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The Influence of Environmental Quality on Life-History Strategies and the Development of Perfectionism

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Abstract

This paper investigates the following research question: "How do harsh and safe environments shape life-history strategies, and how do these strategies affect the development of perfectionism?". Driven by our interests in evolutionary psychology, we wanted to explore the effects of environmental quality on life-history strategies, and thus the influence of life-history strategies on perfectionism. Our study aligns with our hypothesis that individuals raised in safe, stable, and resource-rich environments would adopt slower life-history strategies, leading to higher levels of perfectionistic traits, and that individuals raised in unpredictable, unstable, and resource-scarce environments would adopt fast life-history strategies, leading to lower levels of perfectionistic traits. Our findings suggest that perfectionism may reflect an evolved psychological strategy shaped by early environmental conditions (byproduct of the secure and affluent environment), rather than being a fixed personality trait.

Keywords

Environmental quality; life-history strategy; environmental harshness and unpredictability; perfectionism; byproduct theory; evolutionary psychology

Introduction

Perfectionism is a personality trait characterized by a striving for flawless performance and setting exceedingly high standards of performance, often displaying symptoms such as fear of failure, excessive need for control, high self-criticism, and indecisiveness (Flett & Hewitt, 2002). It is argued that perfectionism manifests in three primary ways. First, self-oriented perfectionism is an internally motivated desire to be perfect. Second, other-oriented perfectionism is the tendency to demand perfection from other individuals. Third, socially prescribed perfectionism is the belief that others will value you only if you are perfect (Benson, 2003). Each type of perfectionism is characterized by variance in each of its causes, where each type is either influenced by different factors in an individual's environment, such as academic pressure, cultural expectations, or parenting style, or aspects of the self,

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such as self-esteem, personality traits, or coping style. Perfectionism has long been an invariable personality trait for many years, as Kuusi et al. (2024) have mentioned "the dispositional nature of perfectionism" in one of their studies, suggesting the innate nature of perfectionism. However, evolutionary theories show that it may have resulted from an adaptation to the environments in which people develop (Curran et al, 2016).

Evolutionary life history theory has been used in recent years as a heuristic framework to better understand mental health in individuals. Life-history theory is one of the most influential evolutionary theories that describes how organisms allocate scarce resources to accomplish developmental goals throughout their lives to maximize evolutionary fitness (Han W and Chen BB, 2020). Life-history theory proposes that individuals calibrate their behavior and growth to early-life environmental conditions: those exposed to harsh, unpredictable, and resource-scarce environments tend to adopt a "fast" approach that emphasizes short-term gains, risk-taking, and rapid reproduction, whereas those who grew up in a secure, affluent, and resource-rich environment promote a "slow" approach characterized by long-term planning, delayed gratification, and slower maturation (Ellis et al., 2009).

Such strategies influence not only when individuals breed and how they spend resources, but also how much effort they devote to pursuits of quality, a conscious and continuous effort to improve to meet or exceed defined standards or expectations. From this view, perfectionism aligns with the characteristics of slow life-history strategies, where individuals who invest in extra time and effort ensure high-quality outcomes, demonstrating traits like dependable future, enhanced social standing, and long-term planning. This suggests that perfectionism mirrors the traits of a slow life-history strategy that is associated with "cautious, conscientious, risk aversive behaviors", rather than fast life-history strategies that emphasize impulsive and risky behavior (Brochu, 2019).

Perfectionism can be seen as a byproduct of the secure, affluent, and resource-rich environment of modern society, compared to what our ancestors experienced (Maloney et al., 2014). This superstimulus, thus, can push life history calibration outside of its designed range into byproduct theory.

This paper investigates how the traits of harsh and safe environments influence the development of perfectionistic traits as an evolved adaptive response to varying environmental conditions. If this question is answered, it could help explain why some individuals grow up with stringent standards and others are happier with a more spontaneous approach.

We predict that individuals who grew up in safe, stable, and abundant environments adopt slower life-history strategies, exhibiting higher levels of perfectionistic characteristics, and will score higher on slow life-history strategy indicators and higher on perfectionism indicators from our survey. On the other hand, individuals raised in harsh, unpredictable, and resource-scarce environments adopt fast life-history strategies, showcasing lower levels of perfectionism, and will score lower on slow life-history strategy and lower on perfectionism indicators from our survey. This prediction suggests a positive correlation between slow life-history strategies and perfectionism, suggesting that individuals who grew up in stable environments are more likely to develop perfectionism.

However, if our theory is not supported, we can assume that life-history strategies do not directly influence perfectionism. That is, perfectionism scores are equal in individuals from harsh and safe environmental conditions, and there is no mediating role of life-history strategies on the development of perfectionistic characteristics.

