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Examining a Model of Structural Relationship between Successful Intelligence Teaching Style and Students' Identity: Mediating Role of Basic Psychological Needs

Najmeh Mohammadinezhad[1], Afsaneh Marziyeh[2*], Hossein Jenaabadi[3]

1. Master's degree in Educational Psychology, University of Sistan and Baluchestan, Zahedan, Iran

2. Associate Professor, Department of Educational Psychology, University of Sistan and Baluchestan, Zahedan, Iran

3. Professor, Department of Educational Psychology, University of Sistan and Baluchestan, Zahedan, Iran

* Corresponding author's Email: marziyeh@ped.usb.ac.ir

Abstract: The aim of the present study was to examine a model of structural relationship between successful intelligence teaching style and students' identity mediated by basic psychological needs of students. The research method was descriptive correlational, and the study population included the faculty members (permanent instructors) of Farhangian University of Zahedan and all the male and female students enrolled at this University in 2022, with a sample size of 43 faculty members and 129 students selected through random stratified sampling. Data were collected using the Measure of Academic Identity Status (Was & Isaacson, 2008), the Basic Psychological Need Satisfaction Scale (La Guardia, Ryan, Couchman, & Deci, 2000), and the Teaching for Successful Intelligence Questionnaire (TSI-Q) (Palos & Maricutoiu, 2013). Content validity was ensured, and the reliability of the research tools was assessed using Cronbach's alpha coefficient, resulting in values of $\alpha = 0.86$ for the Measure of Academic Identity Status, $\alpha = 0.81$ for the Basic Psychological Need Satisfaction Scale, and $\alpha = 0.76$ for the Teaching for Successful Intelligence Questionnaire (TSI-Q). Data analysis involved the utilization of Pearson correlation coefficient and path analysis to address the research questions. The findings demonstrated that the teaching style based on successful intelligence had a direct and significant impact on students' academic identity. Additionally, the teaching style based on successful intelligence had a direct and significant effect on students' basic psychological needs, which, in turn, had a direct and significant effect on their academic identity. Furthermore, the teaching style based on successful intelligence exerted an indirect and significant effect on students' academic identity through their basic psychological needs.

Keywords: Teaching style based on successful intelligence - academic identity - basic psychological needs

Introduction

At the present time, numerous individuals harbor the aspiration to pursue higher education at the university. Across the globe, a considerable cohort dedicates their efforts to gain entry into universities annually (Strayhorn et al., 2016). Additionally, the university years are widely recognized as an optimal period for the cultivation of novel identities (Kroger, 2006). Regrettably, some individuals encounter diverse challenges when adopting and aligning with their university identity (Field et al., 2013). Consequently, there exists a prevalent belief that exploring identity within the context of university settings constitutes a pivotal factor for comprehending the performance and motivation of students in this distinctive milieu (White & Lowenthal, 2011).

Currently, one of the central focuses within human-oriented sciences revolves around investigating the role of psychological elements and their manifestation across various facets of human life. The pursuit of understanding the contributing factors to individual success and goal attainment has sparked profound

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interest. On one hand, educational systems are consistently guided by the noble aim of fostering motivated, purposeful, progressive, and receptive learners—a pursuit that perennially captivates researchers' attention. On the other hand, in order to fulfill the maxim "The learner should not merely study the lesson but also be capable of living by it," the appropriate identity for engaging with the subject must be acquired (Gustavson & Miyake, 2017).

The concept of "academic identity" encompasses an array of competencies, autonomy, purposefulness, self-efficacy beliefs, and extensive emotional experiences that young individuals undergo within the classroom environment, alongside their peers and instructors (Morelock, 2017; Winter, 2009). Its defining characteristic lies in how it operates within the realm of academic pursuits (Was et al., 2009). By embracing the notion that identities are shaped by their context, the educational domain emerges as a critical arena of life. Drawing on insights from Marcia's model (Årseth et al., 2009), four distinct types of academic identities come to the fore: Identity achievement involves a state of strong commitment, reached after a phase of extensively exploring numerous possibilities; Identity moratorium occurs when an individual engages in different roles or activities with the intention of identifying the most fitting one; Identity foreclosure arises when a decision is reached without considering alternative choices and Identity diffusion refers to a state where an individual lacks firm beliefs or convictions and has not actively sought to familiarize themselves with or engage in different options.

