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Comparison Theory in Economic Psychology Regarding the Easterlin Paradox and Decreasing Marginal Utility: a Critique

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Abstract This paper challenges the assumption within Economics that the relationship between money and subjective wellbeing is determined by processes of cognitive comparison. An alternative explanation for such well known phenomena as the Easterlin Paradox and Decreasing Marginal Utility are provided through a consideration of affect. The theoretical basis for such explanations relies on theory from Psychology usually overlooked by Economists, such as affect heuristics and Subjective Wellbeing Homeostasis. The presented evidence for this alternative source of explanation melds psychological theory with empirical data. It is concluded that affective processes offer a coherent alternative explanation for the phenomena under discussion.

Keywords Easterlin paradox · Decreasing marginal utility · Subjective wellbeing homeostasis · Comparison theory · Affect heuristic · Money · Happiness · Homeostatically protected mood

Introduction

In this issue of ARQOL, Carol Graham presents an interesting and scholarly account of the connection between money and happiness. The research she reports adds greatly to the reliable data available for analysis and interpretation. However, her descriptions of the theoretical connection between money and

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happiness focus entirely on cognitive comparisons, either with others (relative deprivation) or self (aspirations). This approach is in accordance with the views of most contemporary economists who have incorporated Subjective Wellbeing (SWB) into their research.

Interestingly, however, this unilateral focus on cognition occurs despite acknowledging that SWB comprises both cognitive and affective components. Graham uses the following quotation:

> "Diener et al. (1999) decompose subjective well-being into an affective or emotional component and a cognitive or judgmental component. The first is determined and measured by how often an individual reports experiencing positive or negative affect (such as smiling), while life satisfaction is composed of an individual's satisfaction with various life domains (such as health and work) as well as with life in general" (Graham 2011, this issue).

The fact that economists generally ignore the affective component of SWB is not surprising. Both economists and psychologists who attempt to bridge the disciplinary divide, naturally approach the other discipline from a perspective that fits most easily with their own training. For economists this means using the logic of classical economic theory, which uses cognition to explain such fundamental constructs as 'rational choice', being central to the measurement of 'utility' (inferred happiness). So while the application of cognition to SWB seems a natural extension of economic theory, the construct of affect has no parallel in Economics. It goes deeper into the realm of Psychology than most economists are prepared to venture. As one consequence of this limitation an old aphorism applies. 'If you only have a hammer, you tend to see every problem as a nail' (Maslow, not determined). Or, to re-phrase in the current context, 'If the only component of SWB being considered is cognition, then all relationships between money and SWB look like cognitive comparisons.

This paper challenges such explanations as primary drivers of the money-SWB relationships. Cognitive comparisons that are motivated and substantive involve effortful processes which people will prefer to avoid rather than engage (Epstein 1994; Forgas 2008; Schutte et al. 2010), most particularly if they have diminished cognitive resources to apply to the task (see Heeren et al. 2009). This is particularly true when people are asked to perform complex processing that involves a feeling state. Such tasks are more likely to be performed using a heuristic (shortcut) in which respondents use mood as information (Branscombe and Cohen 1991; Forgas 1995). Thus, an alternative explanation for the phenomena described in Graham's paper can be found from within the Theory of Subjective Wellbeing Homeostasis and its attendant constructs of set-points and Homeostatically Protected Mood.

The remainder of this paper has two aims as; (a) To show the centrality of affect within SWB; and (b) To address four key issues within Graham's article from the perspective of Psychology.

The Centrality of Affect Within SWB

Over the past 15 years (Cummins 1995) we have been developing the theory of Subjective Wellbeing Homeostasis to account for the extraordinary stability of

population SWB in Australia. Our most recent report (Cummins et al. 2010) describes a decade of investigation involving 24 national surveys. The total variation in mean SWB between surveys has been just three percentage points. To explain this stability, the theory proposes that SWB is actively controlled and maintained for each person in a manner analogous to the homeostatic maintenance of body temperature (see Cummins 2010; Cummins and Nistico 2002). At its heart, the theory of homeostasis envisages a genetically hard-wired system which has evolved to maintain a normal positive sense of wellbeing.