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Methods

Participant recruitment

We recruited a total of 54 participants mainly through online social platforms, where copies of the survey were distributed to friends, families, and acquaintances. The survey consisted of a list of 2 demographic and 27 survey questions, where 9 of the questions concerned early life environments (Childhood Harshness and Unpredictability Scale), while the other 18 questions measured perfectionistic traits.

Childhood Harshness (Resource Scarcity) and Unpredictability Scale

To measure early life experiences that calibrate life history strategy, we borrowed 9 questions from Maranges et al.'s (2022) Childhood Harshness (Resource Scarcity) and Unpredictability Scales. We chose items that had the highest factor loadings, the least perceived redundancy, and had the best fit for the experience of Korean high school students. These scales are measures used to assess early environmental conditions from a life-history perspective, used by researchers to investigate how early environmental adversity, measured through harshness and unpredictability, relates to the development of life-history strategies and psychological traits in individuals. First, the Childhood Harshness Scale consists of 11 items assessing the degree to which individuals experienced material deprivation or economic hardship during their childhood. Examples include “Despite how much my parents worked, my family rarely had enough money for luxury items”, “My family was strained financially”, “I never had the newest style of shoes or clothes”, “I grew up in a relatively wealthy neighborhood”, and more. As such, these statements include limited access to different resources such as money, food, or safe housing. The responses are measured on a 7-point scale, with higher scores indicating higher levels of resource scarcity and vice versa.

Similarly, the Childhood Unpredictability scale was taken from the aforementioned study done by Maranges et al (2022). Out of the 15 items in the original scale, we used 5 questions, such as “I never knew whether my parents would be there to pick me up from school.”, “When I woke up, I often didn’t know what could happen in my house that day.”, “Things were often chaotic in my house.”, and more. These 5 questions were chosen based on which of the 15 covered a range of answers to the different facets of childhood unpredictability. The amount of a parent’s involvement in a child’s life or the presence of a nanny were all considered to be factors that affected how unpredictable the environment was, representing the relative stability of a home in terms of its organisation. The method of testing was the same as the environmental harshness scale; using a scale from 1 to 7, we measured the stability of an early childhood environment.

Perfectionism Scale

The perfectionism scale used in this study measured common behaviors, thoughts, and traits linked to perfectionistic traits across academic, social, and personal contexts. It consisted of 18 self-report items rated on a 7-point Likert scale, from strongly disagree to strongly agree. The questions reflected common signs of perfectionism, including overchecking work, frustration with small errors, and dissatisfaction despite good performance. These items were based on core aspects of perfectionism: self-criticism, high personal standards, and concern over others’ evaluations. Examples of questions we used include “I find it difficult to move on to a new task if I haven’t finished the one I’m currently working on”, “When others get slightly better grades or more success, I feel second-rate.”, “I prefer tasks with clear rules over ones that allow for freedom and creativity.”, and more.

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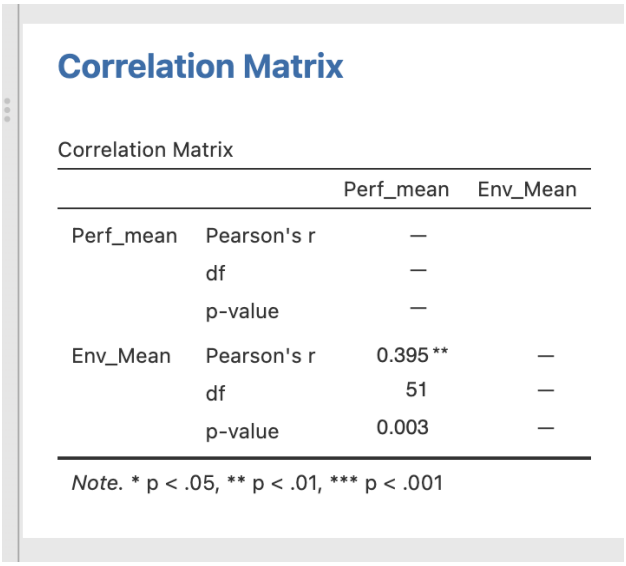
Data analysis



