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The Evolutionary Cost of Competition: A Bio-Psychosocial Analysis of Developmental Constraints

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Abstract: In today's performance-driven world, this study explores how competitive settings create complex limitations on human development. Grounded in Life History Theory, Social Comparison Theory, and the Theory of Planned Behavior, the research investigates the biological, psychological, and social processes that contribute to developmental stagnation. It focuses on how biological activation response (BAR) and perceived social competition (PSC) directly influence human development constraints (HDC) while also analyzing how revolutionary adaptability (RA) and social norm sensitivity (SNS) moderate these effects. Using a quantitative approach, the study collected 385 responses from students, professionals, and development specialists in Vietnam, Singapore, and Malaysia through stratified purposive sampling. The findings reveal that both BAR and PSC significantly intensify developmental barriers in highly competitive environments. Furthermore, RA helps mitigate the adverse effects of BAR, whereas SNS increases the harmful impact of PSC. These results challenge the common belief that competition inherently promotes growth, emphasizing instead how it can hinder development across biological, psychological, and social domains. The study suggests practical reforms, including adaptability training, personalized evaluation methods, and emotional resilience programs. It offers an innovative framework that enriches the understanding of competitive stress and provides valuable guidance for educators, policymakers, and mental health professionals aiming to support sustainable human development.

Keywords: Human development constraints; Biological activation response; Perceived social competition; Social norms sensitivity; Revolutionary adaptability

1. Introduction

As modern societies continue to valorize competitiveness as a hallmark of success and progress, individuals across all stages of life are increasingly immersed in environments that demand constant performance, comparison, and achievement. From educational systems to corporate structures, competition is often framed as essential to growth, innovation, and personal advancement (Gardner, 2010). However, emerging research suggests that such high-

pressure settings may carry hidden evolutionary and developmental costs.

Recent studies indicate that sustained competitive pressure can activate chronic biological stress responses and foster maladaptive psychological and social outcomes, ultimately constraining long-term human development (Ellis et al., 2022). Individuals who perceive themselves as operating within zero-sum environments frequently exhibit heightened physiological arousal, anxiety, and social disengagement, responses that may be adaptive in the short term but detrimental when persistently activated (Thompson & Spacapan, 1991). Despite growing scholarly attention to competition-related stress, existing research remains fragmented, typically examining biological, psychological, or social mechanisms in isolation. To address this gap, the present study adopts an integrated bio-psychosocial perspective to examine how competitive environments impose constraints on holistic human development.

In response to these theoretical gaps, the present study is guided by the following research questions: (1) How does biological activation response in highly competitive environments affect the holistic development of individuals or communities?, (2) To what extent does perceived social competition contribute to developmental constraints, and how is this relationship influenced by individuals' sensitivity to social norms?, (3) Does revolutionary adaptability negatively moderate the impact of chronic biological activation responses on human developmental constraints?, (4) How does social norm sensitivity positively moderate the impact of perceived social competition on human developmental constraints in competitive environments?. Anchored by these questions, the study has four key objectives. First, it aims to evaluate the effect of biological activation responses on human development constraints in competitive settings. Second, it seeks to analyze the psychological and behavioral effects of perceived social competition. Third, the study explores how individual differences in revolutionary adaptability and social norm sensitivity moderate these dynamics. Finally, it aspires to contribute a multidimensional framework that advances both theory and practice helping educators, mental health professionals, and policy designers craft environments that promote sustainable development without sacrificing individual well-being.

2. Literature Review

2.1. Human Development Constraint under Highly Competitive Environments

Human development constraint under highly competitive environments is defined as a condition in which individuals or communities face limitations in achieving holistic development intellectual, emotional, behavioral, and social when exposed to environments marked by intense competition for resources, opportunities, or status (Sroufe ,1982). In such contexts, individuals are not only challenged by scarcity but also by constant social comparison, institutional pressures, and performance-based evaluations. These environments are common in modern educational systems, urban labor markets, or social settings where hierarchical mobility and recognition are limited and highly contested. For example, students in exam-centric school systems may experience intellectual stagnation due to a narrow focus on test preparation, while professionals in highly competitive industries might encounter emotional fatigue and burnout.

The manifestation of this constraint can be observed through multiple dimensions. Intellectually, individuals may avoid creative risks or interdisciplinary exploration. Emotionally, chronic stress, anxiety, and low self-worth often emerge due to continuous exposure to comparative failure or performance pressure (Sassaroli & Ruggiero, 2005). Behaviorally, patterns such as excessive conformity, hyper-competitiveness, or disengagement from collaborative tasks are common (Mallick, 2025). Socially, competition can lead to weakened interpersonal trust, reduced community participation, and heightened social exclusion (Stolle et al., 2008). These constraints are reinforced by systemic mechanisms such as unequal resource allocation, institutionalized ranking systems, and reward structures that privilege a minority while marginalizing the majority.

Consequently, talent is often underutilized or misdirected, innovation is stifled, and social inequalities are exacerbated. From a policy and design perspective, it becomes crucial to understand these constraints not merely as individual shortcomings

but as structural conditions that shape developmental trajectories. Efforts to mitigate such constraints may include reforms in education to encourage diverse talents, workplace policies that promote inclusion and collaboration, and public programs that buffer the negative effects of competitive stress. Recognizing the multidimensionality of human development and the contextual factors that hinder it is essential for building more equitable and nurturing environments. Thus, addressing human development constraints under highly competitive conditions is not just a developmental imperative but also a social and ethical one, demanding integrated responses from educators, policymakers, and community leaders alike.

2.2. Anchoring Theoretical Framework

To comprehensively explain the phenomenon of limited human development in highly competitive environments, this study constructs a foundational anchoring framework based on a combination of four key theories. Each theory offers a unique analytical lens, ranging from biological and psychological to social levels. The framework centers on Life History Theory (LHT), an evolutionary theory that helps explain how humans allocate limited resources (time, energy) to adapt in stressful and scarce environments. Building on this foundation, the study integrates Social Comparison Theory (SCT) to explore psychosocial mechanisms like upward comparison and perceived competition, which profoundly impact individuals' emotions, motivation, and biological responses. Next, Ecological Systems Theory (EST) is employed to outline the layered influence of environmental levels, from societal culture to family and school, in shaping individual behavior and psychological development. Finally, the Theory of Planned Behavior (TPB) provides a framework for analyzing intentional behavior, explaining how individuals form intentions and actions within contexts strongly influenced by social norms of achievement and success. This multi-theoretical combination not only creates a robust interdisciplinary analytical foundation but also expands the ability to explain the phenomenon in depth, from adaptive biological responses to pervasive social influences. It contributes to understanding why and how highly competitive environments can limit human development in the modern context.