This generalized positive view of self may be measured through asking 'How satisfied are you with your life as a whole?', and this question has been used in population surveys for over 35 years (Andrews and Withey 1976). Not surprisingly, given the extraordinary generality of this question, the response that people give does not represent a conscious evaluation of their life. Rather it reflects a deep and stable positive mood state that we initially called Core Affect (Davern et al. 2007), but now refer to as Homeostatically Protected Mood (HP Mood: Cummins 2010).

HPMood appears to comprise three main affects. These are dominated by a sense of contentment, flavored with a touch of happiness and arousal. We propose that this affective and positive view of the self is generated genetically, providing each person with a level of positivity constituting an individual difference between people. The level of HPMood normally experienced by each person represents their SWB 'set-point' and is the level of SWB that homeostasis seeks to defend. As one consequence, SWB has the following characteristics:

1. The experienced level of SWB is normally very stable. Certainly, unusually pleasant or unpleasant events may cause SWB to change. Such events generate affect-as-emotion, which can dominate HPMood and cause the person to experience a level of affect that lies outside their set-point-range for HPMood. However, over a period of time, homeostasis will normally (but not invariably) return SWB to its previous level (see e.g., Hanestad and Albrektsen 1992; Headey and Wearing 1989)
2. The normal genetic set-point for HPMood lies in the 'satisfied' sector of the dissatisfied-satisfied continuum. More precisely, on a scale where zero represents complete dissatisfaction with life and 100 represents complete satisfaction, individual set-points are proposed to lie within the range of about 60–90 points (Cummins et al. 2002).
3. While we initially hypothesised that the origin of this trait positive mood was from personality, as has been suggested by numerous prior researchers (e.g., Oishi and Diener 2001) this has now been challenged. As initially demonstrated by Davern et al. (2007) and confirmed by Blore et al. (2011) and Tomyn and Cummins (2011), structural modelling has revealed that the positive affect in HPMood drives both personality and SWB. In other words, personality correlates with SWB mainly because both variables are being influenced by HPMood.

A more complete description of how homeostasis is proposed to operate may be found in Cummins (2010). The point to be made here, however, is that the affect of mood happiness is a central component of SWB and has much explanatory power.

Specific Issues with the Graham Paper

Graham raises a number of interesting issues from the perspective of the Economics-Psychology interface. Some of these have been discussed in the literature over many years, while others are more contemporary. All are phenomena that require an explanation and, as described above, Graham calls on cognition to provide the theoretical basis for such understanding. Each of these issues will now be addressed, first in terms of the explanation offered from cognition and then in terms of an alternative explanation offered from the broader perspective of Psychology.

The Easterlin Paradox

Richard Easterlin's (1974, 2003) paradox has generated enormous interest and remains contentious to this day. The explanation for steady levels of national SWB despite rising national income, offered by both Easterlin and Graham, is that aspirations rise with income. That is, using the assumption that individual SWB is determined by comparisons with others, a rise in everybody's income means that the position of each individual within the income hierarchy remains constant. However, Graham also acknowledges the 'suggestion of a satiation point' in the income-SWB relationship, such that SWB appears to reach a ceiling at high levels of income. While she regards this as "part of the explanation of the Easterlin paradox" she does not state how this phenomenon can be explained using cognition. This is a particular problem for explanations based on cognition since the point of satiation is quite an ordinary level of income. In 2006 the average gross household income in Australia was $64,272 (Flood and Baker 2010), or only about twice the income required for SWB saturation (see Fig. 2). Thus, the people experiencing satiation are still well within the income hierarchy and yet, for reasons unexplained through comparative strategies, they fail to show a reliable increase in SWB with further income increases.

An alternative explanation of the Easterlin Paradox comes from the perspective of affect, homeostasis and set-points. This explanation is based on the idea that the people in a random population sample can be dichotomized on the basis of those who are, or are not, maintaining normal levels of SWB due to their level of income. In this model, changing proportions of these two kinds of people, combined with a consideration of set-point-ranges and homeostasis, can explain why population levels of SWB remain steady despite rising population wealth. The sequence of this explanation is as follows:

The starting assumption is that the distribution of set-points within any randomly selected population sample is normal, as exemplified by the distribution of SWB within Australia (see Fig. 2.30, Cummins et al. 2010). Each set-point comprises a genetically determined, individual difference. We also propose, on the basis of empirical deduction (Cummins 2010), that the range of set-points represented within such samples is from 60 to 90 points, with a mean of 75. This fits well with the average SWB of 75 points for population samples in Australia.

