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Structural Relationships of Academic Hardiness, Competence Beliefs, Intrinsic Motivation, and Planning with Agency among **High School Students**

Hassan. Khodadad Narenji¹, Habibollah. Naderi^{2*}, Ali Asghar. Shojaei³

¹ PhD Student, Department of Psychology, Babol Branch, Islamic Azad University, Babol, Iran ² Associate Professor, Department of Psychology, University of Mazandaran, Babolsar, Iran ³ Assistant Professor, Department of Psychology, Babol Branch, Islamic Azad University, Babol, Iran

* Corresponding author email address: naderihabibollah@yahoo.com

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ABSTRACT

Objective: The present study aimed to examine the mediating role of active planning in the relationship between human agency and competence beliefs, as well as intrinsic motivation, with the moderating effect of academic hardiness among students in Ramsar and Tonekabon counties.

Methods and Materials: The statistical population of this study included all male and female students in the second stage of high school in Tonekabon and Ramsar counties (8,178 students in the 2018-2019 academic year). Considering the number of items in each questionnaire used, five students were considered per item, resulting in 144 items in this study. A final sample of 720 students was selected using stratified random sampling. The study utilized the Academic Hardiness Questionnaire by Kobasa (1979), the Academic Motivation Questionnaire by Harter (1981), the Human Agency Questionnaire by Jaskylla et al. (2016), the Active Planning Questionnaire by Quine (1990), and the Competence Beliefs Questionnaire by Harter (1982). Data were analyzed using Pearson correlation coefficients and structural equation modeling via SPSS-24 and Amos-24 software.

Findings: The significance statistic between the variables of academic hardiness and human agency was 2.461, which is greater than 1.96, indicating that the relationship between academic hardiness and human agency is significant at the 95% confidence level. Additionally, the path coefficient between these two variables was 0.234, demonstrating the positive impact of academic hardiness on human agency.

Conclusion: The structural relationships of academic hardiness, competence beliefs, intrinsic motivation, and planning with agency among high school students in Tonekabon and Ramsar counties have a significant role.

Keywords: Academic Hardiness, Competence Beliefs, Intrinsic Motivation, Planning, Agency, Students.

1. Introduction

Educational centers have been operational throughout history. Although the form of educational institutions may change from one era to another, their core foundation, which is the teaching of knowledge, remains constant. Due to the increasing importance of academic performance, a portion of psychology has been dedicated to this area. Today, academic counseling organizations and educational centers have been established for this purpose (Asikhia, 2010; Brougham & Kashubeck-West, 2017; Salam & Astuti, 2023).

One of the cognitive factors currently discussed in relation to students' education is human agency, which is rooted in Bandura's social cognitive theory (Jääskelä et al., 2016). Bandura considers both external environmental factors and internal cognitive factors as influential in controlling behavior (Seif, 2012). In research based on the social cognitive psychology framework, agency is associated with conscious intention, thinking, and selfregulation. Bandura views agency as inherently interactive with self-processes. Therefore, individuals actively shape their beliefs based on their capacities to exert control over events that affect their lives. Personal agency is constructed from the reciprocal interaction between individual, behavioral, and environmental determinants (Jääskelä et al., 2016). This reciprocal determinism forms the foundation of dynamics in human agency (Yoon, 2019). From Bandura's perspective, being an agent means intentionally influencing one's actions and life circumstances, where the individual's influence is part of the causal structure of behavior (Mahdavi Mazda, 2016). The main aspects of agency from Bandura's viewpoint include intentionality, forethought, and selfreactiveness (Elson & Hergenhan, 2015). The intentionality aspect of human agency refers to deliberate and voluntary actions, including planning and using strategies to realize one's intentions and will (Bandura, 2001, 2006, 2018). A key characteristic of human agency is the ability to initiate actions with a specific goal in mind. Future plans are rarely fully detailed at the outset, but their realization in the future requires intentions and plans in the present that guide and maintain forward movement (Bandura, 2006). In forethought, individuals are motivated and guided by creating practical plans, adopting goals, and visualizing the potential outcomes of their actions. In this preliminary form of self-direction, behavior is directed by envisioned goals and anticipated outcomes rather than by an unattainable state. Forethought empowers individuals to transcend