2.2.1. Life History Theory

Life History Theory provides an evolutionary framework to understand the way creatures allocate limited resources (example: energy, time) for daily life activities such as growth, keeping alive and reproduction. LHT argues that individuals grow in different environments. In the human context, these campaigns enable influence on psychological aspects, including reactions of high-pressure environments or competition (Hill, 1993).

LHT helps analyze factors such as Biological Activation Response, Revolutionary Adaptability, Human Development under Competition. BAR represents “Fast Life History” in unstable, dangerous environment or shortages of resources that force individuals to change their lifestyles to activate biological response to adapt to extreme environments. It can also provide a basis for understanding how Human Development Limitations might result from suboptimal (resource allocation in highly competitive environments, where specific life history strategies may no longer be suitable or become overwhelmed. In modern society, human is no longer concentrate on essential goals like foods, accommodation, we focus on permanent goals such as education, promotion, social status (Deci & Ryan, 2000). However, the wealth gap is what strategizes social classes and prioritize micro-level resource allocation for specific group (Bratanova et al., 2016). This leads to brilliant individuals from disadvantage background facing significant challenges in their physical and development due to constant lack of resources and unfavorable living conditions. Biologically activated responses, driven by adaptive needs, are the mediating mechanisms through which the environment shapes developmental trajectories (Bateson et al., 2014). While this provides a strong developmental impetus, it also presents significant limitations. When individuals face too many difficulties without seeing tangible results, their morale and motivation can decline, leading to developmental delays or, worse, trapping them in their current environment and preventing further growth.

2.2.2. Social Comparison Theory

Social comparison theory of Leon Festinger (1954) states that a concrete theoretical foundation for

explaining how individuals internalize social stimulations, especially in highly competitive environments. According to SCT, when objective standards for self-assessment are lacking, people tend to compare themselves with others to make judgments about their abilities and personal worth. In this research, SCT play a crucial role in clarifying psychological mechanism through which perceived social competition operates. A key highlight of theoretical framework is how SCT help explain transformation between objective environment and subjective environment. It's not the competitive environment itself that negatively impacts individuals, but rather comparative perception especially upward comparison that meditates between circumstantial factors and limitation in personal development. Comparison with elite individuals (upward comparison) can certainty create motivation, but it can also easily lead to feelings of lack of confidence, anxiety, and activate biological stress response (such as stimulating the HPA axis or the sympathetic nervous system) (Filaire et al., 2007).

However, social comparison theory has also limitations that need to be identified and critiqued within the research framework. One of the significance weaknesses is Social Comparison Theory lack of ability to predict specific behaviors after social comparison: individuals might react by trying harder or conversely, by giving up (Wilson & Ross, 2000). Additionally, the initial SCT did not fully consider individual moderating factors such as self-esteem, coping ability, or social support variables that can either increase or decrease negative effects of upward comparison. Therefore, it's essential to integrate these individual factors into the analytical model to broaden and deepen the theoretical framework.

2.2.3. Theory of Planned Behavior

The Theory of Planned Behavior (TPB), proposed by Icek Ajzen (1991), is a foundational theory in social psychology that explains how people form and execute intentional behaviors. TPB evolved from Fishbein and Ajzen's (1975) Theory of Reasoned Action (TRA) by adding Perceived Behavioral Control (PBC) to the two original components: Attitude towards the behavior and Subjective Norms. From this, TPB asserts that Behavioral Intention the central factor in predicting behavior is formed from the synthesis of these three elements. In the context of this study, TPB is particularly relevant for explaining how individuals respond to social normative pressure in a high-competitive environment, through the extended concept of Social Norm Sensitivity. This factor is considered a refined variant of subjective norms, reflecting the degree to which individuals perceive and internalize societal demands for performance, achievement, and success (Bazan, 2022). Specifically, individuals with high social norm sensitivity are often strongly influenced by collective values such as "must study day and night," "must achieve outstanding results," or "must sacrifice oneself for success" (Fisher & Ackerman, 1998). These social beliefs, combined with a positive attitude towards behavioral outcomes (e.g., believing that working hard will lead to success) and a sense of perceived behavioral control, contribute to forming intentions and subsequently motivating individuals to perform the behavior (Bagozzi, 1992; Ajzen, 2002).

However, TPB is not without its criticisms. One of the most apparent limitations is the intention-behavior gap. In competitive environments, although individuals may form strong intentions (e.g., wanting to study or work tirelessly), they may still fail to execute due to emotional factors, habits, or circumstantial barriers (Gaspar et al., 2010). Moreover, TPB tends to assume that behavior is a result of rational thought, which overlooks the powerful influence of emotions, impulses, or habitual behaviors, which are common in stressful contexts. Another critical point is that TPB does not fully explain broader social structures such as culture, power, or inequality, which profoundly influence the formation of social norms. In this study, the impact of Social Comparison Tendency a factor from Social Comparison Theory can intensify the strength of norms, thereby increasing social pressure that TPB only considers at an individual level. It is a crucial theoretical intersection that helps explain why pressure to conform to norms can lead to revolutionary adaptive behavior or, conversely, self-harming behaviors, depending on the individual's perceived control and surrounding social structures.

Finally, TPB allows for flexible extension through the integration of additional variables. In this study, the integration of TPB with concepts such as revolutionary

adaptability, human development limitation, and social comparison tendency demonstrates that TPB's theoretical value extends beyond predicting isolated behaviors; it can also explain long-term and complex behavioral sequences in a modern competitive social context. Simultaneously, TPB helps illuminate how individuals internalize social pressure and translate it into intentional behavior, even when those behaviors may be detrimental to their holistic development.

2.3. Determinants of Developmental Constraints

2.3.1. Biological Activation Response

Biological activation response (BAR) refers to the process by which a biological system (such as a cell, tissue, or organism) responds to a stimulus by initiating or increasing biological activity. This response often involves the activation of specific biochemical pathways, proteins, or genes that lead to a functional change in the organism (Bahrami & Drabløs, 2016). In highly competitive environments, individuals facing significant challenges and pressures often experience a cascade of biological responses (Salvador & Costa, 2009). These responses, including heightened alertness, increased heart rate, and improved metabolic readiness, prepare the individual to address immediate threats. At moderate levels, this can lead to an immediate surge of inspiration, enabling faster and more efficient task completion in high-stakes or fast-paced settings, a phenomenon often referred to as the "fight or flight" response. However, the frequent or prolonged activation of these biological responses can reverse their physiological benefits, leading to detrimental physical and mental outcomes (McManus et al., 2022). This is characteristic of "chronic biological activation," where persistent stressors and pressures sustain elevated hormone levels, disrupting normal bodily functions and impairing mental clarity and emotional resilience (Norheim et al., 2011). Such sustained stress can result in psychological fatigue, diminished self-regulation, and reduced cognitive flexibility, ultimately hindering an individual's capacity for personal growth, adaptation, and the pursuit of developmental goals.

