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More personalient people are happier☆

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ABSTRACT

The general factor of personality (GFP) has been proposed as the personality equivalent of the general factor of intelligence (*g*). Because GFP is likely an indicator of social effectiveness and emotional intelligence, conducive to smoother social and interpersonal relations, and because humans evolved to be profoundly social, the savanna theory of happiness predicts that more personalient individuals (with higher GFP) are happier. The analyses of the National Child Development Study in the UK (Study 1) and the National Longitudinal Study of Adolescent to Adult Health in the US (Study 2) confirm the prediction. In both studies, the effect size ranged from small to medium. Additional analyses suggest that more personalient individuals are happier, not for genetic reasons, but because of the smoother social and interpersonal relations in everyday experiences. The current analyses add further evidence to the psychometric validity of GFP.

The general factor of personality (GFP) has been proposed as the personality equivalent of the general factor of intelligence (*g*) (Figueredo et al., 2004; Hofstee, 2001; Musek, 2007). *g* is a latent factor that emerges in a factor analysis of a large number of cognitive tests, *regardless* of the specific nature or type of tests, or which aspect of cognitive ability they measure (Jensen, 1998). Similarly, GFP is a latent factor that emerges in a factor analysis of a large number of personality tests, *regardless* of the specific nature or type of tests, or which aspect of personality they measure (Loehlin, 2012; Loehlin & Martin, 2011; Rushton et al., 2009; van der Linden, Bakker, & Serlie, 2011).

While in the past some personality psychologists questioned the validity of the construct of GFP (Ashton et al., 2009; Bäckström et al., 2009; McCrae et al., 2008; Revelle & Wilt, 2013), the proponents of GFP have repeatedly and effectively addressed such criticisms (Chen et al., 2016; Figueredo et al., 2016, pp. 954–955; Irwing, 2013; Musek, 2017, pp. 107–123; van der Linden et al., 2016, 2017). Most personality psychologists have largely moved beyond these debates. With one exception (McCabe et al., 2022; Oltmanns et al., 2018), there have not been new criticisms of GFP in the past decade. As van der Linden et al. (2017, pp. 37–38) aptly point out, *g* initially received the *identical* set of criticisms that some personality psychologists today raise against GFP. Yet today very few psychologists doubt the existence of *g*. GFP is therefore likely to be on its way to complete acceptance eventually as well. The strongest evidence for the psychometric validity of GFP is the fact that an *identical* GFP emerges as a latent factor out of a factor analysis no matter what personality tests serve as the indicators. The correlation between GFPs extracted from different sets of personality tests administered to the same set of subjects approaches 1.0, after statistical correction for measurement errors (Rushton & Irwing, 2011, Fig. 5.12).

Individuals who have higher levels of *g* are universally called *more intelligent*. There is currently no word in the English language to denote individuals who have higher levels of GFP. Neither of the two adjectives that share the root with "personality" – personal and personable – mean "having higher levels of GFP" or "having more socially effective personality" (see below). As a result, Kanazawa (2024a, p. 7) proposes two neologisms to denote "having higher levels of GFP": *personalient* and *personalique*. In this paper, I adopt *personalient* simply because it rhymes with *intelligent*. More personalient individuals have higher levels of GFP in the same way that more intelligent individuals have higher levels of *g*. In terms of the Big Five personality factors, more personalient individuals are more Open to new experiences (O), more Conscientious (C), more Extraverted (E), more Agreeable (A), and less Neurotic (N) (or more emotionally stable).

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1. GFP and happiness

How might more personalient individuals be different from less personalient individuals? In particular, what effect might GFP have on happiness, and why? Only two studies to date have specifically examined the association between GFP and happiness. Musek (2007) used three small Slovenian samples to establish large positive associations between GFP and life satisfaction (*r*s = 0.47–0.50). Chen et al. (2016) found GFP and life satisfaction were positively correlated in two small samples of university students (*r*s = 0.31 and 0.48). In addition, Fisher and Robie (2019) used an international sample of over three million Facebook users to demonstrate that those with "highly adaptive" personality profiles had significantly higher life satisfaction than those with "adaptive" personality profiles did, who in turn had higher life satisfaction than those with "maladaptive" personality profiles did. Their definition of a "highly adaptive" personality profile is identical to a high level of GFP because it is characterized by the highest levels of O, C, E, and A, and the lowest levels of N. Dunkel (2013) found that wellbeing was correlated with the general factor of psychosocial development, which was extracted from trust, autonomy, initiative, industry, identity, intimacy, generativity, and integrity, and was correlated with GFP.

Why would more personalient individuals be happier? The savanna theory of happiness (Kanazawa & Li, 2018) is currently the only general theory of happiness that explains *why* some individuals are happier than others. The theory contends that individuals' levels of happiness fluctuate in response not only to the current consequences of any given situation (what it means now) but also to its ancestral consequences (what it would have meant for our ancestors on the African savanna during the Pleistocene Epoch, 1.6 M to 12 K years ago) because the human brain is predisposed to perceive the current environment as if it were the ancestral environment (Kanazawa, 2004). The events and circumstances that made our ancestors happy then still make us happy today, and the events and circumstances that made our ancestors unhappy then still make us unhappy today.