We also calculate that each set-point range has a width of about 6 percentage points on either side of its set-point. This distribution explains why no population group chosen on the basis of demographic criteria has a reliable SWB higher than

about 81–82 points (Cummins et al. 2007b). That is, if all members of a demographic sample, such as people who are very wealthy, are operating at the top of their respective set-point ranges, then the sample SWB should be about 75+6=81 points. This is in accord with our data on household income shown in Fig. 2.

The next point of understanding, derived from the information above, is that the range of set-points (60–90, or 30 points) greatly exceeds the magnitude of each set-point range (<12 points). Thus, in favourable circumstances of living, where people are maintaining normal levels of SWB, the variance within any large, random sample, will be dominated by the distribution of set-points. Moreover, this distribution is invariant (normal) and not subject to influence by wealth. This domination of variance by set-points adds a dampening and stabilizing factor to the mean SWB of such samples.

A further stabilizing force is that fluctuations in the level of SWB within set-point-ranges will normally appear random due to idiosyncratic differences in momentary experience. The end result of these forces is that, under normal conditions, the SWB of population samples will be very steady over time. As previously stated, the SWB of the Australian population has remained within a 3.0 point range over 24 surveys conducted between 2001 and 2010 (Cummins et al. 2010).

There are, however, acute circumstances where the population SWB will show a systematic change. This may come about through the collective experience of a strongly positive or negative influence. SWB levels will then reflect the probability of SWB lying in the upper or the lower portions of set-point-ranges.

The magnitude of such effects should be modest due to the limited tolerance of homeostasis to allow sustained deviations from the set-point. They should also be transitory due to rapid adaptation. As demonstration of such a positive influence, Cummins et al. (2004) monitored the SWB of the Australian population over the period of the Athens Olympics. The Australian athletes performed in spectacular style, with a medal tally that ranked 4th after the USA, China and Russia. National jubilation was further enhanced by pre-games fears that Australian athletes would fare less well than they had just four years previously, at the Sydney Olympic Games. For a nation of 20 million people, this success vindicated the national preoccupation with sport and the international image of Australia as a sporting nation. The week-by-week data are shown in Fig. 1 where the Ns for each week

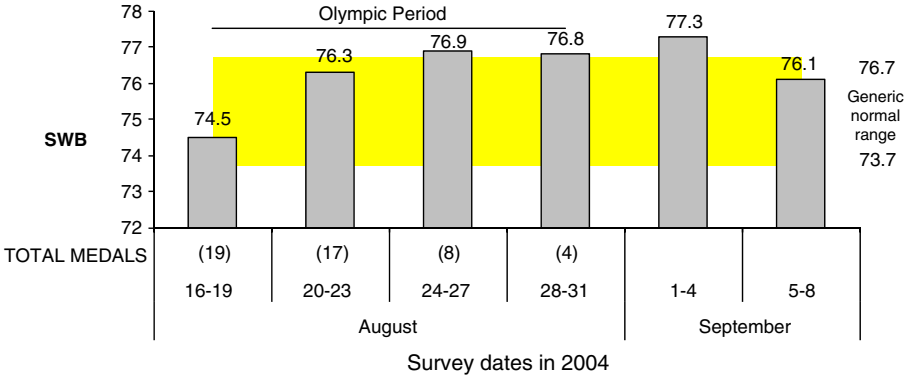

Fig. 1 Subjective wellbeing during the Athens Olympics

range from 234 to 451, forming a total national random sample of 2,000 (see the report for details).

Subjective wellbeing is measured by the Personal Wellbeing Index (PWI: International Wellbeing Group 2006). The normal range is calculated by using 24 survey mean-scores as data and describes two standard deviations around the mean. These results show a progressive and modest rise of some 2–3 points in population SWB over the period, taking it to just above the normal range, with a sharp fall once the games were concluded. This pattern is consistent with the predictions of homeostasis theory.