From a psychological standpoint, chronic stress is closely associated with anxiety, depression, and burnout conditions that further inhibit personal growth and social integration (Koutsimani et al., 2019). Socially, individuals experiencing sustained biological stress activation may withdraw from collaborative settings or avoid challenges that promote development, ultimately reinforcing a cycle of stagnation (Ruiz et al., 2023). Thus, while biological activation is an essential and natural response to environmental pressures, its unchecked or prolonged presence imposes significant constraints on human development. It undermines an individual's physical health, mental agility, and social adaptability all of which are foundational elements in achieving long-term personal and professional advancement. Therefore, understanding and managing biological activation responses is crucial not only for maintaining immediate well-being but also for preventing deeper developmental limitations caused by chronic stress exposure.

Grounded in the earlier integration of theoretical viewpoints, the first hypothesis is stated as follows:

H1: Biological activation response positively impacts human development constraint under highly competitive environments

2.3.2. Perceived Social Competition

Perceived Social Competition (PSC) refers to an individual’s subjective experience of being caught in a relentless race for limited social, educational, or professional rewards (Boboa & Hutching, 1996). This experience is often accompanied by overwhelming feelings of comparison and pressure to outperform peers. Unlike objective competition which involves measurable rivalry perceived competition is inherently psychological and can exist even in environments that are not explicitly competitive. This phenomenon is particularly prevalent in settings such as educational institutions, corporate workplaces, and online social media platforms, where comparative metrics grades, performance reviews, or curated lifestyles are highly visible and frequently emphasized. In such contexts, individuals often experience elevated levels of stress and fear of losing social standing, which can lead to chronic anxiety, diminished self-esteem, and internalized pressure to prove oneself (Crocker & Park, 2004). Over time, this perception cultivates a threat-based mindset, wherein individuals feel compelled to constantly defend or elevate their status within a perceived social hierarchy (Nishii & Leroy, 2022). The

emotional toll of such competition includes fatigue, self-doubt, and burnout factors that negatively affect long-term motivation and psychological well-being. These effects often manifest behaviorally in forms such as overachievement, social withdrawal, or hyper-competitiveness none of which foster healthy personal development.

The link between perceived social competition and Human Development Constraints becomes particularly evident when individuals begin to prioritize short-term performance over sustainable learning, creativity, or collaboration. Intellectual growth suffers when focus narrows to what is rewarded, often at the expense of curiosity or innovation (Chang & Shih, 2019). Emotionally, persistent pressure erodes resilience and self-worth, increasing vulnerability to mental health issues (Flett & Hewitt, 2014). Socially, the drive to surpass others undermines trust, empathy, and collective progress, replacing cooperation with rivalry (Parks & Van Lange, 2013). These developmental barriers are not isolated incidents but rather cumulative impacts that can hinder holistic personal growth. Understanding and addressing perceived social competition is crucial due to its far-reaching implications for well-being and long-term equity. In increasingly competitive societies, failure to manage this perception can lead to widespread developmental stagnation not from a lack of resources or talent, but because the psychological environment becomes too harsh for genuine growth. For educators, employers, and policymakers, this highlights the need to foster cultures that prioritize individual progress and collaboration over constant comparison and zero-sum outcomes. Promoting such environments not only enhances personal well-being but also strengthens social cohesion and innovation. In conclusion, perceived social competition is a powerful yet often underestimated factor that shapes developmental outcomes. Recognizing its role is essential to dismantle the psychological and social barriers to sustainable human development.

In light of the combined theoretical insights previously discussed, the second hypothesis is presented as follows:

H2: Perceived social competition positively impacts human development constraint under highly competitive environments

2.3.3. Moderating role of Revolutionary Adaptability

Revolutionary Adaptability is conceptualized as a higher-order adaptive capacity that enables individuals to cognitively and emotionally reframe chronic stress exposure, thereby preventing biological overactivation from crystallizing into long-term developmental constraints (Ellis & Del Giudice, 2019; Obradović, 2016). Revolutionary adaptability plays a crucial role in shaping the impact of Biological Activation Responses such as heightened stress reactivity or hormonal surges on human development constraint. Biological activation is a natural and often necessary physiological reaction to external stimuli, particularly in high-competition environments (Arechavala-Lopez et al., 2022). However, when sustained over time or experienced intensely without proper regulation, such activation may shift from being adaptive to becoming detrimental. Individuals exposed to constant pressure or perceived threats may experience overactivation of the stress system, resulting in emotional fatigue, cognitive overload, or behavioral rigidity all of which contribute to developmental limitations (Lundberg, 1999).

In this context, revolutionary adaptability serves as a buffer that determines whether biological reactivity becomes a catalyst for growth or a barrier to development. Those with high adaptability can leverage their biological responses effectively transforming stress into motivation, redirecting anxiety into focus, and adjusting behavior to fit shifting demands (Holmes, 2019). These individuals often show enhanced neuroplasticity, allowing for faster recovery and more sustainable learning under pressure. Moreover, their ability to self-regulate emotions and maintain composure under stress helps them avoid burnout and preserve long-term developmental trajectories. On the other hand, individuals with low revolutionary adaptability are more likely to interpret stress responses as threats rather than challenges, leading to chronic psychological strain, behavioral stagnation, and ultimately developmental constraint (Ellis & Del Giudice, 2019).

In academic and professional settings where competition is intense and unrelenting, revolutionary adaptability can be the decisive factor between thriving and failing (Peters & Rodabaugh, 1988). It explains why two individuals with similar levels of biological activation may exhibit vastly different outcomes

one advancing despite pressure, the other breaking down. By moderating the pathway from biological reactivity to developmental outcomes, revolutionary adaptability underscores the complex interplay between physiology and psychosocial adjustment (Obradović, 2016). Recognizing this variable is vital not only for theoretical clarity but also for designing targeted interventions that enhance adaptive capacities. Cultivating revolutionary adaptability through resilience training, mindfulness, emotional intelligence development, and flexible learning environments can empower individuals to convert stress into strength, thereby overcoming the constraints posed by competitive environments.

Building upon the synthesized theoretical perspectives outlined earlier, the third hypothesis is formulated as follows:

H3: Revolutionary adaptability negatively moderates the impact of biological activation response on human development constraint under highly competitive environments.

