RESEARCH PAPER

Does subjective well-being show a relationship between parents and their children?

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Abstract The relationship between the subjective well-being of parents and their own 12–16-year-old children was explored in a Spanish sample of $N = 266$ families. A positive relationship was expected due to both a shared environment and the possibility of the genetic transmission of subjective well-being 'set-points'. A positive significant relationship was found for the summated scale of satisfaction domains forming the Personal Well-being Index, and for the specific domains of health and security for the future. However, no relationship was found for the other five domains that make up this Index or for satisfaction with life as a whole. We conclude while these results provide some evidence for the expected influence of a shared environment, they have failed to provide evidence for high heritability of set-points for subjective well-being.

Keywords Adolescents · Children · Well-being · Life satisfaction · Life domain satisfaction · Family

1 Introduction

In the socialization process that happens within families, there is no doubt that parents have an important influence on many aspects of their children's lives. Thus, it might be expected that the combination of such socialization together with shared genetic influences would cause children to resemble their parents in terms of their attitudes, beliefs, routines and values. Previous studies have tended to confirm this

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common-sense prediction. For example, parental style and children's life satisfaction have been found to be related (Suldo & Huebner, 2004). However, such influences seem to decrease during adolescence, as the influence of peers becomes stronger.

Values are an interesting example of parents-children transmission. In some of our previous research with pre-adolescents from 12 to 16 years, from five different countries (Casas, Figuer, González, & Coenders, 2004), we found modestly significant correlations between adolescents' and their parents' values. This confirms earlier research by Astill, Feather, and Keeves, (2002) with a sample of 1,239 Australian adolescents and by Thomson and Holland (2002) in the United Kingdom. However, while another of our studies (Coenders, Casas, Figuer, & González, 2005) confirmed this trend, we have also generally found that the correlations are not strong and that cultural differences are also evident.

Many parent and child values tend to correlate with life satisfaction. For example, across five countries, Casas et al. (2004) observed that values related to *interpersonal relationships*, *capacities, and knowledge* correlated with overall life satisfaction. Again, however, the correlations were generally low. These results are generally in agreement with those of Sagiv and Schwartz (2000).

In reflecting on the meaning of these results, it became apparent that the theory of Subjective Well-being Homeostasis (Cummins, 2003) may allow a prediction to be made. This theory proposes that subjective well-being (SWB) is actively maintained around a set-point for each person, with the set-point determined by personality. Perhaps as a balance between extraversion and neuroticism, this system strives to maintain a constant, positive level of well-being that is both highly personal and abstract (Cummins, Eckersley, van Pallant, Vugt, & Misajon, 2003). Thus, there are two issues of relevance to our previous results as follows:

(a) It is assumed that the SWB set-point for each person is under a high level of genetic determination. While the strength of this determination is uncertain, longitudinal studies on twins have led to estimates that the stable component of SWB has a heritability of some 40% (Lykken & Tellegen, 1996; Roysamb, Tambs, Reichborn-Kjennerud, Neale, & Harris, 2003). If we accept this value, then a genetic model with a heritability of 40%, predicts that family members who share 50% of their genes should have a SWB similarity of .20. Moreover, the combination of such levels of heritability coupled with a shared living environment should generate even higher levels of shared variance in SWB between parents and their children. However, whether such additive effects would, in fact, occur, is moot. While Lykken and Tellegen (1996) suggest non-additive effects on well-being, the data from Roysamb et al. (2003) suggest otherwise. In either case the end result of the correlation between the SWB of parents and their children should be not less than .20.

(b) The aspect of SWB being protected by homeostasis is proposed to be a highly abstract sense of self (Cummins et al., 2003). Homeostasis is concerned with maintaining the positive non-specific sense of self-satisfaction. As such, the genetically-determined set-point around which it operates, is reasonably measured by data derived from the question "How satisfied are you with your life as a whole?" The data from domain-level scales, on the other hand, are more specific in their content, in that they ask about aspects of life (e.g.: "How satisfied are you with your health?"). Hence, since more variance is contributed

by cognitive processing, the influence of the genetic set-point is predicted to be less than it is for 'life as a whole'.

These considerations gave rise to the following hypotheses:

Hypothesis (a): Satisfaction with life as a whole will show shared variance between parents and children, reflecting both genetic and environmental influences.
Hypothesis (b): The shared variance for specific life domains will be less predictable than it is for life as a whole, since the domains exhibit less genetic influence from the SWB set-point and more variable influence from the environment.

2 Sample characteristics and exploratory data analyses

The questionnaires were administered in both Castilian Spanish and in Catalan. In the region where the questionnaires were administered, both are official languages, and all children speak them fluently, with the exception of recently arrived immigrants. However, that is not the case for all parents, so they were allowed to choose the language version with which they felt more comfortable.

