The Development and Validation of Thai Adolescents' Desirable Characteristics Measurement Scale.

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Abstract: The measurement of adolescents' desirable characteristics (ACD) is a set of self-report questionnaires measures 29 characters (5 domains). Results summarized that (a) ACD is a multidimensional scale which demonstrates good psychometric properties for reliability, and content, convergent and predictive validity and (b) factors consist of 5 domains, the indicators of which were 4,6,4,7, and 8 of observed variables measuring from 3-5 items respectively. The empirical findings suggest in this study provide 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 adolescents' desirable characteristics.

Keywords: desirable characteristic, Thai adolescents, second-order measurement model

Introduction

A characteristic is similar to the words "attribute" or "trait" and desirable and 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, , because the good characters should be the primary objective that many children could reach or succeed (Kagan, 1981). Over the past decades, Thai society has been affected by foreign cultures which influences toward the development of Thai youth personality. In order to reform the country, the Thai government realized that it had to start with developing people as the first goal. The direct way to reconstruct characteristics was through education. Therefore, the Ministry of Education, Thailand (2002) had proposed that education management needed to emphasize both knowledge and virtue for developing Thai children and youth as a complete person, complete with good manners, intelligence, happiness and Thai values, such as the primary educational indicators for improving students in The National Education Act 1999 (B.E.2542) and its amendment in the National Education Act Amendment (Issue 2) 2002 (B.E.2545) (Ministry of Education, 1999; 2002). Moreover, some educators and researchers in Thailand had also attempted to fix the 8 good characters of; patriotism, honesty, orderliness, seeking knowledge, sufficiency living, working hard, love in Thainess and a public mind, in a Standard-based curriculum (2008) (Ministry of Education, 2010) as the specific objective. Then, Chareonwongsak (2003) framed the future image about desirable characteristics of Thai people in five domains: physical, mind, knowledge, skill and existence. Furthermore, the Bureau of Basic Education Committee (2004 as cited in Ministry of Education, 2005) studied the qualities of desirable Thai children from a sample of 2,150 people and analyzed the contents as a Thai traits framework, the results of which were
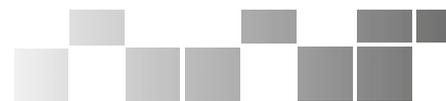
concluded in 9 indicators; personality and behavior, intelligence and skill, moral and virtue, responsibility, occupation, love in Thainess, health and sanitation, technology and civic duty.

According to the above statements, they do not cover all domains in the development of adolescents. The development of adolescents consists of physical, cognitive, emotional, social, and moral domains (Hurlock, 1955; Santrock, 2007; Boonprakop, 2002; Rithakananond, 2007; Kaewkungwal, 2009). Conforming to the research of Catalano, Berglund, Ryan, Lonczak & Hawkins (2004) that adolescent competence subsumes different areas of optimal functioning, including social, emotional, cognitive, behavioral and moral abilities, in the same way as Sirivunnabood, Uwanno, Rithakananond, Kotrajaras, Maneesri, & Suttiwan (2002) classified the Thai behaviors supporting the country developing are in the five fields of social behaviors, political behaviors, personal behaviors, environmental behaviors and economic behaviors.

In order to improve Thai adolescents in accordance with what are considered to be the desirable characteristics, we recognize that the desirable characteristics should be the indicators of how individuals have good manners or believe in the field of Thai context and culture, because the right or desired characteristics are defined by culture and gender. Among the researches and studies about adolescents' desirable characteristics in Thailand showed there are more than 150 good characters for adolescents. The characteristics of desirable male youth were to have well physical health, leadership, creative thinking, be patient, be courage, be able to work with others, be generous of helping others, pleasant, emotional stability, be conscious, love and cherish in culture, support the cultural activities, be brave, and believe in good. Oppositely, desirable female characters were to have good manner, smiling, be polite, be optimism, be reasonable, be honest, be generous, punctuality, place their right to social and personal situations, keep feeling well, be tolerant, appreciate and sensitive to the beauty of nature and art, be gratitude, and respect for elders (Pienchob, 1982; Adnupan, 1987). Moreover, there were not just the sexual charisma, but also the unique features. The study of Nichanont (2001) and the study of Limchumroon (2008) stated some common good characteristics for both male and female adolescents; e.g. discipline, honesty, being economical, kindness, attention to study, gratefulness, patience, Thai proudness, environmental awareness, problem solving ability, being reasonable, justice, being able to work with others, courteousness, sense of humor, following through the parental teaching, and respect others. Furthermore, Ministry of Education (2010) specified the 8 desirable characteristics in Standard-Based Curriculum 2008 (B.E.2551) as the aims to develop the learners.

Besides the literature on desirable characteristics, Chareonwongsak (2003) proposed more than 25 Thai desirable characteristics in 5 dimensions; dimension of physical, dimension of mental, dimension of knowledge, dimension of skill, and dimension of life characteristics; as the developing framework. The study of Vannaluk in 2005 grouped 17 adolescents' desirable characteristics in 4 main features; academic character, personal character, social character, and moral character.