2.3.4. Moderating role of Social Norm Sensitivity

Social Norm Sensitivity (SNS) refers to the extent to which individuals are psychologically attuned and emotionally responsive to the prevailing expectations, values, and judgments of society. Social norm sensitivity plays a pivotal role in determining how individuals respond to Perceived Social Competition, which is characterized by the feeling of being constantly measured against others in terms of achievement, status, or success (Garcia & Schiff, 2013). In highly competitive environments such as schools, workplaces, or online platforms those with high sensitivity to social norms are more likely to internalize external benchmarks of success (Swab & Johnson, 2019). They often feel compelled to conform to these societal standards, fearing judgment or social exclusion if they fall short. This intense internalization magnifies the psychological pressure already induced by perceived competition, thereby increasing emotional strain, performance anxiety, and developmental blockages. These individuals may overextend themselves to meet others' expectations, leading to burnout, identity confusion, and a fragile sense of self-worth all of which contribute to human development constraint.

Conversely, individuals with low sensitivity to social norms demonstrate a greater degree of psychological independence (Jahoda, 1959). They are more likely to filter societal messages critically, prioritizing personal values and goals over externally imposed standards. As a result, these individuals are less reactive to perceived competition and less susceptible to its negative effects. They maintain a more stable sense of identity and are better equipped to navigate competitive environments without sacrificing mental well-being or personal growth. Their resilience stems not from a lack of ambition, but from a grounded self-concept that is not easily shaken by societal comparisons. In this way, low social norm sensitivity functions as a protective factor, mitigating the developmental constraints that often accompany competitive social climates.

The moderating role of social norm sensitivity is particularly salient in modern contexts, where success and value are increasingly defined by social visibility and conformity. Social media platforms, for instance, create constant exposure to idealized norms, intensifying both perceived competition and norm sensitivity. Understanding this dynamic is essential for educators, mental health professionals, and policy makers seeking to foster environments that support authentic development. Encouraging individuals to cultivate self-awareness, critical thinking, and value-driven goals may reduce the harmful effects of social norm conformity. In summary, social norm sensitivity critically shapes how perceived social competition translates into developmental outcomes, and its inclusion in research provides a more nuanced understanding of the pathways leading to or away from sustainable human growth.

Drawing from the previously integrated theoretical frameworks, the fourth hypothesis is articulated as follows:

H4: Social norm sensitivity positively moderates the impact of perceived social competition on human development constraint under highly competitive environments

Anchored in well-established theoretical foundations, this study advances its scholarly significance through the following conceptual framework in **Figure 1**:

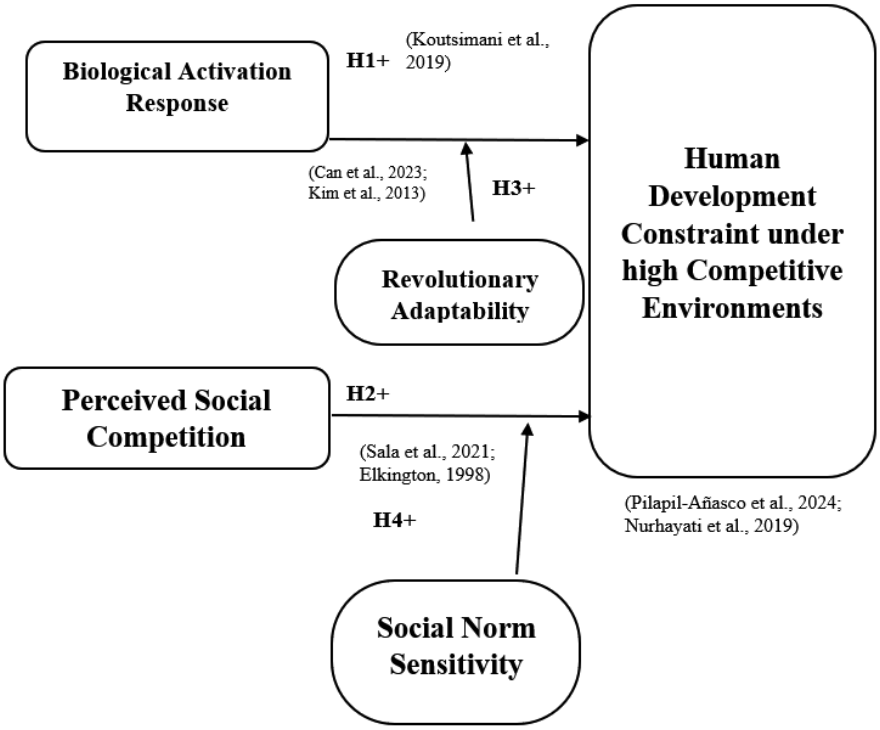

Figure 1: The Paper's Conceptual Framework. *Source*: (The authors, 2025)

3. Methods

This study employs a quantitative research design, enabling the systematic gathering and analysis of data to uncover and verify underlying patterns (Creswell & Creswell, 2017). Furthermore, it incorporates statistical methods to objectively evaluate findings and produce quantifiable results (Babbie, 2020).

To ensure both empirical validity and contextual richness, the study utilized purposive stratified sampling to explore developmental challenges in highly competitive environments. Participants were drawn from Vietnam, Malaysia, and Singapore countries characterized by performance-oriented educational and professional systems making them suitable settings to investigate biopsychosocial responses to competitiveness. The sample was carefully stratified into four stakeholder categories with the same proportion to capture diverse viewpoints: (1) university students facing sustained academic pressure and institutionalized competition; (2) young professionals in high-performance industries such as education, tech, and finance; (3) mental health practitioners and school counselors with expertise in stress-related developmental challenges; and (4) policy analysts and NGO staff focused on youth resilience, mental well-being, and equitable development. Eligibility criteria required participants to have a minimum of one year of direct experience within competitive settings such as undergoing national exams, working in KPI-driven environments, or providing psychological support to individuals experiencing social-comparative stress and to be familiar with psychological or physiological indicators of stress.

Data collection was conducted via an online structured questionnaire featuring a 5-point Likert scale (ranging from 1 = "Strongly disagree" to 5 = "Strongly agree") and focused on four key constructs: Biological Activation Response, Perceived Social Competition, Evolutionary Adaptability, and Sensitivity to Social Norms. The survey was distributed through academic institutions, student support networks, youth psychology organizations, and professional communities engaged in developmental equity. In Vietnam, outreach was supported through partnerships with the Vietnam National Institute of Educational Sciences (VNIES), the Hanoi Youth Psychological Health Network, and university counseling centers. In Singapore and Malaysia, dissemination was facilitated by youth policy think tanks, digital education platforms, and LinkedIn groups concerned with

educational psychology and competitive stress. Of the 636 responses collected, 385 that were randomly selected among 96 of each group were deemed valid after rigorous screening for completeness, contextual relevance, and role-based suitability. This regionally stratified and meticulously curated sample provides a strong empirical foundation for examining how evolutionary stress responses and mechanisms of social comparison influence developmental trajectories within competitive sociocultural environments.