immediate environmental constraints and shape the present to achieve a desired future (Bandura, 2018). In selfreactiveness, agentic individuals are not only planners and forethinkers but also self-regulators. A person cannot merely choose a course of action and wait for appropriate performance to emerge (Bandura, 2006). Through the selfregulatory system, individuals manage their behaviors via self-reinforcement. They do this by adopting behavioral standards and evaluating their performance against these standards. Depending on how closely their behavior aligns with their adopted standards, they respond with positive or negative self-reactive evaluations (Bandura, 2018). Reflective thought refers to the metacognitive ability to think about the directions, consequences, and meanings of one's plans and actions (Elson & Hergenhan, 2015). Individuals are not only self-regulators but also testers of their performance. They reflect on their thoughts, actions, values, and ethics to understand specific challenges. Reflective thought involves engaging with different courses of action and competing values, considering one path compared to others. The most important feature of agency is the metacognitive ability to reflect on one's capabilities, thoughts, and actions (Bandura, 2018).

Understanding many human behaviors is difficult due to their complexity and is one of the concerns of researchers, psychologists, and school counselors. One such concept is academic hardiness (Moshtati & Moayedfar, 2016). The term "hardiness" is not a new concept. Its theoretical basis is founded on the work of existential psychologists and philosophers such as Heidegger, Frankl, and Binswanger, which involves finding meaning in life even when it is sometimes absurd or painful, and fully engaging in life despite its inherent absurdity and suffering (Bartone, 2006). Hardiness is a concept composed of three components: commitment, challenge, and control. The term "challenge" reflects an attitude toward life that motivates an individual to see changes as opportunities for growth rather than threats to security and survival. Indeed, change, rather than stability and uniformity, is considered the main mode of life. Individuals with a strong commitment tendency believe in the value and legitimacy of who they are and what they do. Rather than avoiding issues out of fear, uncertainty, or fatigue, they have a meaningful and purposeful sense of work and relationships and deeply engage in their affairs. The term "control" reflects the belief that an individual can influence the direction of their life through rational considerations (Soderstrom, Dolbier, & Leiferman, 2000). It is assumed that hardy individuals are committed to their



activities, have control over life events, and are inclined to see unexpected or threatening changes as a positive challenge rather than a distressing event (Soderstrom et al., 2000).

Educational specialists have always sought to create conditions that allow learners to demonstrate the highest level of academic efficiency. Therefore, identifying variables that influence learners' academic performance is of great importance (Liu, 2024; Mosharrafa, 2024; Nadeem et al., 2023; Ofem et al., 2024; Rehman et al., 2022). One construct related to academic performance and progress that has garnered attention from scholars in recent decades is academic competence. Competence is a combination of knowledge, behavior, and both overt and covert skills that give individuals the ability and capacity to perform their tasks effectively (Safa & Tofighi, 2021). Competence beliefs are defined as receiving positive or negative feedback in various components. Perceived competence is one of the relatively specific dimensions of self-concept. Today, discussing human functions such as motivation, learning, self-regulation, and progress without mentioning the role of students' beliefs and perceptions of their progress is impossible and incorrect (Bay et al., 2017; Thomaes et al., 2020). Achievement beliefs also influence students' motivation and cognition; that is, students' feelings, interest, and effort in performing a task determine their use of cognitive, metacognitive, and self-regulatory strategies (Freiberger et al., 2012).