There has been accumulating evidence for the savanna theory of happiness. For example, ethnic minorities in the US have lower levels of life satisfaction than whites, because, in the ancestral environment, extended contact with others who looked, spoke, and behaved differently usually signified danger because it normally happened under conditions of conquest, imprisonment, slavery, and abduction (Burrow & Hill, 2013; Kanazawa & Li, 2015). Rural residents in open spaces have higher levels of life satisfaction than urban residents in crowded quarters, because our ancestors lived in hunter-gatherer bands of roughly 150 individuals (Dunbar, 1993) and high population density often signified impending breakdown of social order based on personal ties and informal social control (Li & Kanazawa, 2016). Individuals with more friends have higher levels of life satisfaction because, for our ancestors – a physically vulnerable species living in harsh environments –, having no or few allies or being ostracized from the group was tantamount to a death penalty (Li & Kanazawa, 2016). Exposure to sunlight increases happiness, because, in the ancestral environment without any artificial means of illumination, darkness signified potential physical danger from nocturnal predators or enemies in hiding and thus sunlight always signified safety (Kanazawa et al., 2022).

Humans did not evolve to publish scientific articles in academic journals. They did not evolve to earn big promotions or huge raises on a corporate ladder, win political elections in representative democracies, garner Nobels, Oscars, Grammys, or Pulitzers, or do anything else that modern humans today strive to achieve. Humans evolved as hunter-gatherers in small bands, and, in order to survive in harsh environments, they needed to form friendships and alliances with each other. Humans are profoundly *social* animals adapted for group living, which is why friendships make us happy today (Li & Kanazawa, 2016). Because friendships and alliances were so important, and their absence was so deadly, throughout human evolutionary history, humans are evolutionarily designed to value social and interpersonal relationships with each other.

While the precise nature of GFP is still under debate (Kanazawa, 2024a), two leading (and related) views are that GFP is a measure of social effectiveness (Dunkel & van der Linden, 2014; Loehlin, 2012; Rushton & Irwing, 2011; van der Linden et al., 2016) or of emotional intelligence (van der Linden et al., 2017, 2018). According to these views, more personalient individuals are more socially effective and more emotionally intelligent, such that they are more popular among their friends, colleagues, and superiors (Sitser et al., 2013; van der Linden et al., 2010; van der Linden et al., 2014; van der Linden, te Nijenhuis, et al., 2011). In other words, more personalient individuals typically have *smoother* social and interpersonal relationships with fewer social and interpersonal issues or problems.

If humans evolved to be social, and if more personalient individuals have smoother social and interpersonal relationships, then the savanna theory of happiness would predict that more personalient individuals are happier today because their smooth social and interpersonal lives were what would have made our ancestors happier in their hunter-gather bands. So this leads to my first hypothesis in this paper:

H_1: More personalient individuals are happier than less personalient individuals are.

2. What is the causal mechanism between GFP and happiness?

If more personalient individuals are happier than less personalient individuals are, as H_1 predicts, then what would be the precise causal mechanism? *How* are more personalient individuals happier than less personalient individuals are? The savanna theory of happiness explains the ultimate evolutionary reasons *why* more personalient individuals might be happier, but what is the proximate causal mechanism of *how* they are happier?

There are two immediate possibilities. Both GFP (Rushton et al., 2008) and happiness (Lyubomirsky et al., 2005) are known to be substantially heritable. About half of the variance in both are attributable to genes; in fact, both GFP and happiness follow the "50–0–50 rule" (Kanazawa, 2012, pp. 45–47): Roughly 50 % of individual differences in traits is heritable (attributable to genes), roughly 0 % is attributable to the shared environment, and roughly 50 % is due to the nonshared environment. This is also largely true of life satisfaction and subjective well-being (De Neve et al., 2012; Farhud et al., 2014; Nes & Røysamb, 2017). The 50–0–50 rule highlights the fact that *parenting* (how parents raise their children within the family, which is the basis of shared environment) is not an important determinant of how children turn out, even though (biological) *parents* (who give children their genes) are (Harris, 1995, 1998; Rowe, 1994).

Several studies have shown that personality – in particular, the Big Five personality factors – and life satisfaction share common genetic variance (Røysamb et al., 2018; Sadiković et al., 2018; Weiss et al., 2008). If genes that influence GFP and those that influence happiness are somehow linked in the genome, then such linkage could create a positive association between GFP and happiness, where more personalient individual are happier. If this is the causal mechanism between GFP and happiness, then one empirical implication is that, in longitudinal data, the statistical association between GFP and happiness, predicted by H_1, will disappear *once earlier levels of happiness are statistically controlled.* Genes don't change over time in a life course, so if an individual's genes produce a certain level of happiness at time *t*, then, on average, it should stay more or less the same over time.

I hasten to add that, while the genes themselves are constant throughout life, their *effects* are not necessarily constant. Current research in epigenetics shows that genes' *phenotypic expressions* can be environmentally triggered at various points during development (Pang et al., 2019; Roth, 2012). However, *theoretically,* there is no reason to expect that genes for personalience or life satisfaction to be expressed later in development or that their expressions can be strongly

environmentally calibrated, because both smooth social relationships and subjective well-being are important throughout life, from childhood on. *Empirically,* there have been no studies or data to suggest that such might be the case. Most importantly, the use of prospectively longitudinal data, such as NCDS or Add Health (see below), will allow me to examine empirically the actual constancy or change in the strength of associations between GFP and happiness over the life course.

There is therefore no *a priori* reason to expect that the genetic linkage between genes for personalience and genes for happiness to become stronger or weaker, or fluctuate in any way, over the life course. Given that, GFP should no longer have an effect on happiness once an earlier level of happiness is statistically controlled.

H_{2G} (genetic hypothesis): There is no statistical association between GFP and happiness at time t once the level of happiness at time t-1 is statistically controlled.