4. Results

4.1. Reliability Analysis

Table 1: Reliability analysis of "developmental constraints in competitive environments".

Reliability Statistics				
Cronbach's Alpha		N of Items		
.755		4		
Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
HDC1	7.869	7.214	.720	.742
HDC2	7.312	7.689	.621	.636
HDC3	8.515	7.337	.638	.658
HDC4	8.600	8.446	.572	.585

Where HDC1 to HDC4 are coded for survey questions 1 to 4 of developmental constraints in competitive environments respectively.

Source: (The authors, 2025)

As shown in **Table 1**, all observed variables under the dependent construct demonstrated adjusted item-total correlation coefficients equal to or greater than 0.3. The overall Cronbach's alpha was 0.755, exceeding the commonly accepted threshold of 0.7 and surpassing the alpha values that would have emerged if any individual item had been removed. Additionally, each observed variable's Cronbach's alpha remained higher than its respective adjusted item-total correlation, even when specific items were hypothetically excluded. Consequently, all items were retained for subsequent analysis. Similar patterns of internal consistency were also evident across the remaining variables.

4.2. Exploratory factor analysis (EFA)

Table 2: Rotated Component Matrix.

Rotated Component Matrix[a]				
Component with loading factors				
1	2	3	4	5
HDC1 .645	BAR1 .570	PSC1 .515	SNS1 .630	RA1 .630
HDC2 .647	BAR2 .580	PSC2 .508	SNS2 .585	RA2 .585
HDC3 .556	BAR3 .606	PSC3 .612	SNS3 .672	RA3 .672
HDC4 .678	BAR4 .676	PSC4 .682	SNS4 .645	RA4 .645
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 7 iterations.				

Where survey items RA1 to RA4, BAR1 to BAR4, PSC1 to PSC4, and GAP1 to GAP4 correspond to questions 1 through 4, which were specifically constructed to assess the moderator and the two independent variables.

Source: (The authors, 2025)

As shown in **Table 2**, the rotated component matrix effectively grouped the 20 sub-variables into five distinct components, each aligning with the dependent variable, the two independent variables, and the moderator. All items exhibited factor loadings exceeding 0.5, and none were eliminated during the

factor analysis procedure.

4.3. Multiple Linear Regression Model

Table 3: Coefficients[a].

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.358	.552		4.442	.000
	BAR	.528	.815	.550	3.551	.018
	PSC	.447	.703	.480	3.124	.009

a. Dependent Variable: HDC

Where **HDC**: mean of HDC1 to HDC4; **BAR**: mean of BAR1 to BAR4;
PSC: mean of PSC1 to PSC4

Source: (The authors, 2025)

As presented in **Table 3**, the significance (Sig.) values obtained from the t-tests were .018 and .009, both falling below the standard alpha level of 0.05. These results indicate that the independent variables—biological activation response and perceived social competition —have a statistically significant effect on the dependent variable, human developmental constraints in competitive environments. Accordingly, both hypotheses are validated.

4.4. Moderator Analysis

Table 4: Results analysis of "social norm sensitivity".

Model: 1 Y: HDC X: PSC W: SNS

Sample Size: 385

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OUTCOME VARIABLE: HDC

Model Summary

R	R-sq	MSE	F	dl1	dl2	p
.653	.426	.337	5.091	3.000	381.000	.000

Model

	coeff	se	t	p	LLCI	ULCI
constant	7.854	.426	63.362	.000	6.887	6.725
PSC	.632	.679	5.454	.000	.652	.646
SNS	.657	.912	4.653	.000	.603	.600
Int_1	.460	.758	5.870	.000	.586	.574

Where **SNS**: mean of SNS1 to SNS4

Source: (The authors, 2025)

Table 4 reveals that the p-value for the interaction term (Int_1) is 0.000, which is well below the conventional threshold of 0.05, signifying a statistically significant interaction effect. This finding suggests that social norm sensitivity play a crucial moderating role in the relationship between perceived social competition and human development constraint under highly competitive environments. The interaction coefficient of 0.460 indicates that stronger social norm sensitivity amplifies the beneficial impact of perceived social competition on human development constraint under highly competitive environments. Also, the same analysis for the second moderator, revolutionary adaptability, with p-value less than 0.000 and the interaction coefficient of -0.630. As consequence, hypotheses H3 and H4 are supported.

5. Discussion

5.1. Result Summary

Biological activation response and perceived social competition impact developmental constraints in competitive environments with coefficients of 0.55 and 0.48 respectively. Also, the moderating role of individuals' sensitivity to social norms and revolutionary adaptability towards the relationships between the 2 independent variables and the dependent one gained the coefficients of 0.46 and -0.51 respectively. All the three research questions have been affirmatively addressed.

5.2. Theoretical Implication

The validation of H1 provides strong empirical backing for Life History Theory (Hill, 1993; Bateson et al., 2014), confirming that chronic biological activation once evolutionarily advantageous now imposes developmental drawbacks in highly competitive societies. These findings align closely with the work of McManus et al. (2022) and Ellis & Del Giudice (2019), who emphasize the risks of physiological dysregulation caused by prolonged stress exposure. However, this outcome challenges conventional “fight-or-flight” paradigms (Salvador & Costa, 2009), which often portray biological activation as inherently beneficial for performance. Instead, the study highlights the paradox of chronic arousal: rather than promoting growth, it constricts cognitive functioning, undermines emotional regulation, and leads to fatigue (Koutsimani et al., 2019). As such, BAR should not be viewed solely as a survival-oriented response, but as a potential developmental hindrance in modern contexts calling for a reconceptualization of stress as a non-linear force that can both enable and constrain growth.

The robust statistical evidence supporting H2 highlights the pivotal role of Social Comparison Theory (Festinger, 1957) in developmental psychology, particularly regarding the harmful consequences of upward social comparisons (Liu et al., 2017; Crocker & Park, 2004). Although SCT is often viewed through a motivational lens (Garcia et al., 2013), this study challenges that overly optimistic interpretation. Instead, the findings resonate with Parks & Van Lange (2013), showing that perceived social competition can lead to increased anxiety, burnout, and a decline in self-esteem. This research, therefore, questions the assumption that competition inherently drives effort, revealing how internalized comparisons may inhibit rather than encourage psychological development (Chang & Shih, 2019). In contrast to earlier studies that frame competition as dependent on context, this study argues that even subjective perceptions independent of actual rivalry can be enough to stall developmental progress. As a result, a more refined version of SCT should recognize psychological vulnerability as a key moderating factor.