Identifying the concept of motivation and understanding its various influences on the learning process help teachers apply better methods in designing and implementing their educational programs. Motivation in education and its role in academic achievement have long been a focus of educational psychologists. The term "motivation" can be defined as a driving, guiding, and sustaining force of behavior (Seif, 2007). Motivation is one of the most important elements of learning in any educational environment and covers a broad scope within education. Generally, motivation increases individuals' energy levels and activity, directs them toward specific goals, and results in specific activities (Mostfaeli, 2006). Motivation is considered a prerequisite for learning, much like mental readiness or input behaviors, and its impact on learning is quite evident. One construct that psychologists have used to explain individuals' progress is achievement motivation. Achievement motivation is defined as a desire or interest in success in a particular area. According to research, individuals with high achievement motivation tend to

outperform those who lack this motivation in tasks, including learning (Golestaneh et al., 2016). Seif (2004) noted that through effective teaching, even in the presence of motivation, some level of motivation will be achieved for students, and they are likely to gain more motivation for learning from this initial satisfaction with learning (Seif, 2004).

The theoretical concepts discussed above and the empirical evidence related to them in explaining individual differences in students' human agency patterns in confronting academic achievement situations, such as motivation, study, learning, and exams, have not sufficiently addressed the significant role of competence beliefs, academic hardiness, intrinsic motivation, active planning, and students' human agency. Based on these concepts and relying on the existing theoretical foundations, this research seeks to answer the question: Can the variables of competence, intrinsic motivation, and active planning moderate the role of hardiness in the human agency of high school students?

2. Methods and Materials

2.1. Study Design and Participants

This research is a non-experimental design, more specifically a correlational study using path analysis, aimed at examining the relationship between variables within a causal model. The statistical population of this study included all male and female students in the second stage of high school in Tonekabon and Ramsar counties (8,178 students in the 2018-2019 academic year). Considering the number of items in each questionnaire used, five students were considered per item, resulting in 144 items in this study. A final sample of 720 students was selected using stratified random sampling.

2.2. Measures

2.2.1. Academic Hardiness

This questionnaire was developed by Kobasa and consists of 45 items rated on a four-point Likert scale from 0 to 3 for three subscales: commitment, control, and challenge. Each subscale is assessed by 15 items, with the lowest possible score on each subscale being 0 and the highest being 45. In addition to the three subscales, a total score for hardiness is obtained by summing the subscale scores. The hardiness scale is a valid tool for measuring hardiness and psychological well-being. In the preliminary validation of



the Persian version of the hardiness scale conducted on three samples of students, athletes, and patients, the psychometric characteristics were reported as follows: Alpha coefficients ranged from 0.88 to 0.93 for the commitment subscale, from 0.85 to 0.94 for the control subscale, from 0.89 to 0.95 for the challenge subscale, and from 0.78 to 0.94 for the total hardiness score, indicating good internal consistency for the scale. Test-retest correlation coefficients over intervals of two to four weeks ranged from 0.82 to 0.90 for the commitment subscale, from 0.80 to 0.88 for the control subscale, and from 0.80 to 0.88 for the control subscale, and from 0.80 to 0.88 for the total hardiness score, indicating sufficient test-retest reliability for the scale (Zahiri Nava & Rajabi, 2009).

2.2.2. Academic Motivation

Harter's standardized Academic Motivation Questionnaire consists of 33 items aimed at assessing academic motivation among students. This questionnaire is scored on a Likert scale ranging from 1 to 5, with a minimum score of 33 and a maximum score of 165. The Cronbach's alpha for the questionnaire is 0.92 (Maraghi et al., 2018; Mostfaeli, 2006; Roohi et al., 2013; Zahiri Nava & Rajabi, 2009).

2.2.3. Human Agency

The Human Agency Questionnaire, developed by Jääskelä and colleagues, consists of 34 items that measure students' agency across six subscales: Sense of Equality (items 1 to 3), Choice and Decision (items 4 to 6), Participation and Involvement (items 7 to 15), Interest and Motivation (items 16 to 22), Self-Efficacy (items 23 to 27), and Competence Beliefs (items 28 to 34). The questionnaire is scored on a 5-point Likert scale from strongly disagree = 1 to strongly agree = 5, with reverse scoring for items 1, 5,

Table 1

Descriptive Statistics for the Entire Sample

13, 16, 18, and 32. The overall reliability is 0.91, with Cronbach's alpha coefficients for the subscales ranging from 0.74 to 0.86 in a study (Jääskelä et al., 2016).