The collective SWB experience resulting from negative influences is less certain, both in terms of duration and extent. If the causal experience is acute and distal (eg national morning in response to a tragedy) then SWB homeostasis will ensure adaptation and the recovery of normal SWB will be rapid.

If, however, the causal experience is chronic, proximal and strong, recovery may beyond the capacity of homeostasis for some affected individuals. In this case the reduced levels of SWB are maintained and the people involved have a high probability of entering depression. Such long-term reduction in SWB can be seen in the very low wellbeing of informal carers (Cummins et al. 2007a) or within the German Socio-Economic Panel Survey longitudinal data following the reunification of Germany (Wagner et al. 2007). In such instances, SWB recovery may or may not occur, depending on whether sufficient resources to support homeostasis become available.

If recovery does occur, then the shift in SWB for individuals may be very substantial as they move from depression back to their set-point. Importantly, such recovery is not a movement of the genetic set-point, as has been assumed by some authors (e.g., Headey 2010; Inglehart et al. 2008). This assumption is analogous to suggesting that the homeostatic set-point for core body temperature has been reduced in hypothermia. Rather, hypothermia is a manifestation of homeostatic defeat, where the challenging agent (heat loss) has overwhelmed the capacity of the body to protect its normal temperature. The set-point for temperature remains unchanged and may be evidenced once more when heat-loss is prevented and the body warms. Similarly, low-levels of SWB represent a defeat of SWB homeostasis, not a movement of the set-point. SWB will move back into to its set-point following homeostatic defeat with the provision of sufficient resources to protect against the challenging agent.

In summary, an explanation is offered for the Easterlin Paradox that does not involve cognition. It rests on the proposition that national wealth cannot change the normal distribution of set-points, and that the normal distribution of set-points dominates variance within population samples. Changes in mean SWB comes about due to two related effects. The weaker effect is due to an influence that systematically changes the probability of SWB lying in the upper or lower portion of the set-point-ranges. The stronger effect is due to an influence that changes the proportion of people who are, or are not, maintaining homeostatic control of their SWB.

Thus, due to the power of money as a protective resource, an increase in the SWB of population samples will result from increasing the purchasing power of low income groups. This allows these people to better defend their homeostatic control

of SWB. However, the purchasing power of people within lower income ranges does not normally change with increased GDP because increased wages are matched by inflation. Additionally, increasing the wealth of people who are already well-off has little effect on SWB. This is because, for such people, the protective resources that assist homeostasis are already saturated with income. Because of these factors, rising national wealth within wealthy countries is not normally matched by systematic change in the levels of SWB.

Strength of the SWB-Income Relationship

> "Differences in income only account for a low proportion of the differences in happiness among persons, and other economic and non-economic factors, such as employment and health status, exert important influences on happiness" (Graham 2011, this issue).

Tackling this issue requires a clear separation into within and between-country comparisons. The between-country comparisons are very complex and concern such matters as the distribution of income and cultural response bias (see below). The within-country comparisons are far more straight-forward and illustrated for Australia in Fig. 1. These results are drawn from Cummins et al. (2010) and comprise the cumulative data from around 30,000 people drawn from general population surveys over the past 7 years.

The median household income in Australia lies within the range of $61–100 K per annum (see Flood and Baker 2010). The largest proportion of respondent (N=6,888) lies within this range while the smallest proportion (N=80) has the highest income ($500+K). The stars above columns indicate a significant difference from the group immediately below.

What can be seen is a linear increase in SWB at household incomes up to $101–150 K. This range of incomes up to $150 K includes 95% of the sample and, clearly, income makes a very determined difference to levels of SWB. This is in direct contrast to Graham's statement at the start of this section. However, the next income bracket, to $151–250 K, yields no further influence on SWB. The difference is only 0.9 points and, with a standard deviation of 10.0 points, there is no reasonable prospect of this difference becoming significant with increasing sample size. But at incomes above this level the incremental increase in SWB continues. The 2.3 point increase between the $101–150 K and $251–500 K will become significant once the sample size increases sufficiently. There are a number of observations that can be made as follows:

1. Income makes a clear difference to SWB up to a level that lies just above the top of the normal range. The average adult earnings (ABS, 2010) are estimated to be $51,064, and it might reasonable be supposed that when household income reaches 2–3 times this average, income is sufficient to defend household members against the kinds of stresses that can be ameliorated through money. Consequently, household income beyond this level does not have additional defensive power (see Cummins 2000) and, so, does not result in any systematic increase in levels of SWB through this means.