The notable moderating role of Revolutionary Adaptability lends strong support to Ellis and Del Giudice’s (2019) proposition that resilience mechanisms shape how individuals experience and respond to stress. This finding underscores the adaptive possibilities within Life History Theory (Hill, 1993), suggesting that stress can lead to growth—but only when it is accompanied by effective self-regulation. It also challenges the view of linear biological determinism, particularly the perspective of McManus et al. (2022), who describe chronic stress as uniformly harmful. Instead, the results are more consistent with the work of Obradović (2016) & Holmes (2019), affirming that adaptability can convert adversity into an opportunity for development. Revolutionary Adaptability appears as a critical threshold a pivot point where damaging biological responses are rechanneled into positive developmental outcomes. This stands in stark contrast to claims that biological activation is inherently detrimental, demonstrating instead that its effects are shaped by an individual’s psychological flexibility (Lundberg, 1999). As such, models of developmental plasticity must place adaptive self-regulation at the center, not treat it as a secondary or optional trait.

The empirical validation of H4 introduces critical complexity to the assumptions of the Theory of Planned Behavior (Ajzen, 1991), particularly in relation to subjective norms. While TPB traditionally holds that internalized norms intentionally shape behavior, this study reveals that heightened Social Norm Sensitivity (SNS) may instead lead to developmental stagnation rather than purposeful action. The findings support insights from Swab & Johnson (2019) and Bazan (2022), who portray SNS as a dual-edged trait encouraging conformity while also generating anxiety. This stands in contrast to Ajzen’s (2002) assertion that

behavioral intention typically leads to constructive outcomes. Additionally, the results partially contradict Fisher and Ackerman (1998), indicating that alignment with social norms does not always promote prosocial behavior; in some cases, it may result in self-alienation and confusion about personal identity. As such, TPB requires refinement to account for emotional vulnerability and excessive social identification as factors that can disrupt, rather than enable, the translation of intention into action.

5.3. Practical Implications

The validation of the first hypothesis shows that while the Biological Activation Response (BAR) may have once served an evolutionary purpose, it now functions as a structural barrier to human development in competitive environments. This insight calls for systemic changes by educators and mental health professionals to minimize chronic stress triggers. Educational and occupational institutions should adopt biofeedback-based stress monitoring, mindfulness practices, and scheduled rest periods to counteract the risks of sustained biological overactivation (Holmes, 2019; McManus et al., 2022). In high-pressure sectors, HR departments could also introduce early stress detection tools aligned with developmental evaluations to mitigate burnout and psychological disengagement (Koutsimani et al., 2019).

Regarding the second hypothesis, which confirms the role of Perceived Social Competition (PSC) in restricting development, the study offers key recommendations for communication approaches in schools and workplaces. Instead of public performance rankings that fuel constant comparison (Crocker & Park, 2004; Garcia et al., 2013), institutions should encourage personalized growth goals and narrative-based feedback. Recognizing effort and fostering collective progress over competition should become a core strategy for educators and managers (Chang & Shih, 2019; Flett & Hewitt, 2014). Additionally, digital literacy and social media education should address the developmental risks of curated competitive content, prompting policymakers to consider regulatory steps in digital curricula.

The finding that Revolutionary Adaptability (RA) moderates the negative influence of BAR underscores the need for adaptability-focused interventions. Youth mental health programs should emphasize skills such as emotional regulation, cognitive flexibility, and adaptive reasoning (Obradović, 2016; Ellis & Del Giudice, 2019). In the workplace, resilience training can include scenario-based learning and reflective exercises to help employees manage stress without impeding development (Arechavala-Lopez et al., 2022). Public and nonprofit sectors should support community-based initiatives that strengthen adaptive coping skills, particularly for urban youth facing high competition without sufficient structural support.

5.4. Limitations

Although the study offers strong insights across biological, psychological, and social domains, its cross-sectional design limits the ability to draw causal conclusions. The reliance on self-reported data may introduce biases such as social desirability and cultural response tendencies especially in collectivist cultures like Vietnam and Malaysia, where social conformity can influence how participants report stress and adaptability. Moreover, the regional sample may not fully reflect the diversity of competitive environments globally, particularly within Western educational and corporate systems. The absence of qualitative data also restricts a deeper exploration of the individuals' life experiences regarding perceived competition and adaptability. These limitations suggest that findings should be generalized with caution and underscore the need for longitudinal and mixed-method approaches to better capture developmental dynamics under competitive stress.

5.5. Future Research Directions

Future studies should build on these results by shifting from general developmental patterns to more focused explorations of causality and underlying processes. Long-term longitudinal research is essential to determine if repeated biological stress responses build up over adolescence and into early adulthood, creating lasting limitations on development, and to clarify whether revolutionary adaptability functions as a fixed personal characteristic or as a flexible skill that interventions could enhance. One valuable approach would involve testing whether training centered on adaptability can reduce the enduring negative effects of prolonged stress. Experimental work could sharpen the model by deliberately varying competitive triggers,

such as shifting from ranking-based to mastery-focused assessments, to see if lowering the emphasis on comparison diminishes its effects, especially for those highly attuned to social norms. Cross-cultural investigations should also directly compare how the strengthening influence of social norm sensitivity varies between collectivist and individualist cultures, helping to reveal context-specific developmental pathways. Moreover, researchers should examine the unique role of digitally fueled competition, particularly through algorithm-powered social comparisons on platforms like social media, as a growing source of perceived rivalry. Incorporating in-depth qualitative interviews tracked over time would help illuminate how people actively reinterpret stress and setbacks, framing revolutionary adaptability not merely as a protective factor but as an active process of personal growth amid ongoing competitive demands.

6. Conclusion

This study offers important insights into how biological, psychological, and social pressures in competitive environments can hinder comprehensive human development. The empirical results confirm the detrimental impacts of prolonged biological activation and perceived social competition, while emphasizing the crucial moderating role of revolutionary adaptability. On a theoretical level, the research reinforces the relevance of Life History Theory and Social Comparison Theory, while also suggesting the need to integrate these with models of psychological self-regulation. From a practical standpoint, the findings call for systemic changes in education, workplace structures, and public policy to reduce stress and foster adaptive development. Ultimately, by cultivating resilience and redefining societal expectations, competitive environments can shift from being obstacles to enablers of human growth ensuring that achievement no longer comes at the cost of human potential.

Ethical Statement

As the survey was administered online via Google Forms, informed consent was obtained electronically. Prior to accessing the questionnaire, participants were required to indicate their consent by selecting the option “I agree to participate.” Given that the study did not collect any personally identifiable information, neither written nor verbal consent was necessary. (Survey link: https://docs.google.com/forms/d/e/1FAIpQLScDV8rff-OHOPxvKu5BA4CLw_DAHrnyJ9IS97i78ja37siOMw/viewform?usp=header)

Ethical approval was not required for this research, as the study involved minimal risk and anonymous data collection. The questionnaire gathered only general demographic information (such as country, experience, and education level), and all responses were provided voluntarily and recorded in an anonymous manner.