Alternatively, if more personalient individuals are happier than less personalient individuals are, not for genetic reasons, but because their social and interpersonal relationships in their everyday experiences are smoother, then there should be no end to the effect of GFP on happiness. We have everyday experiences literally every day. An earlier diary study indeed shows that more personalient individuals have fewer interpersonal conflicts and better social relationships on a daily basis (Pelt et al., 2020). In the NCDS data (see below), GFP was significantly (all $p < .001$) associated with how frequently the respondent visited friends in the last two weeks ($r = 0.177$), how frequently friends visited the respondent in the last two weeks ($r = 0.130$) and how frequently the respondent communicated with friends by phone or letter ($r = 0.240$) at age 51. In the Add Health data (see below), GFP was significantly (both $p < .001$) associated with how frequently the respondent hung out with friends in the last seven days at age 16 ($r = 0.042$) and age 22 ($r = 0.135$).

If more personalient individuals are happier because their social and interpersonal relationships are smoother, with fewer issues and problems, then GFP should still be associated with happiness even after earlier levels of happiness are statistically controlled, because the positive effect of smoother social and interpersonal relationships in everyday experiences should continue every day since the time happiness was last measured.

H_{2EE} (everyday experiences hypothesis): There is a statistical association between GFP and happiness at time t even after the level of happiness at time t-1 is statistically controlled.

In the remainder of this paper, I will test these three hypotheses (H_1, H_{2G}, and H_{2EE}) with two different representative population samples from two different nations.

3. Study 1: United Kingdom

3.1. Data

The National Child Development Study (NCDS) is a large, ongoing, and prospectively longitudinal study that has followed a *population* (not a sample) of British respondents since birth for over 60 years. The study included *all* babies ($n = 17,419$) born in Great Britain (England, Wales, and Scotland) during one week (03–09 March 1958). The respondents were subsequently reinterviewed in 1965 (Sweep 1 at age 7; $n = 15,496$), 1969 (Sweep 2 at age 11; $n = 18,285$), 1974 (Sweep 3 at age 16; $n = 14,469$), 1981 (Sweep 4 at age 23; $n = 12,537$), 1991 (Sweep 5 at age 33; $n = 11,469$), 1999–2000 (Sweep 6 at age 41–42; $n = 11,419$), 2004–2005 (Sweep 7 at age 46–47; $n = 9534$), 2008–2009 (Sweep 8 at age 50–51; $n = 9790$), and 2013 (Sweep 9 at age 55; $n = 9137$). In each sweep, personal interviews and questionnaires were administered to the respondents; to their mothers, teachers, and doctors during childhood; and to their partners and children in adulthood. Virtually all (97.8 %) of the NCDS respondents are Caucasian. The Centre for Longitudinal Studies (CLS) of University College London now conducts NCDS and the data are publicly and freely available to registered users of the UK Data Service (https://ukdataservice.ac.uk/).

3.2. Dependent variable: Life satisfaction

At every sweep after the respondent turned 33 (except for age 55), NCDS asked its respondents the identical question: "Here is a scale from 0 to 10, where '0' means that you are completely dissatisfied and '10' means that you are completely satisfied. Please enter the number which corresponds with how satisfied or dissatisfied you are with the way life has turned out so far." This is the standard measure of life satisfaction most commonly used in happiness research (Diener & Diener, 1996). I used ordinal regression to analyze this variable.

It is a significant limitation of the NCDS data that life satisfaction was assessed with a single measure in each sweep. However, if I subject the four separate measures of life satisfaction over the life course to a principal component analysis, it extracts only a single latent factor, and each measure has a high factor loading (age 33: 0.705; age 42: 0.763; age 47: 0.791; age 51: 0.783). In addition, in each sweep in which either relationship satisfaction or job satisfaction was measured, the measure of life satisfaction was significantly positively correlated with both in every sweep (relationship satisfaction: age 33: $r = 0.470$, $n = 7745$, $p < .001$; age 42: $r = 0.191$, $n = 9044$, $p < .001$; age 51: $r = 0.422$, $n = 8161$, $p < .001$; job satisfaction: age 42: $r = 0.242$, $n = 9536$, $p < .001$; age 47: $r = 0.286$, $n = 8290$, $p < .001$). It therefore appears that the singular measure of life satisfaction accurately measured each respondent's overall happiness and life satisfaction in many life domains.

3.3. Independent variable: GFP

At age 51, NCDS measured the respondents' Big Five personality factors with the 50-item International Personality Item Pool. Each respondent could answer each of the 10 statements per factor on a five-point Likert scale from 1 = "very inaccurate" to 5 = "very accurate." Thus, after reverse coding where necessary, each respondent's score varied from 10 to 50 on a personality factor. As noted earlier, past studies show that *an identical* GFP emerges from *any* set of personality tests (Rushton & Irwing, 2011). Thus GFP extracted from the Big Five is as good as, and likely identical to, that extracted from any other set of personality tests.

Unfortunately, NCDS measured the Big Five personality factors only once at 51. However, personality psychologists generally concur that individual personality, including the Big Five, remains largely constant throughout the life course (Soldz & Vaillant, 1999), although there are some individual differences in its stability (Mroczek & Spiro, 2003). One of the major influences on changes over time is age (Roberts & DelVecchio, 2000), which all respondents share in cohort data like NCDS; all NCDS respondents are exactly the same age (within one week) at any given sweep. So I assume that NCDS respondents' scores on the Big Five measured at 51 were largely representative of their personality throughout their lives. However, it is important to note that the fact that the Big Five personality factors were measured only once at 51 is a major shortcoming for my analysis, as personality factors, while relatively stable, are never perfectly so.

