

*A Developing Second-order Measurement Model of Thai Adolescent's Desirable
Characteristic*

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Abstract

Over the past decades in Thailand, some educators fixed the students' desirable characteristics in order to becoming the primary educational indicators for teachers' measurement. However, those characters did not cover all domains in developmental psychology and had no systematic and scientific research conducted to develop such a measured instrument. The present study adopted a comprehensive and rigorous procedure to develop a multifaceted scale for Thai adolescent's desirable characteristic through an empirical investigation. The definition and measurement of adolescent's desirable characteristic (ACD) were important for comprehensive understanding of Thai adolescences. The conceptualization of ACD integrated different streams of literature. Furthermore, ACD simultaneously considered first-order and second-order measurement models as well as the structural model comprising 5 primary domains: physical, cognitive, emotional, social and moral, and emphasized on developing expanded conceptualizations of these characters by modeling them as second-order factors and expressing their defining constituent domains of content as first-order factors. The fit indices showed that the model fitted the data well. The major findings were (a) ACD was a multidimensional constructs and scale indicating good psychometric properties for reliability, a content, convergent and predictive validity, and (b) factor consisting of 5 domains, each of which consisted of 4,6,4,7, and 8 indicators. The empirical findings provided a more succinct picture of ACD, and the well-validated scale could be used as a basis for further research and theoretical groundwork in the field of adolescent's desirable characteristic.

Keywords: desirable characteristics, Thai adolescences, second-order measurement model

1. Introduction

A characteristics is similar to the words “attribute” or “trait” and desirable is close to the term “worth having”. So, the term “desirable characteristics” refers to the specific traits of an individual that are defined as good or ethical human behaviors including beliefs, values, and acts.

Thai society has been affected from foreign cultures over the past decades, which influences toward development of Thai youth personality. In order to reform the country, Thai government realizes that she has to start with developing people as the first goal. The direct way to reconstruct characteristics is through education. Therefore, Ministry of Education, Thailand (2002) has proposed that education management needs to emphasize both knowledge and virtue for developing Thai student as a complete person, fulfilled with good manners, intelligence, happiness and Thai value. Moreover, some educators in Thailand have attempted to fix the 8 good characters: patriotism, honesty, orderliness, seeking knowledge, sufficiency living, working hard, love in Thainess and public mind, in Standard-based curriculum (2008) as the primary educational indicators for measurement (Ministry of Education, 2010). According to the theory of developmental psychology (Hurlock, 1955; Santrock, 2007; Boonprakob, 2002; Rithakananone, 2007), those characteristics do not cover all domains in developmental psychology: physical, emotional, social, and intelligence. In order to improve Thai students in accordance with desirable characteristics, the researcher recognizes the importance of a good measurement. From many research about character measurement in Thailand, the researcher has found that most of measurements are quite similar in measuring morality without the systematic development of the full multi-dimensional measurement model as stated in developmental psychology.

Therefore, the purpose of this study was to develop a multifaceted, 5-dimensional scale for Thai adolescent students’ desirable characteristics based on developmental psychology as an empirical investigation. These students were both male and female from extra large secondary schools in Bangkok, Thailand. Hence, understanding Thai adolescent students’ desirable characteristics structure could help the teachers, their parents and the psychologists promote personality development and character formation of Thai secondary school’s students.

2. Literature review

In the field of developmental psychology and education, desirable characteristics are important indicators of how individuals have good manners or believe. Sirivunnabood (2002) classified the Thai behaviors supporting the country development in 5 fields: social behaviors, political behaviors, personal behaviors, environmental behaviors and economic behaviors. Chareonwongsak (2003) framed the future image about desirable characteristics of Thai people in 5 domains: physical, mind, knowledge, skill and existence. The Office of Basic Education Commission (2004) studied the qualities of desirable Thai children from 2,150 people and analyzed contents as Thai traits framework, the results of which were concluded in 9 indicators; personality and behavior, intelligence and skill, moral and virtue, responsibility, occupation, love in Thainess, health and sanitation, technology and civic duty.