Successful intelligence teaching style, seeks to elevate individual knowledge by: 1) amalgamating creative and practical proficiencies with analytical and memory skills, thereby enabling the cultivation of intellectual attributes; 2) employing diverse methodologies to attract information (through analytical, creative, and practical activities), followed by the capacity to assimilate study materials (Zhang, 2007). From this standpoint, the instructor's role extends beyond the mere conveyance of information during the absorption and production process. It encompasses the inspiration of students to generate and evaluate convictions and practical interests, while concurrently persuading others of the merit of these values (Zhang, 2007). This aligns with research suggesting that students who are exposed to these teaching styles, as opposed to traditional methods, tend to excel in acquiring analytical, creative, and practical proficiencies (Palos & Maricutoiu, 2013a; Zhang, 2007)

Previous investigations have predominantly focused on assessing the theory of successful intelligence through experimental inquiries linked to student learning. However, limited research has been dedicated to evaluating teaching methodologies associated with successful intelligence (Chamorro-Premuzic et al., 2007).

Sternberg (2002) posits that pedagogical practices geared toward retention often lean on conventional instructional techniques. He asserts that striking a balance across the triad of intelligences in education

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holds paramount importance. This entails augmenting customary strategies, which emphasize rote memorization and passive learning, with opportunities that encourage learners to engage in analytical, innovative, and pragmatic thinking (Santrock, 2018). The application of analytical skills empowers learners to dissect, critique, assess, compare, and differentiate information. A key advantage of an education centered on successful intelligence lies in its capacity to equip students with the tools to navigate an array of challenges, potentially influencing their personal, vocational, and societal spheres. Drawing from the perspective of Deci and Ryan (2014) it becomes evident that basic psychological needs are intricately interwoven, and their fulfillment bears positive psychological outcomes. According to the theory of self-determination, these basic psychological needs are intrinsic, although their realization hinges on the contextual backdrop of an individual. For instance, nurturing environments grant individuals the latitude to manifest initiative and make choices, thereby addressing the need for autonomy. Environments fostering competence provide clear structures and guidelines. Warm and responsive settings that emphasize emotional bonds satisfy the need for relatedness. These contexts encompass familial, educational, and interpersonal relations.

In the realm of higher education, instructors assume a pivotal and irreplaceable role in attaining both quantitative and qualitative educational objectives and missions. Consequently, the evaluation of their performance and interactions with students across diverse dimensions, particularly in the realm of pedagogy, along with their potential to influence the development of students' skills and motivation, assumes paramount importance. Embracing diverse teaching approaches while attuning to the heterogeneous needs of learners, and employing a gamut of methods and instructional styles throughout the teaching-learning continuum, can not only augment the breadth and depth of learning but also instill a long-term impetus for knowledge acquisition throughout individuals' lifespans.

Taking into account the significant role that universities and educators play in shaping the identities of young individuals, it becomes evident that students' interpretation of instructors' teaching methodologies can wield influence over their academic identity. Academic identity encompasses a deliberate response to one's educational environment, involving choices such as whether to embark on an educational journey and which path to pursue. Consequently, it encapsulates the pursuit of one's academic identity. The existence of such an identity within an individual fosters a sense of vigor and achievement across various educational domains. Moreover, it assists in gradually overcoming obstacles to success (Ravan et al., 2021). To date, numerous research endeavors have aimed to assess the influence of instructors' personal traits on teaching methodologies, predominantly within the domain of teaching practices prevalent in Western societies. However, the landscape in Iran remains unexplored concerning teaching approaches. With this context in mind, the current study aims to investigate how teaching styles based

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on successful intelligence impact academic identity, mediated by the basic psychological needs of the participating students.