I subjected the raw scores for the Big Five personality factors to principal axis factoring with no rotation. The factor analysis extracted only one latent factor with Eigenvalue >1.0, with the following factor loadings: O = 0.601, C = 0.399, E = 0.619, A = 0.564, $N = -0.251$. The Big Five factors explained 39.5 % of the variance in GFP. Unlike many previous studies on GFP (Rushton & Irwing, 2011), NCDS data did not require a two-step derivation process in which the Big Five personality factors were first reduced to the Big Two, and then finally to the Big One. GFP has a mean of 0 and a standard deviation of 1.

3.4. Control variables

The respondent's IQ was measured at ages 7, 11, and 16 with 11

different cognitive tests, with a mean of 100 and standard deviation of 15; sex was measured at birth (0 = female, 1 = male), education was measured at age 33 with six ordinal categories from 0 = no qualifications to 5 = degree/NVQ5–6; earnings in natural log of 1 K GBP was measured at the same age as the dependent variable. Recall that both age and race are constant in the NCDS data.

3.5. Results

Table 1 presents the results of the ordinal regression analyses of the association between GFP and life satisfaction at ages 33, 42, 47, and 51, net of IQ, sex, education, and earnings. They show statistically significant associations between GFP and life satisfaction at every age. The standardized effect (change in the odds of a respondent being in a category above rather than the one below in the ordinal scale, associated with one standard deviation increase in the independent variable = $e^{(b_x * SD_x)}$) shows that a one standard deviation increase in GFP was associated with 30–60 % increases in such odds. A comparison of the standardized effects down the column within each regression equation shows that GFP had a much stronger association with life satisfaction at every age than any other variable included in the equation. A comparison of the standardized effect of GFP across the top row shows that the effect of GFP on life satisfaction monotonically increased across the life course, from 1.305 at age 33, to 1.356 at age 42, to 1.437 at age 47, to 1.619 at age 51.

There are currently no accepted way of calculating effect sizes in ordinal regression. However, partial correlation coefficient r between life satisfaction and GFP, controlling for all the variables included in the ordinal regression equations, ranged from 0.132 to 0.235. These represented small to medium effects, corresponding to Cohen's d of 0.266–0.484 (Cohen, 1992). The results presented in Table 1 therefore supported H_1. More personalient individuals had higher life satisfaction than less personalient individuals did.

Table 2 presents the results of the same ordinal regression analyses presented in Table 1, with an additional control for an earlier level of life satisfaction at an immediately preceding NCDS sweep. Genes have a strong effect on individual happiness (Lyubomirsky et al., 2005) and individuals have a "happiness set point" to which they usually return after momentary perturbations in happiness (Headey & Wearing, 1989), making individual levels of happiness relatively stable over time. One would therefore expect that a previous level of life satisfaction to have a very strong effect on its current level, and this is indeed what the results of the analysis of the NCDS data showed. The level of life satisfaction at an earlier sweep, four to nine years earlier, was very strongly associated with the current level of life satisfaction. The standardized effect sizes

Table 2
The association between the general factor of personality and life satisfaction, with earlier life satisfaction controlled
National Child Development Study

	(1)	(2)	(3)
	Age 42	Age 47	Age 51
GFP	0.262***	0.311***	0.447***
	(0.039)	(0.044)	(0.041)
	1.236	*1.286*	*1.436*
IQ	−0.008**	−0.003	−0.003
	(0.003)	(0.003)	(0.003)
	0.887	*0.956*	*0.956*
Sex	−0.144*	−0.136*	0.143*
	(0.062)	(0.069)	(0.063)
	0.931	*0.934*	*1.074*
Education	0.008	−0.009	−0.003
	(0.026)	(0.029)	(0.027)
	1.012	*0.986*	*0.995*
Earnings	0.017*	0.043***	0.032***
	(0.007)	(0.007)	(0.007)
	1.094	*1.249*	*1.191*
Earlier life satisfaction	0.587***	0.568***	0.878***
	(0.020)	(0.021)	(0.026)
	2.751	*2.971*	*3.700*
−2LogLikelihood	12,840.298***	9257.900***	11,561.092***
Nagelkerke pseudo R^2	0.238	0.259	0.350
n	3725	3083	3525

Note: Main entries are unstandardized coefficients.
(Numbers in parentheses are standard errors.)
Italicized numbers are standardized effects on odds ($e^{(b_x * SD_x)}$).
* $p < .05$.
** $p < .01$.
*** $p < .001$.

Table 1
The association between the general factor of personality and life satisfaction
National Child Development Study

	(1)	(2)	(3)	(4)
	Age 33	Age 42	Age 47	Age 51
GFP	0.329***	0.376***	0.448***	0.595***
	(0.040)	(0.038)	(0.043)	(0.039)
	1.305	*1.356*	*1.437*	*1.619*
IQ	0.003	−0.005	−0.002	−0.004
	(0.003)	(0.003)	(0.003)	(0.003)
	1.046	*0.928*	*0.970*	*0.942*
Sex	−0.194**	−0.190**	−0.170*	0.089
	(0.067)	(0.061)	(0.067)	(0.059)
	0.908	*0.909*	*0.919*	*1.046*
Education	0.017	0.010	−0.010	−0.006
	(0.027)	(0.025)	(0.028)	(0.025)
	1.026	*1.015*	*0.985*	*0.991*
Earnings	0.015**	0.033***	0.060***	0.060***
	(0.006)	(0.006)	(0.007)	(0.006)
	1.093	*1.190*	*1.364*	*1.387*
−2LogLikelihood	12,286.927***	14,216.100***	10,298.845***	14,089.865***
Nagelkerke pseudo R^2	0.031	0.036	0.061	0.088
n	3444	3852	3183	3883

