waves panel from the United Kingdom with information on income and life satisfaction. Her results are consistent with the hypothesis of adaptation.

In the context of developing countries there are scarce studies assessing adaptation, probably due to the lack of panel data combining subjective and objective information.

In Uruguay, empirical research on subjective well-being has been based in the framework of economics of happiness using cross-sectional data. Bucheli and Rossi (2003) study life satisfaction of women in Montevideo, Cid et al (2007) analyzed the happiness reported by the elderly, while Borraz et al (2008) focus on the family of migrants. Gerstenbluth et al (2008) study the determinants of happiness in Argentina and Uruguay, finding that health is the main explanatory factor.

## II. Methodology and data

### *The data*

In this investigation, we use a two waves panel survey: the first one was carried out during 2004 and the second one in 2006. The first wave corresponded to the survey "Nutritional status of children" carried out in 2004 by Instituto de Economía. It was based on a random sample of first graders attending public schools (80% of total). The sampling framework were public schools (which account for 85% of total children) and the sample was composed by entire class groups. Households of all the children within a group were interviewed. The questionnaire included a broad set of questions to capture well-being. In 2006, those households located in Montevideo (the capital city) and its surrounding areas were revisited (1300 households) and adults in charge of the child were interviewed again. In cases where the parent and the child's mother lived together, both were interviewed. In this second wave, information on subjective and objective well-being was also gathered. Details of the sample and the questionnaire are available at

[http://www.fhuce.edu.uy/academica/filosofia/filPractica/InvEJE/Textos/Cuest\\_prefada pt.pdf](http://www.fhuce.edu.uy/academica/filosofia/filPractica/InvEJE/Textos/Cuest_prefada pt.pdf)

### *Methods*

As noted before, the process of adaptation can follow a downward or upward movement. The downward movement could reflect adaptive preferences in the sense of Elster and the capabilities approach. Meanwhile, the Easterlin paradox and the upward adjustment of aspirations to environmental conditions is consistent with the analysis in the context of the economics of happiness. The econometric methodologies used by both approaches are similar (Burchardt, 2005, Di Tella and Mc Culloch, 2008, Deaton, 2008).

Since Easterlin, the recent literature developed in the framework of the economics of happiness has paid attention to the phenomenon of adaptation defined as the reaction of the levels of happiness to changes in income levels. Based on annual data from 1984 to 2000 of the German socioeconomic panel, Di Tella and Mc Culloch (2008) estimate an equation of the form:

$$F_{it} = \alpha_0 \log Y_{0i} + \alpha_1 \log Y_{1i} + \alpha_2 \log Y_{2i} + \dots + \alpha_{it} \log Y_{it} + \sum_k \delta_k X_{ki} + f_i + A_i + e_i$$

where F represents happiness declared by each individual, Y is income, X<sub>k</sub> represents a set of variables that reflect current individual characteristics (marital status, employment and education), f indicates individual fixed effects, A represents the year of the observation was collected and e is an error term. They use a maximum of seven lags. The hypothesis test to be performed to determine adjustment of reported happiness levels to changes in income can be expressed as:

$$H_0 : \sum_{i=1}^T \alpha_{-i} = 0 \quad \text{versus} \quad H_1 : \sum_{i=1}^T \alpha_{-i} \neq 0$$

In the absence of adaptation, the past income stream would have no effect on the present levels of happiness (measured as life satisfaction) for individuals. If there is adaptation to higher levels of income, the sum of lagged income coefficients should be negative.<sup>2</sup> The authors separate estimates for rich and poor households, approximated by home ownership.

Burchardt (2005) works with a very similar specification but using ordered probit models. She proposes two possible specifications for the adaptation function. The first one provides a contemporary relationship between achievement and satisfaction:

$$S_{it} = F(\log(Y_{it})) + X_{ij} + u_{it}$$

Where S represents the level of satisfaction with life, and for the person's current income, X is a set of individual and group characteristics and u is an error term. In a second formulation she analyzes how the level of life satisfaction in the current period is affected by the current level income and its variation in relation to an earlier period. In different specifications also includes individual fixed effects (f):

$$S_{it} = F(\log(Y_{it}) + R_i + C_i + \Delta Y_{it/t-1} + X_{it} + f_i) + u_i$$

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<sup>2</sup> There may be a potential endogeneity or reverse causality problem given by the fact that improvements in the level of happiness will have impacts on income. Di Tella and MacCulloch (2008) conducted empirical tests that suggest that such shocks do not significantly bias the coefficients found.