References

[1] Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211.

[2] Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology, 32*(4), 665–683. https://doi.org/10.1111/j.1559-1816.2002.tb00236.x

[3] Arechavala-Lopez, P., Cabrera-Álvarez, M. J., Maia, C. M., & Saraiva, J. L. (2022). Environmental enrichment in fish aquaculture: A review of fundamental and practical aspects. *Reviews in Aquaculture, 14*(2), 704–728. https://doi.org/10.1111/raq.12620

[4] Babbie, E. R. (2020). *The practice of social research*. Cengage AU.

[5] Bagozzi, R. P. (1992). The self-regulation of attitudes, intentions, and behavior. *Social Psychology Quarterly, 55*(2), 178–204. https://doi.org/10.2307/2786945

[6] Bahrami, S., & Drabløs, F. (2016). Gene regulation in the immediate-early response process. *Advances in Biological Regulation, 62*, 37–49. https://doi.org/10.1016/j.jbior.2016.05.001

[7] Bateson, P., Gluckman, P., & Hanson, M. (2014). The biology of developmental plasticity and the Predictive Adaptive Response hypothesis. *The Journal of Physiology, 592*(11), 2357–2368.

[8] Bazan, C. (2022). Effect of the university’s environment and support system on subjective social norms as precursor of the entrepreneurial intention of students. *SAGE Open, 12*(4), 21582440221129105. https://doi.org/10.1177/21582440221129105

[9] Bobo, L., & Hutchings, V. L. (1996). Perceptions of racial group competition: Extending Blumer's theory of group position to a multiracial social context. *American Sociological Review, 61*(6), 951–972. https://doi.org/10.2307/2096302

[10] Bratanova, B., Loughnan, S., Klein, O., & Wood, R. (2016). The rich get richer, the poor get even: Perceived socioeconomic position influences micro-social distributions of wealth. *Scandinavian Journal of Psychology, 57*(3), 243–249. https://doi.org/10.1111/sjop.12281

[11] Chang, Y. Y., & Shih, H. Y. (2019). Work curiosity: A new lens for understanding employee creativity. *Human Resource Management Review, 29*(4), 100672. https://doi.org/10.1016/j.hrmr.2018.10.005

[12] Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications.

[13] Crocker, J., & Park, L. E. (2004). The costly pursuit of self-esteem. *Psychological Bulletin, 130*(3), 392–414. https://doi.org/10.1037/0033-2909.130.3.392

[14] Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227–268.

[15] Ellis, B. J., & Del Giudice, M. (2019). Developmental adaptation to stress: An evolutionary perspective. *Annual Review of Psychology, 70*(1), 111–139. https://doi.org/10.1146/annurev-psych-122216-011732

[16] Ellis, B. J., Abrams, L. S., Masten, A. S., Sternberg, R. J., Tottenham, N., & Frankenhuis, W. E. (2022). Hidden talents in harsh environments. *Development and Psychopathology, 34*(1), 95–113. https://doi.org/10.1017/S0954579420000887

[17] Festinger, L. (1957). *Social comparison theory*. Selective Exposure Theory.

[18] Filaire, E., Rouveix, M., Alix, D., & Le Scanff, C. (2007). Motivation, stress, anxiety, and cortisol responses in elite paragliders. *Perceptual and Motor Skills, 104*(3_suppl), 1271–1281.

[19] Fisher, R. J., & Ackerman, D. (1998). The effects of recognition and group need on volunteerism: A social norm perspective. *Journal of Consumer Research, 25*(3), 262–275. https://doi.org/10.1086/209538

[20] Flett, G. L., & Hewitt, P. L. (2014). A proposed framework for preventing perfectionism and promoting resilience and mental health among vulnerable children and adolescents. *Psychology in the Schools, 51*(9), 899–912. https://doi.org/10.1002/pits.21792

[21] Garcia, S. M., Tor, A., & Schiff, T. M. (2013). The psychology of competition: A social comparison perspective. *Perspectives on Psychological Science, 8*(6), 634–650. https://doi.org/10.1177/1745691613504114

[22] Gardner, S. K. (2010). Keeping up with the Joneses: Socialization and culture in doctoral education at one striving institution. *The Journal of Higher Education, 81*(6), 658–679. https://doi.org/10.1080/00221546.2010.11779076

[23] Gaspar, R., Palma-Oliveira, J. M., & Corral-Verdugo, V. (2010). Why do people fail to act? Situational barriers and constraints on ecological behavior. In *Psychological approaches to sustainability: Current trends in research, theory and practice* (pp. 269–294).

[24] Hill, K. (1993). Life history theory and evolutionary anthropology. *Evolutionary Anthropology: Issues, News, and Reviews, 2*(3), 78–88.

[25] Holmes, K. (2019). Neuroscience, mindfulness and holistic wellness reflections on interconnectivity in teaching and learning. *Interchange, 50*(3), 445–460. https://doi.org/10.1007/s10780-019-09360-6

[26] Jahoda, M. (1959). Conformity and independence: A psychological analysis. *Human Relations, 12*(2), 99–120. https://doi.org/10.1177/001872675901200201

[27] Koutsimani, P., Montgomery, A., & Georganta, K. (2019). The relationship between burnout, depression, and anxiety: A systematic review and meta-analysis. *Frontiers in Psychology, 10*, 429219.

[28] Liu, Q. Q., Zhou, Z. K., Yang, X. J., Niu, G. F., Tian, Y., & Fan, C. Y. (2017). Upward social comparison on social network sites and depressive symptoms: A moderated mediation model of self-

esteem and optimism. *Personality and Individual Differences, 113*, 223–228. https://doi.org/10.1016/j.paid.2017.03.037

[29] Lundberg, U. (1999). Stress responses in low-status jobs and their relationship to health risks: Musculoskeletal disorders. *Annals of the New York Academy of Sciences, 896*(1), 162–172. https://doi.org/10.1111/j.1749-6632.1999.tb08113.x

[30] Mallick, R. (2025). *Strengthening the bonds between us: An empirical investigation of morale in human–AI teams and the socially supportive AI teammates who empower it*.