Note: Main entries are unstandardized coefficients.
(Numbers in parentheses are standard errors.)
Italicized numbers are standardized effects on odds ($e^{(b_x * SD_x)}$).
* $p < .05$.
** $p < .01$.
*** $p < .001$.

varied from 2.751 to 3.700, suggesting that a one standard deviation increase in an earlier level of life satisfaction tripled or quadrupled the odds that the individual's current level of life satisfaction was higher.

That is not the news. The news is that, even net of an earlier level of life satisfaction and its strong effect, GFP was still associated with life satisfaction, and the association was only slightly attenuated by controlling for the earlier level of life satisfaction. The partial correlation r ranged from 0.086 to 0.171, corresponding to Cohen's d of 0.173–0.347. The results presented in Table 2 therefore refuted the genetic hypothesis (H_{2G}) as the causal mechanism for the association between GFP and life satisfaction, and supported the everyday experiences hypothesis (H_{2EE}). More personalient individuals appear to have higher life satisfaction because their social and interpersonal relationships in their everyday experiences are smoother and present fewer issues and problems.

3.6. Discussion

The analyses of the NCDS data confirmed H_1. More personalient individuals had a significantly higher level of life satisfaction than less personalient individuals did, and the effect sizes were small to medium. A one standard deviation increase in GFP increased the odds that the NCDS respondent was in a higher category of life satisfaction by 30 to 60 %. Controlling for an earlier level of life satisfaction at an immediately preceding sweep four to nine years earlier did not make much difference. GFP was still associated with current life satisfaction even net of earlier life satisfaction. The results presented in Table 2 refuted the genetic explanation (H_{2G}) for the causal mechanism between GFP and life satisfaction, and supported the everyday experiences explanation (H_{2EE}). More personalient individuals appear to have higher life satisfaction because their social and interpersonal relationships in their everyday experiences present fewer issues and problems.

4. Study 2: United States

4.1. Data

National Longitudinal Study of Adolescent to Adult Health (Add Health) is a prospectively longitudinal study of a nationally representative sample of American youths, initially sampled when they were in junior high and high school in 1994–1995 (Wave I, n = 20,745, mean age = 15.6) and reinterviewed in 1996 (Wave II, n = 14,738, mean age = 16.2), in 2001–2002 (Wave III, n = 15,197, mean age = 22.0), in 2007–2008 (Wave IV, n = 15,701, mean age = 29.1), and in 2016–2018 (Wave V, n = 12,300, mean age = 38.0). See additional details of sampling and study design at http://www.cpc.unc.edu/projects/addhealth/design.

4.2. Dependent variable: Happiness/life satisfaction

At Waves I, II, IV, and V, Add Health measured happiness with the question, “How often was each of the following things true during the past week? You were happy.” 0 = never or rarely, 1 = sometimes, 2 = a lot of the time, 3 = most of the time or all of the time. At Wave III, Add Health measured global life satisfaction with the question “How satisfied are you with your life as a whole?” 1 = very dissatisfied, 2 = dissatisfied, 3 = neither satisfied nor dissatisfied, 4 = satisfied, 5 = very satisfied (reverse coded). I used ordinal regression to analyze both of these variables.

Once again, it is a significant limitation of the Add Health data that happiness and life satisfaction were assessed with a single measure in each wave. However, if I subject the five separate measures of happiness/life satisfaction over the life course to a principal component analysis, it extracts only a single latent factor, and each measure has a high factor loading (age 16: 0.592; age 17: 0.647; age 22: 0.566; age 29: 0.657; age 38: 0.604). Further, as with the NCDS data in Study 1, Add Heath measures of happiness and life satisfaction were significantly correlated with other contemporaneous measures of positive and negative affect, such as how often they enjoyed life in the last seven days (age 16: $r = 0.537$, $n = 20{,}692$, $p < .001$; age 17: $r = 0.558$, $n = 14{,}721$, $p < .001$; age 22: $r = 0.431$, $n = 15{,}175$, $p < .001$; age 29: $r = 0.743$, $n = 15{,}694$, $p < .001$), how often they were depressed in the last seven days (age 22: $r = -0.379$, $n = 15{,}172$, $p < .001$; age 29: $r = -0.495$, $n = 15{,}697$, $p < .001$; age 38: $r = -0.492$, $n = 12{,}176$, $p < .001$), how often they were sad in the last seven days (age 22: $r = -0.330$, $n = 15{,}174$, $p < .001$; age 29: $r = -0.477$, $n = 15{,}697$, $p < .001$; age 38: $r = -0.464$, $n = 12{,}151$, $p < .001$), how often they could not shake off the blues in the last seven days (age 22: $r = -0.314$, $n = 15{,}167$, $p < .001$; age 29: $r = -0.430$, $n = 15{,}696$, $p < .001$; age 38: $r = -.438$, $n = 12{,}188$, $p < .001$), how often they were bothered by things that didn't usually bother them in the last seven days (age 22: $r = -0.237$, $n = 15{,}176$, $p < .001$; age 29: $r = -0.317$, $n = 15{,}694$, $p < .001$), job satisfaction (age 29: $r = 0.207$, $n = 15{,}441$, $p < .001$; age 38: $r = 0.252$, $n = 12{,}009$, $p < .001$), and whether they were happy as a parent (age 38: $r = 0.251$, $n = 8606$, $p < .001$). It therefore once again appears that the singular measure of happiness/life satisfaction accurately measured each respondent's overall happiness and life satisfaction in many life domains.