Both children and parents were asked to rate their own satisfaction with the seven life domains (health, standard of living, life achievements, personal security, groups of people belonging to, security for the future, relations to other people) that form the Personal Well-being Index (PWI) (http://www.deakin.edu.au/research/acqol/instruments/wellbeing_index.htm).

This instrument is employed to measure subjective well-being by the International Well-being Group (http://www.deakin.edu.au/research/acqol/inter_well-being/index.htm). The domains of the PWI constitute the first-level deconstruction of 'Satisfaction with life as a whole', which is also measured as a separate item. Participants responded to a 0–10, end-defined-response scale (Jones & Thurstone, 1955), with 0 labeled "totally dissatisfied" and 10 "totally satisfied".

The original English version of the PWI domains and their back-translation from Castilian-Spanish into English is shown in Table 1.

Convergent and discriminant validity of the translations of these instruments had been checked in previous research with similar populations, for both adolescents and their parents. These showed the expected positive and moderate correlations with other well-being related constructs such as self-esteem, perceived control and perceived social support from family and friends (Casas et al., 2005).

In order to select the sample, we used a two-stage cluster sampling design. In the first stage we randomly selected seven schools within the province of Girona. In each school, we reported our aims to the Director and to the parents association, and we

Table 1 The original English version of the PWI domains and their back-translation from Castilian-Spanish

The original English	Back-translation
Standard of living	Standard of living
Health	Health
Achieved in life	Life achievements
Relationships	Relations with other people
Safety	Personal security
Community connection	Groups of people belong to
Future security	Security for the future

proceeded in accordance with regular ethical guidelines for questionnaire administration to children.

When a school agreed to participate, we randomly selected a number of classes, until we fulfilled a quota for each age group from each school. We then asked for cooperation from the responsible teacher. Following approval, children were asked for their co-operation and were informed that their data would be treated confidentially and that they were free to refuse. The questionnaires were administered in their regular classroom to the whole group. One of their usual teachers and one or two researchers were present during the administration, and clarified any questions that arose.

At the end of the session, we gave each child a letter and a questionnaire for their parents in a sealed envelope, to be delivered by hand. They were asked to return it to the teacher within approximately one week, also in a sealed envelope. The questionnaire could be answered by either of the parents or by both together, and a record was kept of that important variable. Each parent's questionnaire was coded, so that it could be paired with that of their child's. We obtained 462 questionnaires that formed matching pairs between parents and their child and, of these 139 were completed by both parents, 234 by the mother and 89 by the father ($N = 323$ used here, were answered by only one parent).

Missing data were imputed by regression. A randomly drawn residual was added to the imputed value. Cases for which children or parents had four or more missing answers to the eight satisfaction questions (12 cases) were dropped. Cases for which either parents or their children gave a constant answer to all domain satisfaction questions are indicative of either a response-set due to acquiescence, or mischievous or careless responding. Such cases were also dropped (44 cases). An extreme outlier with a high Mahalanobis distance to the mean in the space defined by the 16 satisfaction questions was also dropped, and thus the final sample size was $n = 266$.

By age and gender, 38% were boys and 62% girls. Their age distribution was 15% aged 12, 18% aged 13, 29% aged 14, 21% aged 15, 15% aged 16 and 2% aged 17 (mean age 14.1, SD 1.3).

Table 2 shows a description of the 7 domain variables, the Personal Well-being Index—PWI (summated scale of these 7 domain variables), and satisfaction with life as a whole. All data have been standardized to a 0–100 scale.

Consistent with previous data and theory, the following observations can be made:

(a)   The mean values for both 'Life as a whole' and for the PWI lie within the predicted 70–80 normal range for Western respondents (Cummins, 1995, 1998). Moreover, the mean and standard deviation of the parent sample is remarkably similar to the norms for the Australian adult population (Cummins, Woerner, Tomyn, Gibson, & Knapp, 2005: Mean = 74.65, SD = 12.63, Table A2.6, Page 10). The mean for the children is higher and so is the standard deviation. No normative Australian data are available for comparison.

(b)   The mean PWI score for parents is lower than the mean score for Life as a Whole (approximate p-value in a paired-data t-test for differences in means with cluster samples: 0.001). This is consistent with a reduced influence of homeostasis due to the higher specificity of domains (Cummins et al., 2003).