Material and Methods

The present study is descriptive correlational research with an applied objective. The study population consists of permanent faculty members at Farhangian University, Zahedan branch (Resalat and Shahid Motahari campuses), and all male and female students enrolled at Farhangian University in 2022. The sample includes a total of 43 formal faculty members from Farhangian University in Zahedan. Among them, 26 faculty members are from Resalat campus (female) and 17 faculty members are from Motahari campus (male). Each faculty member's questionnaire was completed by exactly 3 students who are taught by the same faculty member. Consequently, a total of 129 questionnaires were completed by students, and ultimately, data from 172 questionnaires were analyzed.

Instruments

A) Measure of Academic Identity Status: The measure of academic identity status (Was & Isaacson, 2008) consists of 40 items measured on a five-point Likert scale ranging from "completely agree" to "completely disagree." The minimum possible score is 40 and the maximum is 200. Academic diffused identity is measured by questions 1-10, moratorium academic identity by questions 11-20, foreclosed academic identity by questions 21-30, and achieved academic identity by questions 31-40. In Hejazi et al. (2011) study, the questionnaire's reliability was assessed using the Cronbach's alpha method, resulting in a value exceeding 0.70. In the current study, the reliability of this questionnaire was reported as 0.86 using Cronbach's alpha.

B) **Basic Psychological Need Satisfaction Scale**: The Basic Psychological Need Satisfaction Scale (La Guardia et al., 2000) was used to measure the satisfaction of basic psychological needs. This scale consists of 21 items measured on a seven-point Likert scale. The reliability of this questionnaire has been assessed in the study by Johnston and Finney (2010) using Cronbach's alpha coefficient, yielding a value of 0.91. In Iran, Besharat (2013) examined the validity and reliability of this questionnaire, reporting reliabilities ranging from 0.67 to 0.77 for its subscales. In the present study, the reliability of this questionnaire has been reported as 0.81 through Cronbach's alpha coefficient.

C) Teaching for Successful Intelligence Questionnaire: The Teaching for Successful Intelligence Questionnaire (Palos & Maricutoiu, 2013b) consists of 20 questions divided into four subscales: memory, practical, analytical, and reproductive teaching styles. The scale uses a five-point Likert scale ranging from "completely agree" to "completely disagree." Palos and Maricutoiu (2013b) obtained the reliability of this questionnaire for the components of memory, practical, analytic, and reproductive

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teaching styles as 0.79, 0.85, 0.78, and 0.84, respectively, using Cronbach's alpha coefficient. In the study of Arabsheybani and Akhondi (2018), the reliability of this questionnaire was estimated to be above 0.70 using Cronbach's alpha coefficient. The reliability of this questionnaire was reported as 0.76 using Cronbach's alpha.

Data Analysis: Descriptive statistics including means and standard deviations were calculated. To test hypotheses and the research model, Pearson correlation coefficient and path analysis were used. All statistical computations were performed using SPSS-26 and LISREL-10 software.

Results

The mean and standard deviation of teaching styles based on successful intelligence, educational identity, and fundamental psychological needs along with their components are provided in Table1.

Table 1. Mean and standard deviation of teaching styles based on successful intelligence, educational identity, and fundamental psychological needs

Variable	N	Mean	SD
Memory style	43	13.90	4.78
Practical style	43	12.93	4.46
Analytical style	43	14.74	4.59
Reproductive style	43	12.51	3.81
Competence	129	21.71	7.42
Relatedness	129	16.07	6.11
Autonomy	129	21.76	7.57
Academic identity	129	38.78	13.76

According to Table 1, the memory teaching style has mean and standard deviation values of (13.90, 4.78), the practical teaching style has mean and standard deviation values of (12.93, 4.46), the analytic teaching style has mean and standard deviation values of (14.74, 4.59), and the reproductive teaching style has mean and standard deviation values of (12.51, 3.81). Additionally, the variable "need for competence" has mean and standard deviation values of (21.71, 7.42), the variable "need for relatedness" has mean and standard deviation values of (16.07, 6.11), and the variable "need for autonomy" has mean and standard deviation values of (21.86, 7.57). According to Table 1, the academic identity has mean and standard deviation values of (38.78, 13.76).