4.3. Independent variable: GFP

At age 29, Add Health measured the respondent's Big Five personality factors with the 20-item Mini-International Personality Item Pool. The respondent could answer each of the four statements per personality factor on a five-point Likert scale, from 1 = strongly disagree to 5 = strongly agree. Thus, after reverse coding where necessary, each respondent's score varied from 4 to 20 on a personality factor. Once again, the fact that Add Health measured the Big Five personality factors only once at 29, while not ideal, does not present a significant problem in my analysis because personality is known to be stable over the life course, especially in cohort data like Add Health (Mroczek & Spiro, 2003; Roberts & DelVecchio, 2000; Soldz & Vaillant, 1999).

I subjected the raw scores for the Big Five personality factors to principal axis factoring with no rotation. The factor analysis extracted only one latent factor with Eigenvalue >1.0, with the following factor loadings: O = 0.484, C = 0.226, E = 0.466, A = 0.577, $N = -0.230$. The Big Five factors explained 33.1 % of the variance in GFP. Once again, Add Health data did not require a two-step derivation process and produced the Big One in one step.

4.4. Control variables

The respondent's IQ was measured at ages 16 and 22 with an abbreviated version of the Peabody Picture Vocabulary Test, and at age 29 with word recall and backward digit spans tests, with a mean of 100 and standard deviation of 15; sex was measured at 16 (0 = female, 1 = male); and age was measured at the same time as the dependent variable. At Waves I and II, neither education nor earnings were measured, because all respondents were still in school. At Waves III–V, education (measured as years of formal schooling in Wave III, with 13 ordinal categories in Wave IV, and with 16 ordinal categories in Wave V) and earnings (natural log of annual earnings in $1 K) were measured at the same time as the dependent variable. At Waves I and III, race was measured with three dummies (black, Asian, and Native American) and, at Wave V, with four dummies (black, Asian, Native American, and Pacific Islander), with white as the reference category in all waves. At Waves III and V, Hispanicity was measured (1 if Hispanic, 0 otherwise). I used the measure of race and Hispanicity either at the same time as the dependent variable or the most recent past.

4.5. Results

The results presented in Table 3 replicated the results from Study 1 presented in Table 1. At every wave, net of IQ, sex, age, education,

earnings, race, and Hispanicity, GFP was statistically significantly associated with measures of happiness/life satisfaction. The effect sizes in the Add Health data were also comparable to those in the NCDS data; a one standard deviation increase in GFP was associated with a 20–60 % increase in the odds that the respondent was in a higher category of happiness/life satisfaction. The partial correlation coefficient *r* ranged from 0.080 to 0.232, representing small to medium effects, corresponding to Cohen's *d* of 0.161–0.477 (Cohen, 1992). The analyses of Add Health data therefore confirmed H_1.

The results presented in Table 4 once again replicated the results from Study 1 presented in Table 2. Even net of the level of happiness/life satisfaction in an immediately past wave, in addition to all the other controls, GFP was still associated with happiness/life satisfaction, and the effect sizes, measured by the standardized regression coefficient, did not attenuate much. In fact, the association between GFP and current happiness was so strong that, at 29 (Column 4), the standardized coefficient for GFP was slightly larger than that for life satisfaction at 22. GFP was a stronger predictor of current happiness than earlier life satisfaction was. The partial correlation coefficient *r* ranged from 0.064 to 0.221, corresponding to Cohen's *d* of 0.128–0.453. The analyses of Add Health data therefore refuted H_{2G} and confirmed H_{2EE}.

4.6. Discussion

The analyses of the Add Health data confirmed H_1. More personalient individuals were happier and more satisfied with their life than less personalient individuals were at every wave. A one standard deviation increase in GFP increased the odds that the Add Health respondent was in a higher category of happiness/life satisfaction by 20 to 60 %. Controlling for an earlier level of happiness/life satisfaction at an immediately preceding wave one to ten years earlier did not make much difference. GFP was still associated with the current happiness/life satisfaction even net of earlier happiness/life satisfaction. The results presented in Table 4 refuted the genetic explanation (H_{2G}) for the causal mechanism between GFP and life satisfaction, and supported the everyday experiences explanation (H_{2EE}). More personalient individuals appear to have greater happiness/life satisfaction, not because of their genes, but because their social and interpersonal relationships in their everyday experiences present fewer issues and problems. The results with Add Health, presented in Tables 3–4, replicated the results with NCDS, presented in Tables 1–2.

5. General discussion

Humans evolved to be profoundly social and value social and interpersonal relationships. More personalient individuals (who have higher levels of GFP) are expected – through their higher levels of social effectiveness and emotional intelligence – to have smoother social and interpersonal relationships with fewer problems and issues. Thus the savanna theory of happiness predicts that more personalient individuals are happier and have higher life satisfaction than less personalient individuals are. Further, if more personalient individuals are indeed happier because of their smoother social and interpersonal relationships in their everyday experiences, and not because of their genetic endowments, then GFP is expected to be associated with current happiness and life satisfaction even after earlier levels of happiness/life satisfaction are statistically controlled.