[31] McManus, E., Haroon, H., Duncan, N. W., Elliott, R., & Muhlert, N. (2022). The effects of stress across the lifespan on the brain, cognition and mental health: A UK Biobank study. *Neurobiology of Stress, 18*, 100447. https://doi.org/10.1016/j.ynstr.2022.100447

[32] Nishii, L. H., & Leroy, H. (2022). A multi-level framework of inclusive leadership in organizations. *Group & Organization Management, 47*(4), 683–722. https://doi.org/10.1177/10596011221111505

[33] Norheim, K. B., Jonsson, G., & Omdal, R. (2011). Biological mechanisms of chronic fatigue. *Rheumatology, 50*(6), 1009–1018. https://doi.org/10.1093/rheumatology/keq454

[34] Obradović, J. (2016). Physiological responsivity and executive functioning: Implications for adaptation and resilience in early childhood. *Child Development Perspectives, 10*(1), 65–70. https://doi.org/10.1111/cdep.12164

[35] Parks, C. D., Joireman, J., & Van Lange, P. A. M. (2013). Cooperation, trust, and antagonism: How public goods are promoted. *Psychological Science in the Public Interest, 14*(3), 119–165. https://doi.org/10.1177/1529100612474436

[36] Peters, T., & Rodabaugh, K. (1988). *Thriving on chaos: Handbook for a management revolution*. https://doi.org/10.1080/07377366.1988.10401142

[37] Ruiz, F. J., Warner, N. S., Acampora, G., Coleman, J. R., & Kohan, L. (2023). Substance use disorders: Basic overview for the anesthesiologist. *Anesthesia & Analgesia, 137*(3), 508–520.

[38] Salvador, A., & Costa, R. (2009). Coping with competition: Neuroendocrine responses and cognitive variables. *Neuroscience & Biobehavioral Reviews, 33*(2), 160–170. https://doi.org/10.1016/j.neubiorev.2008.09.005

[39] Sassaroli, S., & Ruggiero, G. M. (2005). The role of stress in the association between low self-esteem, perfectionism, and worry, and eating disorders. *International Journal of Eating Disorders, 37*(2), 135–141.

[40] Sroufe, L. A. (1982). The organization of emotional development. *Psychoanalytic Inquiry, 1*(4), 575–599. https://doi.org/10.1080/07351698209533421

[41] Stolle, D., Soroka, S., & Johnston, R. (2008). When does diversity erode trust? Neighborhood diversity, interpersonal trust and the mediating effect of social interactions. *Political Studies, 56*(1), 57–75. https://doi.org/10.1111/j.1467-9248.2007.007

[42] Swab, R. G., & Johnson, P. D. (2019). Steel sharpens steel: A review of multilevel competition and competitiveness in organizations. *Journal of Organizational Behavior, 40*(2), 147–165. https://doi.org/10.1002/job.2340

[43] Thompson, S. C., & Spacapan, S. (1991). Perceptions of control in vulnerable populations. *Journal of Social Issues, 47*(4), 1–21. https://doi.org/10.1111/j.1540-4560.1991.tb01831.x

[44] Wilson, A. E., & Ross, M. (2000). The frequency of temporal-self and social comparisons in people's personal appraisals. *Journal of Personality and Social Psychology, 78*(5), 928–942. https://doi.org/10.1037/0022-3514.78.5.928

APPENDIX: Survey

Table 5. Background Information Section

1	Which of the following best describes your current role or professional status?	University student	Early-career professional (e.g., in education, technology, etc.)	Mental health professional or school counselor	Policy researcher, NGO/advocacy worker	Other (please specify):
2	How many years of experience do you have in a competitive academic or professional environment (e.g., exam-focused education, KPI-driven workplace)?	Less than 1 year	1 to 2 years	3 to 5 years	More than 5 years	
3	Have you ever directly supported or worked with individuals experiencing psychological stress due to academic or performance-related competition (e.g., through counseling, education, or policy initiatives)?	Yes	No	Prefer not to say		
4	In which country are you currently studying, working, or conducting your professional activities?	Vietnam	Singapore	Malaysia	Other (please specify):	

No	Variables	Coded Sub-variables	Content
1	Human Development Constraint under high Competitive Environments	HDC1	I feel that constant performance pressure restricts my ability to develop creatively and intellectually. (Sroufe, 1982; Mallick, 2025)
		HDC2	I often avoid taking developmental risks because I fear falling behind others in competitive settings. (Sassaroli & Ruggiero, 2005; Chang & Shih, 2019)
		HDC3	Intense competition has led me to experience emotional fatigue or psychological withdrawal. (Stolle et al., 2008; Crocker & Park, 2004)
		HDC4	In my environment, talent and potential often go underutilized due to pressure to conform to narrow success metrics. (Gardner, 2010; Flett & Hewitt, 2014)
2	Biological Activation Response	BAR1	In highly competitive situations, I experience heightened physical symptoms such as increased heart rate or alertness. (Salvador & Costa, 2009; Bahrami & Drabløs, 2016)
		BAR2	Prolonged exposure to stressful competition affects my ability to concentrate or stay emotionally balanced. (McManus et al., 2022; Norheim et al., 2011)
		BAR3	I often feel biologically "on edge" due to the constant pressure to perform. (Ruiz et al., 2023; Koutsimani et al., 2019)
		BAR4	My biological stress responses limit my long-term ability to grow or adapt in challenging environments. (Ellis & Del Giudice, 2019; Arechavala-Lopez et al., 2022)
3	Perceived Social Competition	PSC1	I often compare my academic or professional progress with others, which increases pressure on myself. (Crocker & Park, 2004; Garcia et al., 2013)
		PSC2	Even when no explicit ranking exists, I feel like I'm competing with others for recognition or status. (Bobo & Hutchings, 1996; Nishii & Leroy, 2022)
		PSC3	I frequently worry about falling behind others in my social or academic environment. (Liu et al., 2017; Chang & Shih, 2019)

Continuation Table:

No	Variables	Coded Sub-variables	Content
3	Perceived Social Competition	PSC4	The feeling of being constantly evaluated by others has caused me anxiety or self-doubt. (Flett & Hewitt, 2014; Parks & Van Lange, 2013)
4	Social Norm Sensitivity	SNS1	I feel a strong need to conform to societal expectations of achievement and success. (Fisher & Ackerman, 1998; Bazan, 2022)
		SNS2	I often internalize the belief that I must continually excel to be accepted or valued. (Ajzen, 2002; Swab & Johnson, 2019)
		SNS3	Societal pressure makes me feel guilty or anxious if I'm not constantly productive. (Festinger, 1957; Jahoda, 1959)
		SNS4	I feel that social norms strongly influence my behavior and life choices in competitive environments. (Garcia et al., 2013; Fisher & Ackerman, 1998)
5	Revolutionary Adaptability	RA1	I am able to transform stressful experiences into opportunities for personal growth. (Holmes, 2019; Obradović, 2016)
		RA2	When facing pressure, I adapt my thoughts and behaviors flexibly rather than becoming overwhelmed. (Peters & Rodabaugh, 1988; Arechavala-Lopez et al., 2022)
		RA3	I can reframe threatening situations in a positive light to maintain emotional balance. (Ellis & Del Giudice, 2019; Lundberg, 1999)
		RA4	I actively regulate my emotions to prevent stress from limiting my performance or development. (Obradović, 2016; Holmes, 2019)