2. At an income of $251–500 K a new factor emerges that does seem to take SWB to higher levels. It seems quite possible that the active ingredient here is, indeed, a cognitive recognition of material wealth as being demonstrably higher than for most other people. Perhaps this is the time at which cognitive comparisons come into play, to boost SWB beyond the levels achieved by money as a defensive resource.

An important issue raised by this analysis is the use of log transformations to represent these data. Graham states:

> "For our income variable, we used log of per capita household income measured in 2005 PPP U.S. dollars. This specification helps control for outliers, and conforms to standard economic assumptions that an extra unit of income is more significant for those at the bottom of the distribution with less available resources than for those at the top." (Graham 2011, this issue)

Certainly the relationship between income and SWB can be made linear by a log transformation. However, while such transformation has statistical advantages, it also has strong negative features. First, the creation of a straight line obliterates the subtlety of different phases of relationship above and below $151–250 K, as shown in Fig. 2. It also gives a false impression that happiness can be forever increased by additional income. This is incorrect. As has been argued, there is a ceiling on increases in happiness imposed by genetic set-points and homeostasis. In fact, the mean happiness for a group of people chosen on demographic grounds tops-out at about 82 points, as was argued previously and exemplified in Fig. 2.

Further evidence for this ceiling and understanding of the phenomenon is provided by Fig. 3.

The data for Fig. 3 are from the same source as for Fig. 2, being cumulative across surveys. The figure depicts the changing levels of variance, in the form of standard deviations, within income groupings. What can be seen is a gradual diminution of within-group variance as income increases, up to an income of $101–150 K per year, and then the variance stabilizes.

The reason for this pattern lies within homeostasis theory. The theory predicts that wellbeing variation within income groups will reflect two kinds of influence, described earlier, as follows:

(a) Assuming random recruitment and a large sample, the range and distribution of HPMood set-points should be constant within income groups. That is, each

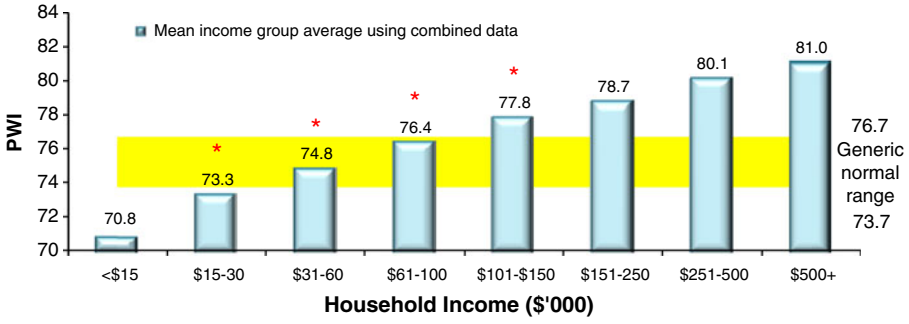

Fig. 2 Income vs subjective wellbeing

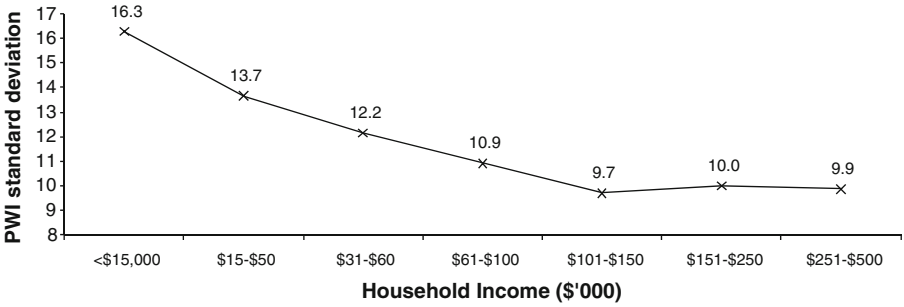

Fig. 3 PWI standard deviation × household income

income group should contain a normal distribution of set-points ranging from 60 to 90, with a mean of 75 points (Cummins 2010).

