



# The General Factor of Personality and general intelligence: Testing hypotheses from Differential-K, Life History Theory, and strategic differentiation–integration effort



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## ARTICLE INFO

### Article history:

Received 31 August 2013

Received in revised form 3 December 2013

Accepted 13 December 2013

Available online 20 January 2014

### Keywords:

Life History Theory

Strategic differentiation–integration effort

Differential-K

General Factor of Personality

General intelligence

## ABSTRACT

Life history as applied to human psychology has progressed on different levels of analysis including between racial groups (Differential-K) and between individuals (Life History Theory). While the approaches at each level have garnered significant research support, some findings at the level of individual differences are inconsistent with findings from the level of group differences. The association between the General Factor of Personality and general intelligence was examined across and within racial groups to investigate the inconsistency. The results were in line with predictions derived from strategic differentiation–integration effort (SD–IE), the proposition that aggregation amongst variables decreases as life history strategy slows. The results suggest SD–IE may be a useful tool in reconciling the apparent contradictions across the levels of analysis.

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## 1. Introduction

Differential-K theory (Bogaert & Rushton, 1989; Rushton, 1985) posits that three racial groups (Mongoloid, Caucasoid, and Negroid; referred to subsequently as Asian, White, and Black) vary systematically on a large number of characteristics. According to Differential-K, differences between groups result from divergent evolutionary paths in response to the presence of either unstable, high extrinsic mortality environments or stable, low extrinsic mortality environments. When early modern humans entered Eurasia during the Pleistocene, they had to adapt to a broader range of yearly temperatures as they moved farther north and farther to the east, away from the moderating influence of the Gulf Stream and the Atlantic Ocean. Such environments favored the evolution of higher-K life history (LH) strategies as the predictability in seasonality and in resource abundance constituted a recurrent selective pressure favoring higher intelligence, impulse control, and parenting effort allocation – all of which would have adapted populations living in these regions to the presence of evolutionarily novel challenges (e.g., extreme cold, novel predators, hard to acquire resources). Where mortality would have been

unpredictable, and resources would have been relatively easier to obtain, such as in Sub-Saharan Africa, selection would have favored more *r*-selected traits, like higher mating effort, lower parental investment, lower intelligence, etc. (Rushton, 2000).

Following the lead of Bogaert and Rushton (1989; see Figueredo, Cabeza de Baca, & Woodley, 2013 for a review), Figueredo and colleagues (2004, 2006, 2007) extended the LH paradigm from species and human group differences to individual differences. This research orientation, known as *Life History Theory* (LHT), also reveals coherence amongst a large number of differences, which collectively form a *K* factor. The *K* factor consists of domain-specific facets into which an individual could invest, including reproductive effort and parental investment. Furthermore, it has been found that the *K* factor co-varies genetically with personality and covitality (i.e., global physical and mental health) forming an even higher-order factor referred to as Super-K. While individual differences in LH strategies are acknowledged to have a strong heritable component (Figueredo & Rushton, 2009; Figueredo, Vásquez, Brumbach, & Schneider, 2004), environmental factors that impact the development of LH strategies are also important in the modulation of individual LH strategies in ontogenetic time (Ellis, Figueredo, Brumbach, & Schlomer, 2009).

Differential-K and LHT have stimulated much research and also much controversy in large measure because of their integrative power. Given that the foundation for each subtheory is the LH

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model, one should be able to move back and forth across the two levels of analysis allowing for even greater integration. For instance, individual differences should fit within the pattern of the larger group differences. However, this has proven problematic. The scales used to measure individual LH strategy do not consistently follow the group pattern predicted by Differential-K (Dunkel, 2012; Figueredo et al., 2005). Another example is that LH as an individual differences variable does not correlate strongly with *g* (Woodley, 2011), whereas it does when operationalized as a group differences variable (i.e., at the country-level analysis; Meisenberg & Woodley, 2013). This problem, the incongruence between group and individual level LH associations, has been referred to as “Rushton’s Paradox” (Meisenberg & Woodley, 2013).

In an attempt to address Rushton’s Paradox in the relationship between LH strategy and *g*, Woodley (2011) proposed the cognitive differentiation–integration effort hypothesis (CD–IE). CD–IE suggests that a slow LH strategy is associated with differentiated cognitive abilities; conversely a fast LH strategy is associated with greater integration amongst cognitive abilities and stronger correlations among cognitive tests. Thus it is not the level of *g* per se that varies with LH strategy, but the degree to which cognitive abilities themselves co-vary with each other across the LH spectrum. Analyses corroborate this effect, both at the individual and group differences levels of analysis (Woodley, Figueredo, Brown, & Ross, 2013). Recently, the idea behind CD–IE has been expanded to characteristics of the Super-K.