The correlation analysis between teaching styles and academic identity indicates that the correlation coefficient of memory teaching style with academic identity (r = 0.653), the correlation coefficient of practical teaching style with academic identity (r = 0.577), the correlation coefficient of analytic teaching style with academic identity (r = 0.665), and the correlation coefficient of reproductive teaching style

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with academic identity (r = 0.442) are positive and significant (P < 0.01). Similarly, the correlation analysis between teaching styles and basic needs reveals that the correlation coefficient of memory teaching style with the need for competence, relatedness, and autonomy are (r = 0.729, r = 0.730, and r = 0.797), the correlation coefficient of practical teaching style with the need for competence, relatedness, and autonomy are (r = 0.849, r = 0.790, and r = 0.688), the correlation coefficient of analytic teaching style with the need for competence, relatedness, and autonomy are (r = 0.885, r = 0.923, and r = 0.843), and the correlation coefficient of reproductive teaching style with the need for competence, relatedness, and autonomy are (r = 0.849, r = 0.908, and r = 0.810) are positive and significant (P < 0.01). According to the results, the correlation coefficient of academic identity with the need for competence (r = 0.492), the correlation coefficient of academic identity with the need for relatedness (r = 0.528), and the correlation coefficient of academic identity with the need for autonomy (r = 0.506) are also positive and significant (P < 0.01). To investigate the research model, path analysis was employed, and the fit indices for the model are presented in Table 2. According to Table 2, X^2/DF ratio is 109.97, and the values of fit indices GFI, AGFI, NF, CFI, and NNFI are close to one, indicating that these indices have met the necessary standards. Therefore, it can be said that the model has a good fit and is confirmed. The direct path coefficients are provided in Table 3, and the indirect path coefficients are presented in Table 4.

Table 2. Fit indices for the model

Fit indices	X^2/DF	RMSEA	NFI	NNFI	CFI	IFI	RFI	GFI	AGFI
Value	109.97	0.08	0.95	0.97	0.96	0.97	0.95	0.95	0.96

Table 3. Direct effect in the proposed model

Path	Path coefficient	P	T value	P	Result
Memory style to Academic identity	0.52	0.001	11.29	0.001	Confirmed
Practical style to Academic identity	0.46	0.001	8.88	0.001	Confirmed
Analytical style to Academic identity	0.42	0.001	8.54	0.001	Confirmed
Reproductive style to Academic identity	0.47	0.001	8.64	0.001	Confirmed
Memory style to Competence	0.44	0.001	8.87	0.001	Confirmed
Memory style to Relatedness	0.37	0.001	7.28	0.001	Confirmed
Memory style to Autonomy	0.45	0.001	9.14	0.001	Confirmed
Practical style to Competence	0.55	0.001	12.13	0.001	Confirmed
Practical style to Relatedness	0.41	0.001	8.23	0.001	Confirmed
Practical style to Autonomy	0.33	0.001	8.37	0.001	Confirmed
Analytical style to Competence	04.7	0.001	9.82	0.001	Confirmed
Analytical style to Relatedness	0.38	0.001	7.52	0.001	Confirmed
Analytical style to Autonomy	0.25	0.001	6.13	0.001	Confirmed
Reproductive style to Competence	0.48	0.001	10.02	0.001	Confirmed
Reproductive style to Relatedness	0.46	0.001	9.57	0.001	Confirmed
Reproductive style to Autonomy	0.48	0.001	10.08	0.001	Confirmed
Competence to Academic identity	0.31	0.001	7.83	0.001	Confirmed
Relatedness to Academic identity	0.24	0.001	5.40	0.001	Confirmed
Autonomy to Academic identity	0.56	0.001	14.36	0.001	Confirmed

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According to Table 3, the path coefficient of the memory teaching style with students' academic identity indicates that the coefficient of the path between the memory teaching style and academic identity is (0.520) with a t-value of (11.29). Similarly, the path coefficient of the practical teaching style with academic identity is (0.460) with a t-value of (8.88), the path coefficient of the analytic teaching style with academic identity is (0.420) with a t-value of (8.54), and the path coefficient of the reproductive teaching style with academic identity is (0.470) with a t-value of (6.48), all of which are positive and significant.