(c)   Children evidence a higher level of subjective well-being than their parents. According to a t-test for paired data of cluster samples, the differences are

Table 2 Descriptive statistics of SWB variables

		Mean	SD
Children			
Satisfaction with	Standard of living	82.19	19.62
	Health	79.42	24.11
	Life achievements	80.09	18.03
	Relations with other people	79.22	20.70
	Personal security	75.06	21.55
	Groups belonging to	82.84	20.83
	Security for the future	74.87	20.13
Children: Personal Well-being Index (PWI)		79.10	14.67
Parents			
Satisfaction with	Standard of living	73.19	18.32
	Health	76.20	20.08
	Life achievements	76.08	15.42
	Relations with other people	76.43	17.16
	Personal security	72.75	17.80
	Groups belonging to	75.14	16.83
	Security for the future	67.64	19.08
Parents: Personal Well-being Index (PWI)		73.92	12.35
Children: Satisfaction with life as a whole		79.30	21.70
Parents: Satisfaction with life as a whole		77.32	16.29

significant for the Personal Well-being Index (approx. *p*-value: 0.015) and the domains of standard of living (approx. *p*-value: 0.016), life achievements (approx. *p*-value: 0.047), groups belonging to (approx. *p*-value: 0.006), and security for the future (approx. *p*-value: 0.0005).

Figure 1 presents the mean values show in Table 1 in the context of Australian adult normative data. The vertical bars show the two standard deviation normative range of values for both the PWI and the seven domains (Cummins et al., 2005). The current values for the parents and their children can be seen superimposed as triangles and circles respectively.
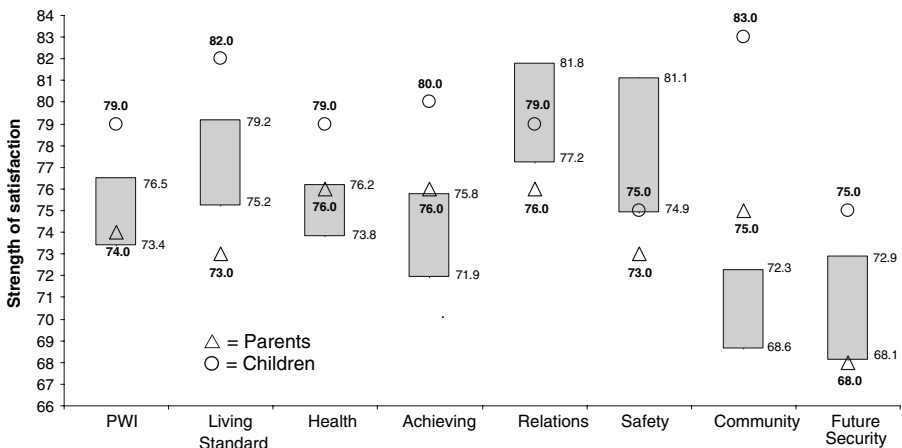

Fig. 1 Personal Well-being Index and domains: parents vs. children

It can be seen that the parental responses vary across the domains, with some being slightly above and others below the normative ranges. The children's responses, on the other hand, lie consistently above their parent's scores and never below the Australian adult ranges. Importantly, however, their rating of satisfaction with safety lies only at the base of the normative range, thus indicating that their scores do not represent some simple high response set. It is also notable that the domain of Future Security is rated the lowest by parents and children. These data patterns when taken together give confidence that the PWI is showing at least some degree of equivalence across the age and cultural divides.

3 Correlation between child and parent well-being

Since a cluster sample was used, the usual formula for the standard error of a $\hat{\rho}$ Pearson correlation coefficient cannot be used to construct statistical tests or confidence intervals. The "jackknife" technique (Quenouille, 1956) makes it possible to compute robust standard errors in a variety of settings (Tukey, 1958) which include cluster samples (Fay, 1985). In this case, the data are grouped into k primary sampling units (Lee, Forthofer, & Lorimor, 1989), which in our case are $k = 7$ schools. Let $\hat{\rho}_{(j)}$ be the Pearson correlation estimate when omitting the cases in the jth group (school) and $\hat{\rho}$ the estimate with the complete sample. We define:

$$\hat{\rho}_j = \kappa\hat{\rho} - (\kappa - 1)\hat{\rho}_{(j)}$$

The jackknife point estimate of the Pearson correlation is the mean of the $\hat{\rho}_j$ estimates over the k groups and the jackknife standard error is the standard deviation of the $\hat{\rho}_j$ estimates over the k groups divided by $\sqrt{k}$.

It is widely known that failure to reject the null hypothesis in a statistical test is hard to interpret when the power of the test is low because fairly high true values of the parameter would likely go undetected. Similarly, rejection of the null hypothesis is hard to interpret when the power of the test is high because rejection might occur with a high probability even for very small true values of the parameter. In this paper we use confidence intervals which, in addition to the decision of rejecting or not the null hypothesis, show the range of plausible parameter values. These intervals are constructed in the usual way from the jackknife point estimate, the jackknife standard error and an appropriate value of the t distribution.