2.2.4. Active Planning

The Active Planning Questionnaire, developed by Quinn, consists of 12 items. Respondents are instructed to read the statements and select "yes" if they agree with the statements and "no" if they disagree. Scoring is binary, with 0 for "no" and 1 for "yes." In Hafezi and colleagues' study, the reliability coefficients for Quinn's time management questionnaire were calculated using Cronbach's alpha and split-half methods, with values of 0.72 and 0.30, respectively, indicating acceptable reliability for the questionnaire (Hafezi et al., 2011).

2.2.5. Competence Beliefs

The Competence Beliefs Questionnaire, developed by Harter in 1982, consists of 20 dichotomous items with responses of "no" = 0 and "yes" = 1. The minimum score is 0, the maximum is 20, and the cutoff point is 10. The reliability and validity of Harter's questionnaire were reported as 0.78 and 0.79, respectively, in a study conducted on 198 students (110 boys and 88 girls) (Harter, 1982).

2.3. Data Analysis

Data were analyzed using Pearson correlation coefficients and structural equation modeling via SPSS-24 and Amos-24 software.

3. Findings and Results

Table 1 presents the descriptive statistics for the entire sample. The skewness and kurtosis statistics indicate that the distribution of data for each variable is normal.

Variable	Mean	Standard Deviation	Median	Mode	Skewness	Kurtosis	Minimum	Maximum
Academic Hardiness	1.72	0.488	1.81	1.92	-0.265	-0.684	0.70	2.84
Active Planning	0.72	0.219	0.80	0.80	-1.022	0.657	0.00	1.00
Competence Beliefs	2.71	0.545	2.67	2.67	0.140	-0.055	1.27	4.27
Intrinsic Motivation	3.18	0.458	3.24	3.42	-0.361	-0.673	1.94	4.09
Human Agency	3.11	0.492	3.18	3.18	-0.281	-0.507	1.85	4.26

Table 1 examines the normality of the research variables.The GOF (Goodness of Fit) value for the research model, as



shown in Table 2, was calculated to be 0.505, indicating a moderate ability of the model to predict the endogenous latent variable.

Table 2

Communality and R² of Research Variables

Variable	Communality	\mathbb{R}^2	
Academic Hardiness	0.591		
Competence Beliefs	0.428	0.434	
Intrinsic Motivation	0.464	0.643	
Active Planning	0.431	0.334	
Human Agency	0.463	0.738	
Average	0.475	0.537	

To test the hypotheses and examine the significance of the path coefficients between variables, the software output was used. The path coefficients and the results of their significance are provided in Table 3.

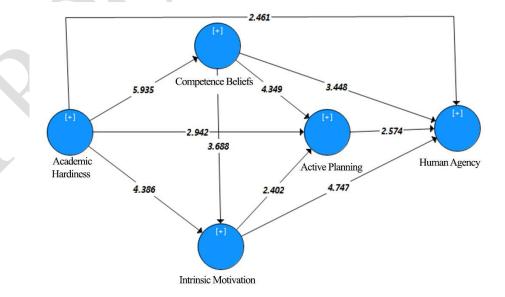
Table 3

Results from Structural Model Evaluation for Hypothesis Testing

From Variable	To Variable	Path Coefficient (β)	t-value	Test Result
Academic Hardiness	Competence Beliefs	0.659	5.935	Confirmed
	Active Planning	0.319	2.942	Confirmed
	Intrinsic Motivation	0.517	4.389	Confirmed
	Human Agency	0.234	2.461	Confirmed
Competence Beliefs	Active Planning	0.558	4.349	Confirmed
	Intrinsic Motivation	0.361	3.688	Confirmed
	Human Agency	0.298	3.448	Confirmed
Intrinsic Motivation	Active Planning	0.250	2.402	Confirmed
	Human Agency	0.396	4.747	Confirmed
Active Planning	Human Agency	0.341	2.574	Confirmed