(b) Change in SWB reflects the strength of life challenge to homeostasis. This is predicted to be greatest for the most vulnerable groups, who are either people with constitutionally weak homeostatic systems (low SWB set-points and a vulnerability to depression) or people whose homeostatic systems are placed under pressure through external events that they cannot objectively control. This latter group will include people who are disabled and people on low incomes.

As a consequence, the theory predicts that the Personal Wellbeing Index will show greater variation within the lowest income groups. This is because people on low incomes have less access to this flexible, protective resource. They are therefore more vulnerable to the vagaries of their daily environment and also to chronic stressors. As a result, a higher proportion of group members will be suffering homeostatic defeat at any one time. These people create a negative skew to the distribution, which increases the within-group variance.

This explanation is consistent with the results in Fig. 3. It is also notable that the minimal variance is achieved at an income ($101–150 K), which takes SWB to a level just above the normal range, and that the resistance to further increase in SWB shown in Fig. 2 is matched by constant within-group variance in Fig. 3. This is another indication that a different process starts to emerge beyond this level of income, allowing further increases in SWB. This process may well be downward income comparison, which is a weak force at the next income level ($151–250) but emerges as a consistent and strong influence at $251–500 K. The lack of change in within-group variance as SWB increases shows that most of the members of these high income groups are being similarly influenced.

In summary, it appears that the relationship between household income and SWB is caused by two different influences, each depending on the level of income. At lower income ranges, additional money acts by lifting the tail of the SWB distribution. At high incomes it acts through downward comparison with lower-income groups.

The SWB-Income Relationship Between Nations

Graham cites some rather odd results which, she states, renew debate over whether the Easterlin paradox actually exists. The data for these studies come from the

Gallup World Poll and other sources which cover many different countries. The assumption underpinning these studies is that SWB data from all countries are comparable. They are not.

The reason that such data are not comparable is due to the well-established phenomenon called Cultural Response Bias. This bias causes people from different cultures to respond differently to response scales. The strength of this bias is such that it may account for substantial between-country variance in SWB. Moreover, since we do not know enough to un-confound our results from this effect, valid SWB comparisons between countries are not possible at this time.

The best example of this bias in the literature to date is the Confucian Response Bias. There is now a considerable body of data to show that the SWB population mean for China and South-East – East Asia averages about 65 points instead of the 75 points found in the West.

The most compelling evidence comes from the review by Chen and Davey (2008). Table 1 in their publication lists results from 16 data sources involving population samples from China-mainland, Macau, Taiwan and Singapore, all countries infused with Confucian philosophy. Excluding one outlying value of 38.8 points, the other 15 values average to 63.14 points with a standard deviation of 4.45. This is a remarkable degree of agreement given that the studies involved the use of different measurement instruments, were administered by different researchers, and span an 18 year period (1990–2007).

Further evidence comes from Macau. Rato et al. (2007–2009) measured population SWB using the Personal Wellbeing Index in a series of eight cross-sectional surveys. Their reports show the means vary from 63.3 to 66.7 points, which is a comparable level of stability to our Australian data.

Other confirming data come from Lau et al. (2005) and Lau et al. (2008). The SWB of their Hong Kong samples average 65.9 and 67.1 points respectively, again using the Personal Wellbeing Index. This paper also offers an explanation for why this value is about 10 percentage points lower than it is for Australia and other Western countries. This is the well-documented tendency for Confucian-Asians to avoid rating themselves at the top of the response scale. It is, thus, the relative absence of very high ratings that causes the difference in measured SWB and which invalidates international comparisons.

Summary

The cognitive comparisons assumed by Economists to underpin SWB stability and change are challenged by the evidence presented in this paper. Here it is argued that phenomena such as the Easterlin Paradox and Decreasing Marginal Utility can be adequately explained by unconscious, automatic, low energy processes based on affect. These include the application of heuristics, the Theory of Subjective Wellbeing Homeostasis and its attendant constructs of set-points and Homeostatically Protected Mood. Further research is required to determine the relative role of cognition and affect in these processes, but it seems at this time that the explanatory power of the affective processes are dominant.

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