Table 3 shows the correlations between parent and own child domain satisfaction. Only satisfaction with health and security for the future can be considered to be significantly related between parents and children (both confidence limits are positive). However, for most of the non-significant correlations, the confidence intervals have relatively large upper limits, so that the possibility of there being other substantial correlations between parent and child domain satisfactions cannot be ruled out.

PWI does correlate significantly between parents and children at .19. However, the correlation with Life as a Whole is non-significant and it is notable that the confidence interval does not include high values (a correlation equal to 0.22 corresponds to less than 5% shared variance between parents and children).

We also performed tests of the null hypothesis of equal intergenerational correlations for each pair of domain variables. The tests were done using Yuan and

Table 3 Jackknife confidence intervals $(1 - \alpha = 0.95)$ for the Pearson correlations between parent and own child well-being

	Correlation coefficient	Standard error	Lower confidence limit	Upper confidence limit
Standard of living	0.066	0.087	–0.147	0.279
Health	0.216	0.064	0.059	0.373
Life achievements	0.133	0.063	–0.021	0.287
Relations with other people	0.037	0.057	–0.102	0.176
Personal security	0.124	0.078	–0.067	0.315
Groups of people belonging to	0.117	0.078	–0.074	0.308
Security for the future	0.176	0.035	0.090	0.262
PWI	0.186	0.055	0.051	0.321
Overall life satisfaction	0.083	0.055	–0.052	0.218

Bentler's χ^2 statistics available in the program MPLUS4 (Muthén & Muthén, 2006) which is robust to cluster samples and non-normality.

Significant differences emerged between the two highest and two lowest correlations in Table 3:

(a) The correlation for health is higher than both standard of living ($p = .015$) and relationships ($p = .024$).

(b) The correlation for future security is higher than relationships ($p = .009$).

4 Discussion

The first matter of note is that the adult mean scores for both Satisfaction with Life as a Whole (77.32) and for the Personal Well-being Index (73.92) lie within the expected 70–80 normative range. The corresponding standard deviations (16.29 and 12.35) are also very comparable with the Australian population norms (Cummins, Eckersley, Lo, Okerstrom, Hunter, & Woerner, 2004). Additionally, while we do not have Australian normative data for children, the fact that their mean scores on both measures are slightly higher than their parents indicates that there is nothing in these statistics to suggest widespread homeostatic defeat. This is important since it shows that there is no statistical indication, within either sample of children or the parents, of some untoward influence that could have been masking normative set-point responses. The implications of this are that the conditions for the demonstration of heritability appear to be good.

In this normative context, it is notable that we have found no reliable parent-child relationship between the levels of satisfaction with life as a whole. This is arguably the acid test for heritability for set-points since this measure represents the most abstract and personal of the SWB questions (Cummins et al., 2003). It is, thus, the measure least likely to reflect the environmental influences of shared socialization.

On the other hand, a significant parent-child relationship does appear for the PWI. Moreover, the .19 correlation is consistent with the predicted value of .20 from genetic considerations alone (see introduction). However, the interpretation of this higher correlation is difficult. On the one hand it has a statistical advantage over 'life as a whole' because, being a summated scale, it is less subject to correlation attenuation bias. Alternatively, this higher correlation may also be due to environmental factors,

since the domain items are more specific. So, these two results together provide very equivocal evidence for a simple genetic effect.

Unfortunately our sample is too small to compare father-son, mother-son, father-daughter and mother-daughter dyads. With such subdivisions the sample standard errors would double. Moreover, we did not have twins in our sample, so we cannot perform monozygotic—dizygotic comparisons.

In terms of PWI domains, only the relationship between standard of living and future security can be considered to be significantly related between parents and children. Again, these weak parent-child correlations provide little support for the idea that individual set-points, which must influence estimations of domain satisfaction to some extent, are highly heritable.

One caveat for the negative interpretation of these results is that life satisfaction exhibits non-linear properties and, therefore perhaps another kind of statistical techniques should be used (González, 2006; González, Casas, & Coenders, 2007a; González, Coenders & Casas, 2007b). However, even though such non-linearity is certain, the correlations we have obtained are so small that this is unlikely to be the dominating influence. Moreover, the normative nature of these data implies that the conditions for the demonstration of heritability appear to be good. We therefore conclude that these results have failed to provide evidence for high heritability of set-points for SWB, even though the PWI results seem to indicate a detectable influence of a shared environment.

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