Figure 1

Model with T-values





4. Discussion and Conclusion

The present study aimed to investigate the mediating role of active planning in the relationship between human agency and competence beliefs, as well as intrinsic motivation, with the moderating effect of academic hardiness among students in Ramsar and Tonekabon counties. The research findings align with prior findings (Basharpoor & Ahmadi, 2017; Maraghi et al., 2018; Roohi et al., 2013). According to Bandura, beliefs related to personal agency constitute a crucial set of primary determinants or human motivation, influencing motivational, cognitive, and intervening processes. High agency indicates that an individual has the ability to successfully participate in making a real difference in their current performance compared to their previous performance (Basharpoor & Ahmadi, 2017). In explaining this finding, as Bandura believes, human agency involves planning and executing actions. For this purpose, a person first identifies goals based on their values, such as education, which must be compatible with their abilities and resources. Next, they specify the necessary activities aligned with their goals, then design a plan to operationalize these activities, and finally, they execute the plan. To monitor progress toward the goal, evaluations are conducted at specified intervals, and necessary adjustments are made if required. This process itself, through the feedback it provides on progress, enhances motivation. The concept of agency focuses on self-regulation, self-awareness, willpower, and future orientation, shaped by factors such as conditional scientific agency and structural constraints.

According to Bandura's theory, the findings indicate that adolescents in Tonekabon and Ramsar lack a conceptual understanding of agency. In other words, they do not have a clear grasp of the concept of agency and its components in human life. Despite having a positive perception of their capabilities, their agency is conditional; therefore, among the three types of agency—personal, collective, and proxy agency—referred to by Bandura (2006), it can be cautiously said that the adolescents' agency is of the proxy type. More precisely, these adolescents lack personal agency, meaning they cannot independently influence their decisions and environment (Bandura, 2006). Consequently, they can only be effective in their choices by relying on others.

Thus, it can be concluded that adolescents rely on others to achieve desired and certain outcomes, which is what Bandura (2018) refers to as proxy agency. Bandura argues that all three types of agency find meaning in the context of cultural settings (Bandura, 2018). In other words, the cultural context guides the individual toward the type of agency that aligns with that culture. Given that agency is a natural capacity for free action present in all individuals, and considering that agency is a personal variable, meaning that some individuals are more agentic while others are less so, it can be concluded that adolescents in Tonekabon and Ramsar not only lack a conceptual understanding of agency but also exhibit weak agency in practice.

5. Limitations & Suggestions

Overall, the results of this study showed that the structural relationships of academic hardiness, competence beliefs, intrinsic motivation, and planning with the agency of high school students in Tonekabon and Ramsar counties play a significant role. One limitation of this research is that it was only conducted among adolescents in Tehran, specifically within the age range of 15-18 years. Furthermore, given that agency is related to the cultural context of society and considering the lack of empirical understanding of the concept of agency in Iran, it is recommended that a human agency questionnaire for adolescents in Iran be developed and standardized based on a prescriptive model. Additionally, planning for any educational initiative requires problem identification and a description of the current situation. This research provided a description of the agency status among adolescents. The findings of this study can be useful in planning for the development of agency in adolescents. Adolescence, as a crucial transitional period in life, necessitates the serious consideration of skill and educational training due to its impact on later life stages. Therefore, fostering high-agency adolescents in the country requires the development of a comprehensive and fundamental program, which can be achieved through universities, educational institutions, cultural centers, and other relevant organizations.

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Declaration of Interest

The authors of this article declared no conflict of interest.



Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

This article is derived from the first author's doctoral dissertation. All authors equally contributed to this article.

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