This idea, called the strategic differentiation–integration effort hypothesis (SD–IE; Figueredo et al., 2013) states that the level of coherence amongst Super-K characteristics themselves lessen as individuals are tracked from fast to slow along the LH strategy continuum. Figueredo, Woodley, Brown, and Ross (2013) found support for their SD–IE hypothesis as measures indicating a slow LH strategy exhibit greater integration as LH strategy moves from slow to fast. Consistent effects have also been found at the group-differences level with LH aggregates obtained at the level of the states of the US (Fernandes & Woodley, 2013) and also with country-level aggregates of scores (Woodley & Fernandes, 2014).

### 1.1. General Factor of Personality

Although it has been overshadowed by the emphasis on group differences in intelligence in Differential-K, personality is also a component of Differential-K (Rushton & Jensen, 2005). And while personality has received greater focus in LHT than it has in Differential-K, interest in personality has gathered momentum when Musek’s (2007) analyses brought the existence of a General Factor of Personality (GFP) comparable to *g* for cognitive abilities, to widespread attention. Proponents of LH theory as applied to human psychology quickly adopted the belief that the GFP reflects LH strategy (Rushton, Bons, & Hur, 2008). Thus Differential-K predicts group differences in the GFP, but these differences have yet to be examined.

If the GFP is a proxy for LH strategy, then because the LH strategy–*g* correlations at the level of individual differences are weak (Woodley, 2011), only a weak correlation between the two would be expected. To date, the results for the GFP–*g* association have been mixed. A number of studies have been conducted, leading to an assortment of correlations ranging from negative (Lesson, Heaven, & Ciarrochi, 2012) to strongly positive (Dunkel, 2013). Measurement issues may account for much of the variance in findings. Thus while self-report measures themselves are not preferred (Connelly & Ones, 2010), self-report measures that frame items and scales that form a GFP in a way that is more closely aligned with its underlying construct may produce a stronger GFP–*g* association (Dunkel, van der Linden, Beaver, & Woodley, under review).

It could be that the GFP has been incorrectly framed as a proxy measure of LH strategy.

There is evidence for this, as findings suggest that the GFP more closely represents social effectiveness – the ability to achieve goals within a social context. Personality scales associated with social effectiveness produce high loadings on the GFP (Loehlin, 2012; Loehlin & Martin, 2011). Additionally, individuals high on the GFP are liked and are perceived as popular (van der Linden, Scholte, Cillessen, te Nijenhuis, & Segers, 2010) and are socially robust (van der Linden, Vreeke, & Muris, 2013). In short, the GFP appears to be closely aligned with emotional or social intelligence (van der Linden, Tsaousis, & Petrides, 2012).

Thus, while the shared variance between the GFP and LH strategy suggests some overlap, there is more unique than shared variance between the two constructs (Dunkel & Decker, 2010). This is consistent with the idea that the GFP, while not a good proxy for LH strategy, is nonetheless a component of Super-K. This also provides an explanation for the presence of GFP–*g* correlations in various studies, as it is the non-LH variance component in the GFP that might actually relate to *g*, with the two perhaps co-loading to an extent on a distinct global fitness factor, which unlike LH, measures the strength of sexual selection operating on underlying mutation load (Miller, 2010).

### 1.2. Aims and hypotheses

Differential-K, LHT, and SD–IE lead to three complementary hypotheses. Differential-K predicts group differences in both *g* and the GFP so that Asians score higher on both *g* and the GFP than Whites, and Whites score higher on each variable than Blacks. LHT predicts a significant correlation between the GFP and *g*. Finally SD–IE predicts that any positive GFP–*g* correlation will be stronger in Blacks than Whites and stronger in Whites than Asians.

Finally, we attempt to determine the degree to which both *g* and GFP saturation determine the strength of the relationship between measures of intelligence and personality in each race. In other words, we attempted to determine if the effects were “Jensen effects”.

## 2. Method

### 2.1. Sample description

Our sample is drawn from the Project Talent (American Institutes for Research, Project Talent, 1960). The study is described as “a national longitudinal study that first surveyed America’s high school students in 1960. Over 440,000 students from 1353 schools across the country participated in two full days or four half days of testing”. Flanagan and colleagues (1962) provide a full description of the procedures and test construction. The current investigation used the baseline year of the dataset.

A question concerning race was omitted during the base year but was included during a subsequent wave of data collection and retroactively included in the base level data. When included, the item was poorly worded, causing some participants to avoid answering the item (Bayer, 1972). Thus, the present analysis includes a subset of the overall sample. Group sizes were as follows: Asian ( $n = 999$ ; 515 male), Black ( $n = 6,533$ ; 2644 male) and White ( $n = 147,355$ ; 73,834 male). To clarify, most “Asians” in the US were East Asian i.e., Mongoloid during the 1960s (US Bureau of the Census, 1963; Wong & Hirschman, 1983).

### 2.2. Personality scales

The Student Activities Inventory (SAI) was used to measure participant disposition or personality. The scale was constructed with the following criteria:

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