Finally, the author controls the trajectory of the t-1 periods of initial income (9 in this case), classified as ascending, flat, falling and fluctuating. This equation, relevant to understanding the dynamics of adaptation in the long term, can not be estimated in this report as they only had two waves of the panel. The interest of this work is to conduct an analysis of this kind for a developing country using the capabilities approach. However, please note that the panel data used, as noted, includes only two waves, and in that sense, the empirical analysis is considerably narrower than that undertaken by Burchardt (2004). First we estimated a linear specification using OLS:

$$S_{it} = F(\alpha_0 \log Y_{2006i}, \alpha_1 \log Y_{2004i}, \sum_k \delta_k X_{ki06}, G_{i06}) + e_i$$

where C indicates the reported level of life satisfaction (with life in and with a certain domain of life), Y is income, X is a set of variables that reflect individual characteristics and G represents the average characteristics of the reference group in terms of subjective and objective well-being, as it will be indicated below. We also included school fixed effects to distinguish school characteristics from group indicators (Lavy et al 2009, Halliday et al, 2007).

If fixed effects of the peer group were not included, this may lead to an incorrect interpretation of the coefficients of the variables that capture group effects (Lavy et al 2009; Halliday et al, 2007). We also tested potential endogeneity between individual and group performance using the Hausman test but it was rejected in all cases. Various studies have shown that reference groups influence the levels of satisfaction reported. The more similar the answers provided by the individual and the group that adheres, the less it will experience cognitive dissonance (Festinger, 1975). In that sense, the possibility of developing adaptive preferences is greater if there is a high correlation between the responses of the group and those of the individual. The database used in this work, allows for a fairly accurate identification of the peer group of households analyzed, since the sample contained full groups. In this way, we can identify the reference group of adults from the characteristics of adults in charge of the group of classmates of each child. As it was mentioned, the sample is representative of children attending in 2004 to first-year public schools in Montevideo and the

metropolitan area. Therefore, the parents share a set of activities that take place at the school, interact with each other and Totally live in the same neighborhood to which the school belongs. For each household we computed the average level of life satisfaction and income of the reference group.

Also, we used an ordered probit model to carry out the same estimations.

Estimations were carried out for the whole sample, for women and by educational group to capture differential adjustments.

The control variables considered were age, sex, household educational climate and marital status.

We examine reported life satisfaction in the following domains: life as a whole, income and housing. For each dimension, respondents were asked to indicate their level of satisfaction on a scale ranging from 1 to 5 (with 1 being very dissatisfied and 5 very satisfied).

When there was a coresident couple, two responses were obtained per household. Note that in the research previously quoted scales and questions vary. Di Tella and McCulloch and Deaton use a life satisfaction scale that ranges from 1 to 10, while the one used by Burchardt varies between 1 and 7. While the former authors use questions that relate to overall satisfaction with life, Burchardt uses satisfaction with income. In what follows we use the dimensions already mentioned, modifying the specifications previously presented to suit each specific dimension.

### **III. Main results**

In this section we present the econometric results for each domain. The domains we considered were life in general, income and housing. In each case we present tables reporting the coefficients of interest. The full regression outputs can be requested to the authors.

#### **Life and income satisfaction**

Income is a mean that can affect people's achievements in various dimensions. For this reason we considered its effects on life satisfaction in general and on the respondents satisfaction with their economic situation. A person will develop adaptive preferences if

her levels of satisfaction on these dimensions have been affected by her past objective situation. As Burchardt states, satisfaction levels depend not only on who the people are but who they have been.

We estimated the effects of income in different specifications using two variants to measure it. We first present a model that included the log of per capita household income in 2004 and the 2004-2006. In another specification we include a set of dummy variables that identify whether the household was in extreme poverty in 2004 and 2006, only in 2004, only in 2006, or it has never experienced that situation.<sup>3</sup> This alternative was carried out with the purpose to assess whether there is a high deprivation threshold that results in different responses in terms of adaptation.

Table A.1 gathers the coefficients of interest from the different estimations carried out using life and economic satisfaction as dependent variables. At the same time, we considered two different specifications to capture the potential effects of the peer groups. Openings were made for specific groups by educational levels, and for women. For the purposes of clarity in the commentary first present estimates using the logarithm of income (a) and, secondly, we consider the discretized income using the poverty line (b).

#### a. Estimations including income as a continuous variable

In all the models specified, the logarithm of income per capita in 2006 was significant and positive, reflecting that income levels are associated with increased levels of satisfaction with life in general and with income (Tables A.1 and A.2).

The coefficient of income in 2004, does not present the same robustness and is sensitive to the dependent variable, the specification and the population group for which the estimation was made.

In the specifications that analyze life satisfaction in general and satisfaction with the economic situation as dependent variables, past income is not significant, rejecting the hypothesis of adaptive preferences in all cases.