In the examination of the path coefficient between the memory teaching style and basic psychological needs of students, the path coefficient between the memory teaching style and the need for competence is (0.440) with a t-value of (9.79), the path coefficient between the memory teaching style and the need for relatedness is (0.370) with a t-value of (7.28), and the path coefficient between the memory teaching style and the need for autonomy is (0.450) with a t-value of (9.49), all of which are positive and significant. Moreover, the path coefficient of the practical teaching style with the need for competence is (0.550) with a t-value of (12.13), the path coefficient of the practical teaching style with the need for relatedness is (0.410) with a t-value of (8.32), and the path coefficient of the practical teaching style with the need for autonomy is (0.330) with a t-value of (7.68), all of which are positive and significant. Furthermore, in the examination of the path coefficient between the analytic teaching style and basic psychological needs of students, the path coefficient between the analytic teaching style and the need for competence is (0.470) with a t-value of (9.82), the path coefficient between the analytic teaching style and the need for relatedness is (0.380) with a t-value of (7.54), and the path coefficient between the analytic teaching style and the need for autonomy is (0.250) with a t-value of (6.26), all of which are positive and significant. According to Table 3, the path coefficient of the reproductive teaching style with the need for competence is (0.480) with a t-value of (10.10), the path coefficient of the reproductive teaching style with the need for relatedness is (0.460) with a t-value of (9.57), and the path coefficient of the reproductive teaching style with the need for autonomy is (0.480) with a t-value of (8.18), all of which are positive and significant.

Lastly, as per the results presented in Table 3, the path coefficient between the need for competence and academic identity is (0.310) with a t-value of (7.87), the path coefficient between the need for relatedness and academic identity is (0.240) with a t-value of (5.50), and the path coefficient between the need for autonomy and academic identity is (0.560) with a t-value of (14.36), all of which are positive and significant.

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Table 4. Indirect effect in the proposed model

Predictor	Mediator	Criterion	Value	p	Value	p	Result
Memory style	Competence	Academic identity	0.13	0.001	0.57	0.001	Confirmed
	Relatedness		0.08	0.001	0.45	0.001	Confirmed
	Autonomy		0.25	0.001	0.70	0.001	Confirmed
Practical style	Competence	Academic identity	0.17	0.001	0.72	0.001	Confirmed
	Relatedness		0.09	0.001	0.50	0.001	Confirmed
	Autonomy		0.18	0.001	0.51	0.001	Confirmed
Analytical	Competence	Academic identity	0.14	0.001	0.61	0.001	Confirmed
	Relatedness		0.09	0.001	0.47	0.001	Confirmed
	Autonomy		0.14	0.001	0.39	0.001	Confirmed
Reproductive style	Competence	Academic identity	0.15	0.001	0.63	0.001	Confirmed
	Relatedness		0.11	0.001	0.57	0.001	Confirmed
	Autonomy		0.14	0.001	0.75	0.001	Confirmed

According to Table 4, the indirect effect of the memory teaching style on academic identity through competence is (0.13), the indirect effect of the memory teaching style on academic identity through relatedness is (0.08), and the indirect effect of the memory teaching style on academic identity through autonomy is (0.25). Similarly, the indirect effect of the practical teaching style on academic identity through competence is (0.17), the indirect effect of the practical teaching style on academic identity through relatedness is (0.09), and practical teaching style on academic identity through autonomy is (0.18), the indirect effect of the analytic teaching style on academic identity through competence is (0.14), the indirect effect of the analytic teaching style on academic identity through relatedness is (0.09) and the indirect effect of the analytic teaching style on academic identity through autonomy is (0.14). Furthermore, the indirect effect of the reproductive teaching style on academic identity through competence is (0.15), the indirect effect of the reproductive teaching style on academic identity through relatedness is (0.11), and the indirect effect of the reproductive teaching style on academic identity through competence is (0.26). According to the t-values obtained for each of these coefficients, all the estimated coefficients are significant. Therefore, all indirect effects in the model are statistically significant.

