Personality and Individual Differences 111 (2017) 215–219

Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

Life history strategy as a mediator between childhood environmental unpredictability and adulthood personality

Bin-Bin Chen *, Zeyi Shi, Shijin Sun *

Fudan University, China

ARTICLE INFO

Article history:
Received 11 January 2017
Received in revised form 9 February 2017
Accepted 11 February 2017
Available online xxxx

Keywords:
Life history
Slow/fast strategy
Childhood environmental unpredictability
Personality
Five Factor Model

ABSTRACT

Life history (LH) theory provides a unifying perspective on understanding human behaviors as adaptive LH strategies in response to particular environmental conditions. Although several studies have examined the association between personality traits and LH strategies, there is little extant empirical literature examining how early life environmental conditions might be related to personality traits in adulthood. The purpose of the present study was to examine the relationships between childhood environmental unpredictability, life history strategies, and the basic dimensions of personality as identified by the Five Factor Model. A total of 252 undergraduate students completed measures of childhood environmental unpredictability, a slow LH strategy, and personality. Structural equation modeling indicated that, as predicted, a slow LH strategy mediated the association between childhood environmental unpredictability and five personality traits. These results define the evolutionary origin of personality traits. Limitations and suggestions for future research are discussed.

1. Introduction

In the past few decades, the Five Factor Model is one of the most important models for understanding individual differences in personality (e.g., Costa & MacCrae, 1992). It identified five basic dimensions of personality traits: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Recently, there has been increasing interest in providing an evolutionary explanation for the five personality traits (Buss, 2009; Figueredo et al., 2005b; Schmitt & Shackelford, 2008). One of the most influential evolutionary models is life history (LH) theory, which provides a comprehensive evolutionary framework for understanding the relationships between individuals' LH and the evolution of personality variations. However, there are relatively few studies looking at the role of LH-relevant environmental factors on personality. In the present study, we aim to add to the existing literature by investigating how environmental conditions may play a role on personality traits within the evolutionary LH framework.

According to LH theory, an individual's behavior is considered as being part of a LH strategy which is enacted by a suite of biological and psychological systems organized for the optimal allocation of energy and resources among the competing demands of survival, growth, and reproduction over the lifespan (Del Giudice, Gangestad, & Kaplan, 2015). LH strategy is often illustrated in terms of a slow-to-fast continuum (Figueredo et al., 2006). Individuals who adopt a fast LH strategy are more likely to seek short-term rewards over long-term benefits while the opposite pattern occurs when individuals adopt a slow LH strategy. Therefore, a fast LH strategy is related to earlier sexual maturation, impulsiveness, risk-taking, aggression, short-term sociosexual orientation, and less parental investment. A slower LH strategy, conversely, is related to inhibitory control, long-term goals, risk avoidance, and high parental investment (e.g., Chen & Chang, 2016; Del Giudice, 2014; Figueredo, Vásquez, Brumbach, & Schneider, 2004; Griskevicius, Tybur, Delton, & Robertson, 2011; Strouts, Brase, & Dillon, 2016).

A large body of literature, based on evolutionary biology, has suggested that LH trade-offs may be reflected in different personality traits in animals (Réale et al., 2010; Wolf, van Doorn, Leimar, & Weissing, 2007). Ample studies in evolutionary psychology area also have provided evidence for the link between LH strategy and personality in humans (Del Giudice, 2014; Figueredo, Vásquez, Brumbach, & Schneider, 2007).

Recently, building on the LH theoretical framework, a LH-based personality model provides an ultimate evolutionary explanation for how life history trade-offs are related to individual differences in personality traits that promote reproductive fitness (Figueredo et al., 2005a; Manson, 2015). With respect to the Five-Factor Model, some personality traits are related to a slow LH strategy whereas others are related to a fast LH strategy. Specifically, Agreeableness, characterized by a tendency to have positive social relations and high affective investment in others, is related to a slow LH strategy. Extraverted individuals tend to have high levels of social organization and social affiliation. Therefore, Extraversion is associated with a slow LH strategy, especially measured

* Corresponding authors at: Department of Psychology, Fudan University, 220 Handan Road, Shanghai 200433, China.
E-mail addresses: chenbinbin@fudan.edu.cn (B.-B. Chen), sunshijin@fudan.edu.cn (S. Sun).

http://dx.doi.org/10.1016/j.paid.2017.02.032
0191-8869/

by the Mini-K short form (Figueredo et al., 2006). Conscientiousness, which is typically considered as a trait associated with impulse control, conformity, persistence, responsibility, and even greater longevity (Nettle, 2006), is also associated with a slow LH strategy. In contrast to Conscientiousness, Neuroticism was found to be related to a greater risk of mortality (Friedman et al., 1993) and to higher levels of social avoidance and inhibition (MacDonald, 1995). Therefore, it is considered as a fast LH strategy (Figueredo et al., 2005a). Last, the nature of the relationship between Openness and LH strategy remains unclear (Manson, 2015). Recently, some researchers (Manson, 2015; Strouts et al., 2016) speculate that people high on Openness, which is characterized by curiosity and novelty seeking, are more likely to devote much time and energy to social, task-related, and idea-related endeavors, therefore, Openness may be associated with a slow LH strategy. Within the LH theoretical framework, there is empirical support for some of these ideas (Gladden, Figueredo, & Jacobs, 2009; Strouts et al., 2016). It should also be noted that Openness and Extraversion were weakly associated with a slow LH strategy in some previous studies (Figueredo et al., 2005a; Manson, 2015; Strouts et al., 2016).