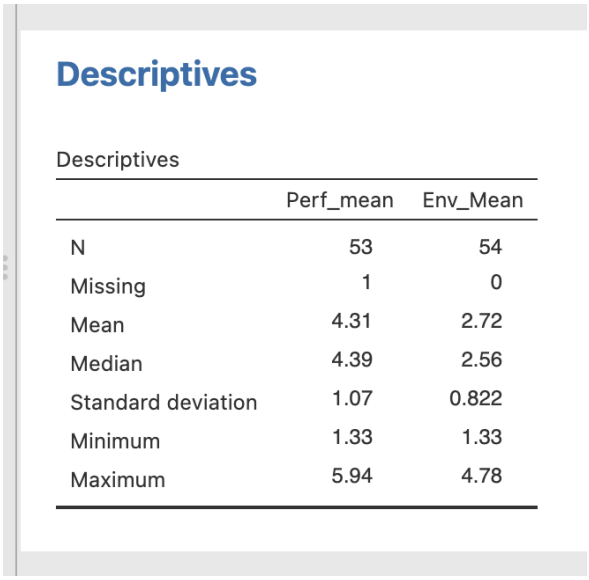
Correlation Matrix

Correlation Matrix

		Perf_mean	Env_Mean
Perf_mean	Pearson's r	—	
	df	—	
	p-value	—	
Env_Mean	Pearson's r	0.395 **	—
	df	51	—
	p-value	0.003	—

Note. * p < .05, ** p < .01, *** p < .001

Figure 1. Correlation Matrix between Environmental Safety and Perfectionism



Descriptives

Descriptives

	Perf_mean	Env_Mean
N	53	54
Missing	1	0
Mean	4.31	2.72
Median	4.39	2.56
Standard deviation	1.07	0.822
Minimum	1.33	1.33
Maximum	5.94	4.78

Figure 2. Descriptive Statistics for Environmental Safety and Perfectionism Scores

As shown in the figures above, the results demonstrate a moderate positive correlation between perceived early life environmental safety and the levels of perfectionism (r=.395, p=.003). To calculate these measures, we averaged the participants' responses to each item within the environmental and perfectionism scales, with reverse scoring applied when appropriate. This process produced an overall Perfectionism and an Environmental Quality score for each participant. These findings greatly align with our proposal, suggesting that people brought up in a disproportionately safe and resource-abundant environment tend to possess heightened perfectionism, which might be indicative of a more extreme

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life-history strategy. The results support our theory, which proposes that perfectionistic tendencies are exhibited as adaptive behaviors in response to early environmental stability.

Results

We analyzed 54 responses within the age range of 15 to 18+, with a mean age of 16.6 years. Most of our participants were 16 or 17 years old, and the sample consisted of 57.4% females and 42.6% males. Participants completed self-report scales that measured their environmental quality and perfectionistic traits, both on a 7-point Likert scale. The responses to each item were averaged for analysis, and two measures were generated: an Environmental Quality score and a Perfectionism Score.

Descriptive statistics are presented in Figure 2, which shows that the mean perfectionism score was 4.31 (SD = 1.07), whereas the mean environmental quality score was 2.72 (SD = 0.82). Furthermore, we found a statistically significant positive correlation between environmental quality and perfectionism scores ($r=0.395$, $p=0.003$). These results support our hypothesis, as they indicate that individuals who showed less early-life harshness and unpredictability tended to have higher perfectionistic tendencies. These findings suggest that exposure to stable and resource-rich environments allows individuals to devote more time and energy to future-oriented goals, making it more likely to develop perfectionism.

Conclusion

Overall, there was statistically significant evidence showing a connection between environmental quality and perfectionism. Our results suggest that people who grew up in a resourceful environment were more likely to develop slower life-history strategies and show higher levels of perfectionistic traits. These traits include setting very high standards, being overly self-critical, and trying to avoid any mistakes.

This supports our hypothesis that perfectionism is merely an inherent feature of one, but rather a response to the kind of environment they grow up in. Instead of being a fixed personality trait, perfectionism may develop over time based on how stable, safe, or predictable someone's early life was. People who grow up in environments where resources are available, routines are consistent, and the future seems secure may learn that putting in more effort, being careful, and aiming for perfect results will help them succeed in the long run. In these cases, perfectionism becomes useful, since it helps people achieve goals, gain approval, and do well over time. This fits with what life-history theory calls a slow strategy, where people take their time, plan ahead, and work toward future rewards. These individuals often set very high standards for themselves, are hard on themselves when they make mistakes, and spend extra time making sure their work is just right.

Limitations

There are two limitations to this research. First, our measure of life-history strategy relied significantly on economic indicators of resource limitation, and this might not have captured all the relevant variables, including emotional instability or parental investment. Second, we tested for perfectionism as a single construct, without differentiating among self-oriented, other-oriented, and socially prescribed perfectionisms (Benson, 2003). Future research would be improved by more generic measures of environmental adversity and testing perfectionism subtypes separately in order to better understand how varying conditions affect particular traits.

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