The analyses of the NCDS data in the UK (Study 1) and the Add Health data in the US (Study 2) supported both predictions. Both more personalient Brits born in 1958 and more personalient Americans born in the early 1980s were happier than their less personalient counterparts were. And the strong associations between GFP and happiness/life satisfaction did not much attenuate when earlier levels of happiness/life satisfaction were statistically controlled. The cause of more personalient individuals' higher levels of happiness and life satisfaction is likely the smoother social and interpersonal relationships in their everyday

Table 3
The association between the general factor of personality and happiness/life satisfaction
National Longitudinal Study of Adolescent to Adult Health

	(1)	(2)	(3)
	Age 16	Age 17	Age 22
GFP	0.332***	0.399***	0.249***
	(0.025)	(0.028)	(0.026)
	1.277	*1.342*	*1.202*
IQ	0.013***	0.010***	−0.008***
	(0.001)	(0.001)	(0.001)
	1.215	*1.162*	*0.887*
Sex	0.015	−0.021	0.124***
	(0.035)	(0.039)	(0.036)
	1.008	*0.990*	*1.064*
Age	−0.078***	−0.078***	−0.031**
	(0.009)	(0.011)	(0.011)
	0.865	*0.865*	*0.946*
Education			0.133***
			(0.010)
			1.299
Earnings			0.001
			(0.004)
			1.005
Race			
Black	0.044	−0.059	−0.341***
	(0.044)	(0.049)	(0.047)
	1.019	*0.975*	*0.866*
Asian	−0.204**	−0.282***	−0.403***
	(0.068)	(0.077)	(0.070)
	0.947	*0.928*	*0.894*
Native American	−0.036	−0.095	−0.273***
	(0.091)	(0.102)	(0.080)
	0.993	*0.983*	*0.940*
Hispanicity			0.057
			(0.052)
			1.021
−2LogLikelihood	26,759.229***	20,737.258***	25,270.285***
Nagelkerke pseudo R^2	0.046	0.051	0.035
n	11,878	9279	11,353

	(4)	(5)
	Age 29	Age 38
GFP	0.663***	0.388***
	(0.026)	(0.030)
	1.630	*1.331*
IQ	−0.003	−0.009***
	(0.001)	(0.002)
	0.956	*0.874*
Sex	0.105**	−0.196***
	(0.036)	(0.043)
	1.054	*0.908*
Age	0.003	0.011
	(0.010)	(0.011)
	1.005	*1.021*
Education	0.041***	0.025***
	(0.009)	(0.007)
	1.094	*1.088*
Earnings	0.012*	0.196***
	(0.005)	(0.020)
	1.048	*1.251*
Race		
Black	−0.257***	−0.076
	(0.046)	(0.057)
	0.898	*0.970*
Asian	−0.211**	−0.095
	(0.068)	(0.092)
	0.943	*0.978*
Native American	−0.122	0.195
	(0.079)	(0.238)
	0.973	*1.018*
Pacific Islander		0.168
		(0.232)
		1.015

(*continued on next page*)

Table 3 (*continued*)

	(4)	(5)
	Age 29	Age 38
Hispanicity	0.004	0.014
	(0.051)	(0.068)
	1.001	*1.005*
−2LogLikelihood	25,510.540***	19,104.390***
Nagelkerke pseudo R^2	0.078	0.047
n	11,656	8363

Note: Main entries are unstandardized coefficients.
(Numbers in parentheses are standard errors.)
Italicized numbers are standardized effects on odds ($e^{(b_x * SD_x)}$).
* $p < .05$.
** $p < .01$.
*** $p < .001$.

experiences, not their genes.

There are three views on the nature of GFP (Kanazawa, 2024a): GFP as social effectiveness, GFP as emotional intelligence, and GFP as a slow life history indicator, although they are conceptually and empirically highly intertwined (van der Linden et al., 2015; van der Linden et al., 2017). The results presented above lend support to the first two views, while they are mute on the third. The fact that GFP is associated with happiness/life satisfaction even net of an earlier level of happiness/life satisfaction suggests that more personalient individuals are happier because of the smoother social and interpersonal relationships they encounter in their everyday experiences, not because genes for GFP and those for happiness/life satisfaction are closely linked in the genome. More socially effective individuals with higher levels of emotional intelligence are expected to experience fewer problems and issues in the social and interpersonal domains in their everyday experiences, and the positive effects of smoother social and interpersonal lives are renewed every day. The empirical results presented above support the views that the nature of GFP is social effectiveness and emotional intelligence.

The current analyses also add to the accumulating evidence for the

Table 4
The association between the general factor of personality and happiness/life satisfaction, with earlier happiness/life satisfaction controlled
National Longitudinal Study of Adolescent to Adult Health