Discussion

Gaining a sense of identity, which involves the continuous experience of oneself as a coherent and integrated entity over time and actions, leading to the development of a specific and distinct self-definition, is recognized as a central task during the youth phase (Lounsbury et al., 2005). To embrace the responsibility of learning, individuals must be intrinsically motivated, avoiding coercion from instructors to fulfill tasks. In essence, instructors should minimize the extent of traditional instruction

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and knowledge transfer, instead fostering learning opportunities that create favorable circumstances. Undoubtedly, enlightening both students and educators about these strategies and their implications for the teaching and learning process, while enhancing their awareness in this context, will result in a conscious selection of approaches by both parties. Embracing diverse teaching styles proves more advantageous than adhering to a singular style, as it offers a range of effective methods catering to the distinct learning styles of various students. Therefore, in an ideal scenario, instructors should possess proficiency in multiple teaching styles.

Given the presence of varied teaching methodologies, students will also showcase a heightened ability to adapt and remain motivated. Each student or group may require a teaching approach aligned with their individual needs, ultimately addressing their fundamental psychological requirements and academic identity. Consequently, one could argue that elucidating teaching styles founded upon successful intelligence (namely memory, practical, analytic, and reproductive) not only meets essential psychological needs but also elevates students' academic identity (Henkel, 2005; Saw & Han, 2021).

Overall, the outcomes underscore that teaching styles rooted in successful intelligence exert a direct and significant influence on students' academic identity. Our findings are consistent with previous research to a certain extent (Eskandari et al., 2022; Flanigan et al., 2017; Ghanbaritalab & Tahmasebi Koyani, 2020; Nazari & Fallahchai, 2021; Sepahvand et al., 2022). Additionally, the impact of these styles on students' basic psychological needs is direct and noteworthy, as these needs, in turn, have a direct and meaningful impact on a successful academic identity. Furthermore, the influence of teaching styles grounded in successful intelligence on students' academic identity is indirectly significant, mediated by their basic psychological needs.

The findings of this research are subject to the constraints associated with using questionnaires. The reliance on questionnaires for data collection may introduce limitations such as response bias or inaccuracies due to participants' interpretation of the questions. The results are based on a specific sample (Farhangian University professors and students), which might not be fully representative of the entire population, potentially limiting the generalizability of the findings. Finally, the research's cross-sectional nature might restrict the ability to establish causal relationships, as it does not account for changes over time or potential confounding variables.

In light of the significant impact observed in this study regarding teaching styles founded on successful intelligence and their influence on academic identity, mediated through basic psychological needs among students at Farhangian University, several suggestions for practical implementation and future research emerge.

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To enhance the alignment between teaching methods and academic identity development, it is recommended to establish educational programs such as in-service workshops for educators, focused on integrating teaching styles rooted in successful intelligence. This initiative can foster a dynamic learning environment that resonates with students' individual needs and aspirations.

Educators at Farhangian University are encouraged to foster an environment of support and connection with students, thereby promoting the growth of academic identity. Establishing meaningful relationships between instructors and students can contribute to a more holistic and fulfilling educational experience. Moreover, instructors should leverage teaching styles rooted in successful intelligence, encompassing memory, practical, analytic, and reproductive approaches, to ignite curiosity and innate motivation among students. This approach could lead to more engaging learning experiences and positively impact students' academic identity. A well-designed classroom environment that encourages interaction and collaboration can significantly enhance the learning process. Creating spaces that facilitate student-student and student-instructor interaction, while accommodating diverse learning styles, can further enhance academic achievements.

To address the limitations of the present study, conducting similar research on diverse samples across various universities and student groups can yield more comprehensive insights into the relationship between teaching styles and academic identity. Also, exploring the impact of teaching styles based on successful intelligence on students' enthusiasm for learning and academic aspirations can shed light on the potential mechanisms behind the observed effects.

Investigating the mediating role of basic psychological needs in the relationship between students' intrinsic motivation and self-efficacy can provide a deeper understanding of the underlying processes driving academic identity development. Examining the interplay between academic identity and academic procrastination, while considering the role of basic psychological needs, can uncover new strategies for reducing procrastination tendencies and enhancing academic outcomes. In the end, projecting academic performance based on students' academic identity and instructors' use of teaching styles rooted in successful intelligence could offer valuable insights into the potential long-term effects of tailored teaching approaches.

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