Among the various researches and frameworks in Thailand, the definition and measurement of adolescent's desirable characteristics (ACD) were important for comprehensive understanding of Thai adolescences. The conceptualization of ACD integrated from different streams of literature. The researcher summarizes the Thai adolescent's desirable characteristics in 5 domains; physical domain, intelligence and skill domain, emotional domain, social domain and moral domain, based on student's desirable characteristics from the National Education Act (2002), Fundamental Education Curriculum (2005) and Standard-Based Curriculum (2010) accompanied with research of Chareonwongsak, K. (2003), Pienchob, S. (1982), Nickanong, C. (2001) and Department Of Mental Health (2000) to formulate the ACD model, presented as a hypothesized second-order measurement model of adolescence's 5-dimensional desirable characteristics in Fig.1.

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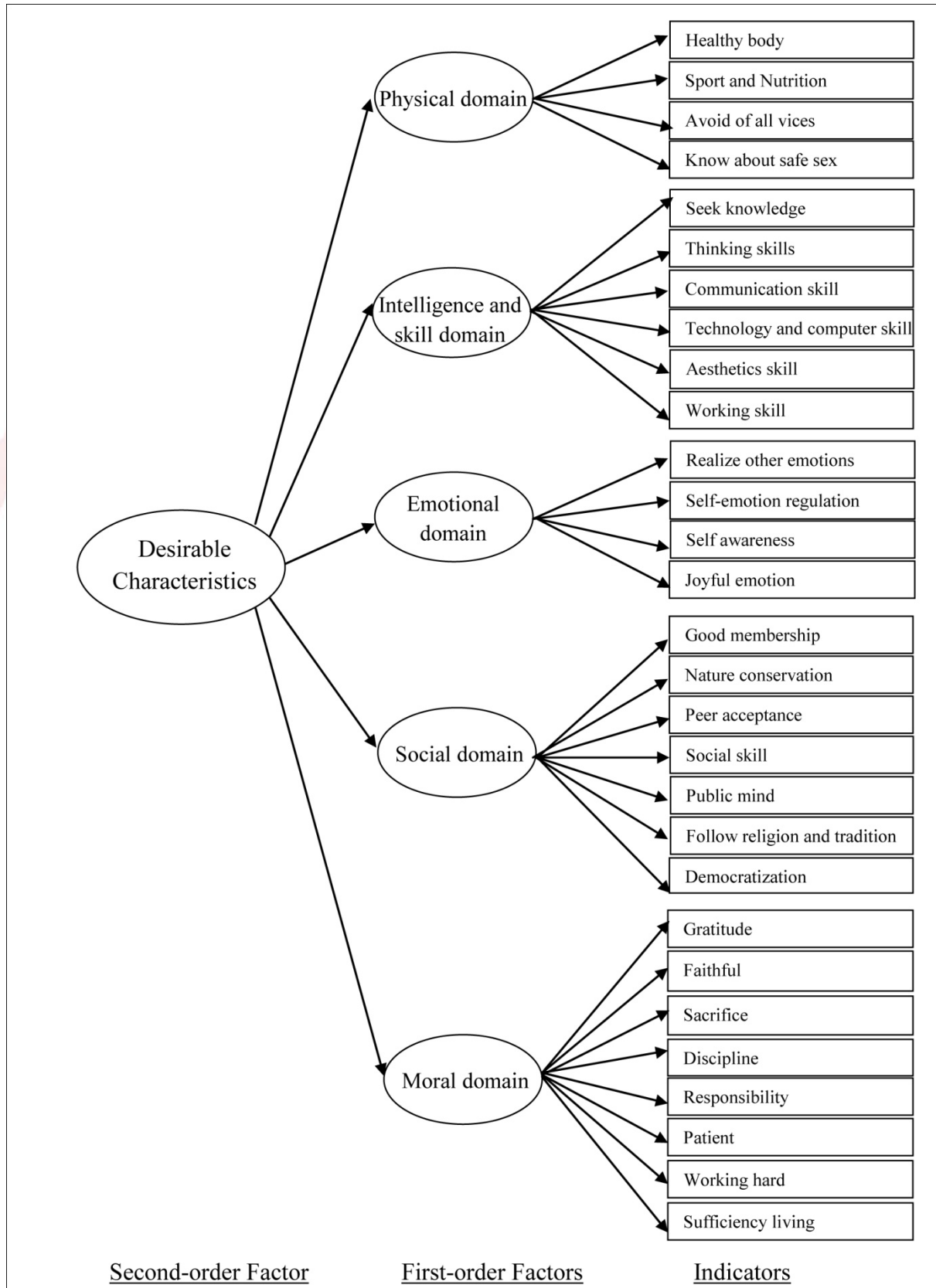