	(1)	(2)	(3)	(4)
	Age 17	Age 22	Age 29	Age 38
GFP	0.316***	0.204***	0.640***	0.219***
	(0.029)	(0.029)	(0.026)	(0.031)
	1.262	*1.162*	*1.603*	*1.175*
IQ	0.006***	−0.009***	−0.001	−0.009***
	(0.001)	(0.002)	(0.001)	(0.002)
	1.094	*0.874*	*0.985*	*0.874*
Sex	−0.040	0.141***	0.090*	−0.208***
	(0.040)	(0.041)	(0.036)	(0.044)
	0.980	*1.073*	*1.046*	*0.902*
Age	−0.049***	−0.021	0.004	0.015
	(0.011)	(0.013)	(0.010)	(0.011)
	0.913	*0.963*	*1.007*	*1.029*
Education		0.133***	0.021*	0.022**
		(0.012)	(0.009)	(0.008)
		1.299	*1.047*	*1.077*
Earnings		0.001	0.011*	0.158***
		(0.004)	(0.005)	(0.020)
		1.005	*1.044*	*1.198*
Race				
Black	−0.074	−0.292***	−0.179***	−0.019
	(0.050)	(0.054)	(0.046)	(0.057)
	0.969	*0.884*	*0.927*	*0.992*
Asian	−0.231**	−0.385***	−0.132	−0.020
	(0.079)	(0.080)	(0.068)	(0.093)
	0.940	*0.899*	*0.964*	*0.995*
Native American	−0.057	−0.229*	−0.079	0.198
	(0.104)	(0.092)	(0.079)	(0.241)
	0.989	*0.949*	*0.982*	*1.018*
Pacific Islander				0.161
				(0.235)
				1.015
Hispanicity		0.078	−0.003	0.031
		(0.060)	(0.052)	(0.069)
		1.029	*0.999*	*1.010*
Earlier happiness/ life satisfaction	0.813***	0.351***	0.527***	0.707***
	(0.026)	(0.026)	(0.022)	(0.028)
	1.943	*1.328*	*1.536*	*1.778*
−2LogLikelihood	19,731.337***	19,503.912***	24,935.674***	18,438.860***
Nagelkerke pseudo R^2	0.158	0.058	0.127	0.128
n	9271	8866	11,650	8362

Note: Main entries are unstandardized coefficients.
(Numbers in parentheses are standard errors.)
Italicized numbers are standardized effects on odds ($e^{(b_x * SD_x)}$).
* $p < .05$.
** $p < .01$.
*** $p < .001$

psychometric validity of GFP. In earlier years of the GFP research, some personality psychologists used to claim that GFP was a mere statistical artifact (Ashton et al., 2009; Bäckström et al., 2009; McCrae et al., 2008; Revelle & Wilt, 2013). However, it would be difficult to explain how a "mere statistical artifact" could predict and explain two of the most important individual difference variables in personality psychology – happiness and life satisfaction. How could a "mere statistical artifact" be so strongly associated with happiness and life satisfaction, even when their earlier levels are statistically controlled? Only the psychometric validity of GFP as a measure of social effectiveness and emotional intelligence could explain the continued influence of GFP on happiness and life satisfaction in everyday experiences.

5.1. Limitations and future directions

The studies reported above represent the first attempt to examine the associations between GFP and happiness/life satisfaction with large population samples. The results between the two studies were consistent; they both showed that more personalient individuals were happier because of their smoother social and interpersonal relationships in everyday lives. But these results must be replicated with other large population samples from other nations to establish the robustness of the findings. However, the fact that the two datasets used in this paper both come from WEIRD (Western, Educated, Industrialized, Rich, and Democratic) societies (the UK and the US) is *not* a major limitation of the studies. The savanna theory of happiness is an evolutionary psychological theory, and all evolutionary psychological theories should ideally be tested in WEIRD societies (Kanazawa, 2024b).

In the analyses presented above (in Tables 2 and 4), I refuted the genetic hypothesis for the association between GFP and happiness logically but indirectly, by demonstrating that the association between GFP and happiness/life satisfaction did not much attenuate even when earlier levels of happiness/life satisfaction were statistically controlled. However, more conclusive and convincing demonstration and evidence against the genetic hypothesis would involve the use of GWAS data and polygenic scores that show that GFP and happiness/life satisfaction are not genetically associated.

Critics might argue that another limitation of the studies is that the key dependent and independent variables – happiness/life satisfaction and GFP – were all based on self-report. I do not believe, however, that this is an inherent limitation, as I believe that, for some theoretical constructs, self-reports are the best and only measures. Kanazawa (2014, p. 319n) suggested that self-report was the only legitimate measure of happiness:

> It is possible to argue that, regardless of their objective life circumstances, individuals' true level of happiness is whatever they subjectively feel and express as it is. If poor, unemployed, unhealthy, unmarried individuals without any friends or family say they are 'extremely happy', is that a 'wrong' response?

Similarly, if one observes someone at a party acting very awkwardly and uncomfortably while interacting with other partygoers, one might objectively conclude as an outside observer that such a person is an introvert and does not enjoy attending parties. But if the person then says that he/she *loves* going to parties, despite his/her external demeanors, would that be a "wrong" response? I would contend that, if the person says he/she enjoys going to parties and interacting with other partygoers, then he/she is an extravert, regardless of what an outside observer might conclude. Settling this debate is beyond the scope of the current paper.

6. Conclusion

This paper represents the first attempt to examine the association between GFP and happiness/life satisfaction with large population samples in two different nations. The analyses of the National Child Development Study in the UK and the Add Health data in the US confirmed that more personalient individuals with higher levels of GFP were happier and more satisfied with their life throughout the life course. GFP was still associated with happiness and life satisfaction even after earlier levels of happiness/life satisfaction were controlled, suggesting that the reason for the association was the smoother social and interpersonal relationships that more personalient individuals encountered in their everyday experiences, not their genetic endowments. The fact that GFP can predict and explain such important individual difference variables as happiness and life satisfaction so consistently and strongly throughout life in two different nations adds to the evidence for the psychometric validity of GFP as a genuine and important individual difference variable in its own right.

CRediT authorship contribution statement

Satoshi Kanazawa: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization.

Declaration of competing interest

The author declares absolutely no conflict of interest, real or perceived.

Data availability

The links to the data are included in the paper.

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