These results are consistent with those reported in other studies (Deaton, 2008) and contradicts the findings of Burchardt (2004) and Di Tella and Mac Culloch (2008) for the Uruguayan case. We are rejecting the hypothesis of adaptation: people do not adapt

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<sup>3</sup> This threshold corresponds to the national extreme poverty line (INE, 2002).

to living with low income. It must be remembered, however, that our data set has only two waves.

However, our finding the consistency of our findings with those of Deaton may result from the fact that our information is on a middle-income country while Di Tella and Mac Culloch and Burchardt work with panels mainly from high-income countries. At the same time, the fact that we are using a panel based on children from public schools, truncates the income distribution as we are losing the 15% of households with higher income. It must also be considered that in this time span, probably most households experienced increases in income since it is a recovery period after a severe economic crisis that peaked in 2002.

Another result of interest is the significance of the levels of average life satisfaction and income of the peer group. In the population as a whole and in the case of women, average levels of life satisfaction of the peer group were significant, indicating a positive relationship between subjective well-being of respondents and their reference group. Meanwhile, average income of the reference group was not significant. This suggests a potential adaptation to the views of the peer group and may be indicative of adaptive preferences and the way they operate.

b. Estimations including income as a discrete variable (extreme poverty)

To analyze the robustness of our results we estimated another set of models (Tables A.1 and A.2) using instead of income a set of binary variables that reflect whether the household was in extreme poverty only in 2004, 2004 and 2006, only in 2006, or if they have never experienced extreme poverty (omitted variable). These results show lower levels of life satisfaction for those belonging to households in extreme poverty in 2006, regardless of the situation experienced in 2004. This aspect confirms the evidence of absence of adaptive preferences, also for households with incomes below a certain threshold. Likewise, those who belonged to poor households in the two periods have higher levels of non conformity than the other groups.

#### **IV. Final comments**

In relation to the adaptive preferences hypothesis in the different domains, our results tend to reject it. There is no evidence of an adjustment in the levels of life satisfaction or satisfaction in a particular domain due to exposure to deprivation, associated to a past income or to a lack of it.

In relation to housing conditions, the situation is a bit different. When overcrowding is analyzed as a discrete variable, there were weak signs of adaptation. Meanwhile, in terms of access to durable goods and access to quality services, this hypothesis is rejected.

The second channel of preference formation and adaptation refers to the association to the peer group performance. It was found that the average performance of peer groups in terms of objective well-being was not significant in almost all cases. However, the satisfaction of the peer group featured prominently in many of the specifications. The conformity of the reference group positively affects the reported levels of compliance life and income satisfaction. This means, for example, that groups which show low levels of satisfaction in some dimension are associated with low satisfaction of the respondent. This has been frequently mentioned in the literature, which states that a lower distance to the response for the reference group generates lower levels of cognitive dissonance.

This research found that reported satisfaction with life, income and housing is strongly associated with the perceptions of their peer group, particularly in the case of income, but not the average value objective indicators of the group.

These findings indicate that adaptation might operate through the interaction with the peer group rather than in relation to the past history of deprivation.

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Table 1 Coefficients of interest. Dependent variable: life satisfaction. (group fixed effects)			
Variable and specification	a	b	c
<b>1) Income (continuous)</b>			
Income 2006	0.156***	0.148***	0.0132***
Income 2004	-0.0132	-0.022	0.004
Average satisfaction reference group		0.572***	
Average income reference group			0.000
<b>2) Income (discrete)</b>			
Extreme poverty 2004	0.009	0.012	0.012
Extreme poverty 2006	-0.0497**	-0.0470**	-0.0477**
Extreme poverty 2004 and 2006	- 0.0611***	-0.0566***	-0.0592***
Average satisfaction reference group		0.203***	
Average income reference group			0.000
*** significant at 1%, ** significant at 5%, * significant at 10%			

Table 2 Coefficients of interest. Dependent variable: income satisfaction. Fixed effects			
1) Income (continuous)	I	II	III
Income 2006	0.156***	0.148***	0.0132***
Income 2004	-0.0132	-0.022	0.004
Average satisfaction ref. group		0.572***	
Average income ref. group			0.000
2) Income (discrete)			
Extreme poverty 2004	0.009	0.012	0.012
Extreme poverty 2006	-0.0497**	-0.0470**	-0.0477**
Extreme poverty 2004 and 2006	-0.0611***	-0.0566***	-0.0592***
Average satisfaction ref. group		0.203***	
Average income ref. group			0.000
*** significant at 1%, ** significant at 5%, * significant at 10%			