Fig.1 Hypothesized second-order measurement model of Thai Adolescence's Desirable Characteristics

3. Method

3.1 Participants

There was 194 students participated in this study. These students studied in Grade 8 and 11 from 2 extra large secondary schools in Bangkok; Surasakmontree School and Wat Nuannoradit School. We randomly selected the schools by using Lottery method. The 194 students consisted of 90 male students and 104 female students, aged from 155 to 213 months with a mean of 183.98 (SD = 18.56).

3.2 Survey and procedure

The design of 5-dimensional ADC scale in Thai version for measuring Thai adolescence's desirable characteristics (ADC) was a self-report questionnaire with five-point Likert-type scale ranging from 'mostly have' to 'least/never have' consisted of 5 factors and 29 indicators, based on the evidences from literature review. The ADC scale consisted of 5 subscales that are aimed at assessing physical, cognitive, emotional, social and moral domains following the theory of developmental psychology and Thai social context. The scale development process comprised of the following stages: a) defining the theoretical and operational definition, b) drafting of 200 items, 5-7 items for each of the 29 indicators, c) checking for content validity by 3 experts possessing professorship in developmental psychology, d) pre-testing the scale with 122 students from 2 Bangkok secondary schools, and estimating for Cronbach's alpha reliability, the result of which were very good with .79, .92, .90, .95, and .94 for the those 5 indicators respectively, e) screening of the three best items, as suggested by Jöreskog and Sörbom (2001), for each of the 29 indicators to develop the short form of the scale, using the corrected item-total correlation (CITC). As a result the final developed ADC scale consisted of 5 factors, 29 indicators and 100 items.

The next step was to validate the measurement model of the developed ADC scale. Firstly, the short form of the ADC scale was examined for face and content validity by 4 professors in developmental psychology, 1 professor in educational psychology and 1 secondary school teacher in educational conduction. Secondly, the ADC scale was used to collect the data by means of a survey. We set the sample size based on the criteria suggested by Hair et al. (1998) of at least 5 units for each parameter in the measurement model. Since our model had 63 parameters, therefore the sample size should be 315. Unfortunately, we could get only 194 students (82 in Grade 8 and 112 in Grade 11), from two secondary schools in Bangkok as our research sample.

3.3 Data analysis

Data were analyzed in three following stages: Firstly, we estimate for Cronbach's alpha reliability of the 5 factors underlying the ADC scale. Secondly, we analyzed the data using the second order factor analysis using LISREL to check for construct validity. Prior to the analysis, we used normality test and Bartlett's test for sphericity to check for the required statistical assumptions.