In addition, humans have evolved psychological mechanisms that are sensitive to conditions in the environment, which hence shapes the LH strategies (Ellis, Figueredo, Brumbach, & Schlomer, 2009). LH strategies and their behavioral correlates are believed to be influenced by environmental conditions early in life. This may call attention to an evolutionary view (Belsky, Steinberg, & Draper, 1991; Del Giudice, 2009), which states that LH strategies and their behavioral correlates may build upon the early experiences which individuals use to assess the local environmental stress. That is to say, early life experiences may calibrate the LH strategies and hence set LH speed based on environmental cues in ontogeny.

From this perspective, individuals who develop in predictable environments have an expectation of a certain future with less risks and low harshness, and hence are more likely to pursue a slow LH strategy. Individuals who develop in unpredictable environments, on the other hand, have an expectation that their future is uncertain and they must be lived quickly, and hence are more likely to pursue a fast LH strategy. Therefore, such developmental mechanisms based on early life environmental conditions might have been selected for, as it might maximize the functional match between phenotypic traits and environmental ecologies (Ellis et al., 2009; Frankenhuis & Del Giudice, 2012).

Of particular relevance to the present study is the very limited investigation of the role that early environmental conditions may play in LH strategies and relevant personality traits. Indeed, research examining these relationships is almost totally non-existent. One notable exception is one recently published study (Carver, Johnson, McCullough, Forster, & Joormann, 2014). This study involved the sample of undergraduates and examined the relationship between self-reported high levels of childhood harshness and personality traits. It indicated that childhood harshness was related to some personality traits (e.g., agreeableness). The present study aimed to expand on the current literature by further investigation of personality traits based on the Five Factor Model and emphasis on the role of childhood environmental (un)predictability. For example, as a slow LH strategy, Agreeableness, a trait which is reflective of positive interpersonal relationships, might be advantageous in a predictable environmental condition (Carver et al., 2014). In other words, people high in Agreeableness show greater cooperation and prosocial behaviors in predictable environments where their payoffs will be realized (Strouts et al., 2016). On the other hand, although Neuroticism is typically considered as a trait which results in interpersonal difficulties, it might be advantageous in an unpredictable environmental condition.

In the evolutionary LH literature, LH strategy is frequently examined as a mediator between environmental condition and its behavioral outcomes. For example, a fast LH strategy mediated the relationships between harsh environmental conditions and psychological and physical health problems (Hampson, Andrews, Barckley, Gerrard, & Gibbons, 2016). It means that experiences in early life may calibrate the developmental paths of LH strategies, which in turn shape the behavioral outcomes. Similarly, we tested whether childhood environmental unpredictability would play an indirect role on personality traits through the mediation of the LH strategy.

Given the above background, we tested the associations between childhood environmental unpredictability, LH strategy, and personality in a sample of college students. Based on the research reviewed above, it was hypothesized that a slow LH strategy was positively correlated with Agreeableness, Conscientiousness, Extraversion, and Openness, but negatively related to Neuroticism. It was further hypothesized that childhood environmental unpredictability was indirectly associated with personality traits through the mediation of the LH strategy. Using Structural Equation Modeling (SEM), the analyses relied both on the overall model fitness statistics and significance tests of specific paths and association patterns.

2. Method

2.1. Participants and procedures

Two hundred and fifty-two undergraduates (85 males, 167 females; mean age = 19.77 years, SD = 1.13) took part in the study. They were recruited from psychology courses in exchange for partial fulfillment of course requirements. All questionnaires discussed in this paper were completed as part of a larger online survey.

2.2. Measures

2.2.1. Life history strategy

The Life History Strategy-short-form scale (Mini-K) consists of 20 items to measure a variety of cognitive and behavioral components of slow LH strategies (Figueredo et al., 2006). Participants were asked to respond to these statements (e.g., "I often make plans in advance;" "I avoid taking risks.") using a 7-point Likert scale (1 = "strongly disagree" to 7 = "strongly agree"). A composite score was computed by averaging the 20 items. The existing literature has shown that this scale score is positively related to slow life histories when assessed by other LH measures or by environmental indicators theoretically related to slow life histories (Olderbak, Gladden, Wolf, & Figueredo, 2014). Internal consistency reliability estimate was 0.83 in the current study.

2.2.2. Childhood environmental unpredictability

The Environmental Conditions Scale was used to assess childhood environmental unpredictability (Brumbach, Figueredo, & Ellis, 2009). Participants were asked to think about their childhood before age 12 and rate each item on a 4-point Likert scale (0 = "never" to 3 = "always"). It consists of 5 items (e.g., "How often had your parents or other adult care-givers not taken care of your basic needs, such as keeping you clean or providing food or clothing?"; $\alpha = 0.69$). All five items were listed in online Supplementary material. All items were averaged to generate a composite score where higher scores indicated higher levels of childhood environmental unpredictability. Despite its retrospective nature of reporting on early life experiences, previous studies provided support for the accuracy of retrospective reporting (Brewin, Andrews, & Gotlib, 1993; Hardt & Rutter, 2004).

2.2.3. Personality

The NEO Five-Factor Inventory (NEO-FFI; Costa & MacCrae, 1992) is a 60-item self-report questionnaire that assesses the basic dimensions of personality as identified by the Five Factor Model (FFM). The inventory contains five dimensions of personality, Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. Items were answered using a 5-point scale (1 = "not at all true" to 5 = "completely true"). It is a widely used personality inventory with substantial data to prove its internal and external validity (Costa & MacCrae, 1992).