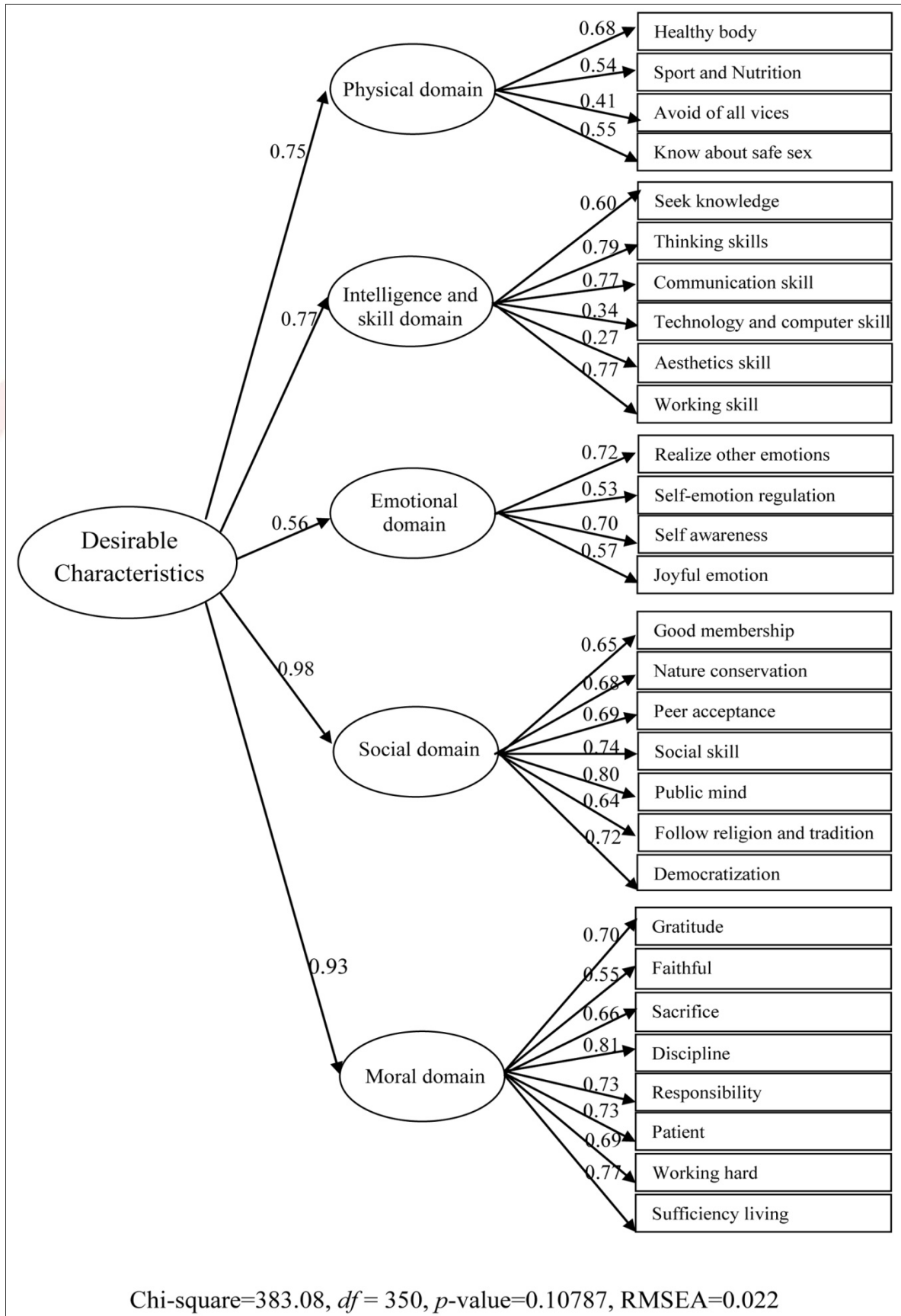


Fig.2 Final second-order measurement model of Thai adolescent's desirable characteristics

4. Results

4.1 Reliability analysis

The values of Cronbach's alpha for each of the five factors of the ADC short form scale were .73, .87, .84, .93, and .92, respectively, indicating quite good internal consistency of the developed ADC scale.

4.2 Confirmatory factor analysis

The underlying structure of the measurement model of the ADC short form was displayed in the above Fig.1. The tests of skewness and kurtosis indicated the normal distribution of all 29 indicators. The Bartlett test of sphericity (2898.740, $df = 406$, at $p = .000$) and the Kaiser-Meyer-Olkin measure of sampling adequacy ($KMO = .923$) indicated that there were sufficient relationships among all 29 indicators to conduct factor analysis. The result of the second order factor analysis using LISREL indicated that the measurement model of the ADC short form scale was satisfactory valid or fit to the empirical data with chi-square value = 383.08, $df = 350$, $p < 0.05$, RMSEA = 0.022, RMR = 0.21, CFI = 1.00, GFI = 0.88, AGFI = 0.85, as shown in Fig.2.

The confirmatory factor analysis results revealed the highest significant and the lowest loadings of the indicators for the first-order factors as follows: healthy domain (.64) and avoid of all vices (.41) for physical domain, thinking skills (.79) and technology and computer skills (.34) for intelligence and skills domain, realize other emotions (.72) and self emotion regulation (.53) for emotional domain, public mind (.80) and follow religion and tradition (.64) for the social domain, and discipline (.81) and faithful (.55) for moral domain.

5. Discussion and conclusion

We present a new questionnaire to assess desirable characteristics in Thai adolescents; the ADC scale. The main purpose of this study was to develop a multifaceted scale of desirable characteristics in adolescent students. The ADC was designed to cover the domains in the theory of developmental psychology. The measurement model supports our idea that the ADC could assess more specific domains. In addition to its favorable psychometric properties, the ADC is short in length, making it easy and cheap to administer.

The importance of desirable characteristics has been documented in the literature of educational and developmental psychology. And it is used as an index of an individual's behavior and development. However, very few studies in the educational and psychological literature have examined the basic structure of the desirable characteristics. If the teachers understand the students' characteristics, the teachers can then develop effective program for students to improve good personalities and increase positive thoughts.

Data were collected from 194 students enrolled in Grade 8 and 11 in Bangkok secondary schools, Thailand. CFA were conducted to confirm students' desirable

characteristics structure. The results of CFA confirmed the presence of a second-order measurement model of desirable characteristics. The fit indices provided empirical evidence of a well-fitted model.

The structure model contains five primary factors/domains and one second-order factor with relations that correspond to ADC constructs and scale demonstrates good psychometric properties for reliability, and content validity and factors consisting of 5 domains, the indicators of which were 4,6,4,7, and 8 of observed variables measuring from 3-5 items respectively. Moreover, the secondary-order factorial structure helps provide a more parsimonious framework to explain the ADC.

This study shows that secondary school students' desirable characteristics centered on social and moral domains ($\gamma = .98$ and $.93$), which indicates that students value the behaviors that affected other people are good characters. They are less concerned about self (γ for physical, intelligence and skill was $.75$ and $.77$). The emotional domain was the lowest contributor among students' desirable characteristics ($\gamma = .56$). This could be due to the influence of culture and tradition in Thai society, which encourages sympathy and considerateness among youth.

Moreover, the influence of the Thai culture is shown in how the students' characters affect the other's perceptions upon themselves. They also care about self-concept but it was not as important as social and moral domains. Like several researches on desirable characteristics of Thai students (Pienchob, 1982; Nickanong, 2001; Limchumroon, 2008), the mostly good characters in youth and teachers' opinions are moral attributes and behaviors that make people happy or are gained acceptance from others.

It is also important for future researchers to compare students' desirable characteristics with those of adolescents in other provinces, regions or different ages (age group). A study on the similarities and differences in desirable characteristics among adolescents with different regions will enable teachers, educators, parents and developmental psychologists to understand which characters are unique among adolescence students. This can help educators and who concerned with developing practical programs or activities to promote and retain good characters of students. In addition, understanding how much desirable characteristics in adolescence students can help the teachers improve students with completed developmental domains.

The strength of this study was that it utilized (was the utilization of) the second-order CFA to validate structure of desirable characteristics and ADC scale which demonstrated good psychometric properties for reliability, and content validity. However, the main limitation of this study is in the generalizability of desirable characteristics. Because the data were collected in Thailand, the factor structure can only represent Thai adolescents' desirable characteristics perceptions. It is suggested that cross-cultural comparison studies be conducted to examine the possibility of generalizing the second-order factor structure onto different subjects with different cultural backgrounds.

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