Moreover, most of research in Thailand was quite similar in measuring moral competence. From reviewing the literature, we concluded all traits in three groups; male traits, female traits and combined traits. We are interested in measuring the combined traits, because they are considered to be universal for both genders. Besides, we found there were no full multidimensional scales underlying the theoretical framework for developmental
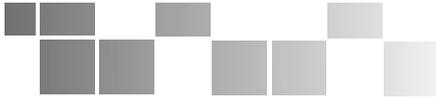
and measuring this data. Therefore, the purpose of this study was to develop a multifaceted, 5-dimensional scale for Thai adolescent students' desirable characteristics based on developmental psychology as an empirical investigation.

1. Development of Thai adolescents' desirable characteristics measurement scale

For the past several years, characters development is the issue which has received attention from educators, parents, and the general public. Raising desirable characteristics is a goal for all teachers and those who are interested. In this study, we focus on what is the appropriate desirable characteristics that contribute to Thai adolescents' development.

In the first phase, we began with gathering the indicators of desirable characteristics from the relative research and theories of personality in three trait-groups: male, female, and combined. We directly linked the items of good characters to issues associated with the Ministry of Education's framework and development of adolescents to provide a similar content across items. Then, we synthesized these indicators in five domains; physical, cognitive, emotional, social, and moral, and assorted the components which were suitable with the conceptualization of desirable characteristics for adolescents in Thailand. Due to different streams of the good characters, we integrated from the literature and summarized 29 components of Thai adolescents' desirable characteristics. There were (1) Physical health, (2) Sport and nutrition, (3) avoidance of vices, (4) Safe sex, (5) Learning behavior, (6) Thinking skills, (7) Communication skills, (8) Computer and technology skills, (9) Aesthetic skills, (10) Working skills, (11) Self-awareness, (12) Self-regulation (13) Awareness of others, (14) Be joyful person, (15) Good membership of family and community, (16) Environment preservation, (17) Peer acceptance, (18) Social skills, (19) Public mind, (20) Religion persistence, (21) Democracy adherence, (22) Gratitude, (23) Honesty, (24) Discipline, (25) Sacrifice, (26) Responsibility, (27) Patience, (28) Industrious, and (29) Sufficiency. The definitions of 29 Thai adolescents' desirable characteristics is shown in Table 1. We argue that all these characteristics might be universal, depending on the cultural and educational background of Thai adolescents. We also formulated the Thai adolescents' desirable characteristics as a hypothesized second-order measurement model (See Fig.1). All domains in developmental psychology are specific factors which observed variables are included in the set, while the specific factor is not separately identified as a model parameter and cannot be estimated in the standard common factor model. So, the appropriate condition is the second-order factor analysis because the specific variance is estimated as the unique variance in the second-order factor model which can be used to separate the specific and error portions from the unique variance (Rindskopf & Rose, 1988).
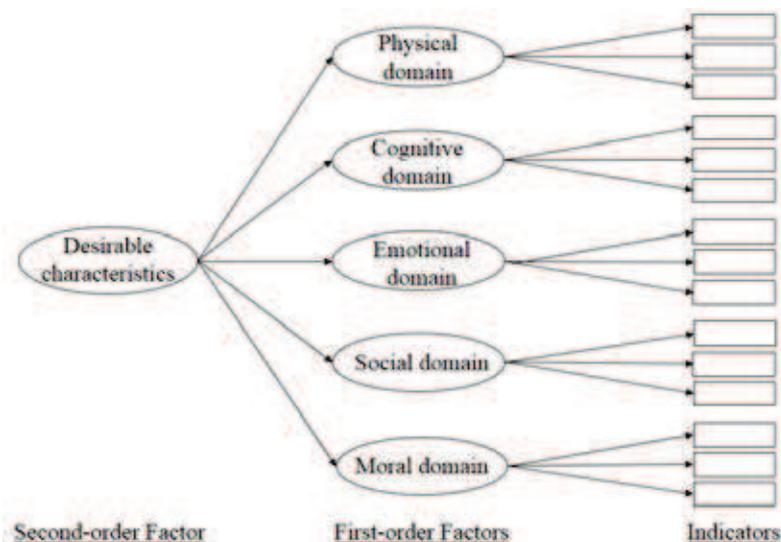
Figure.1. Hypothesized second-order model of Thai Adolescence's Desirable characteristics

From reviewing the research, there were many ways to assess those characteristics. Most instruments had questions and could assess only one aspect of developmental psychological domain or trait at a time. If we want to investigate all five domains, the students must spend almost 1-2 hours to complete each domain. Thus, there was a need for a systematic assessment of desirable characteristics in multidimensional terms. To convey the multidimensionality of the characteristics, we tried to design a scale to assess full domains, because we believe that most researchers are interested in assessing the full range of characteristics more than a single characteristic. Therefore, adolescents' desirable characteristics could only be captured by a set of components that vary across people. The Thai adolescents' desirable characteristics were the comprehensive assessments of the 29 desirable characteristics in a single session with a self-report survey.

In the second phase, we experimented with different item formats and phrasings before arriving at the current inventory, which contained 200 items (4-7 items for each of the 29 desirable characteristics, placed in a nonsystematic order), 10 items of which were reverse-scored. Respondents used a 5-point scale to indicate whether the item was "mostly have" (=5) or "least/never have" (=1) while reverse items scored "mostly have" (=1) or "least/never have" (=5). Subscale scores were formed by averaging the relevant items. Paper-and-pencil versions of the Thai adolescents' desirable characteristics scale had been completed by 122 students from two Bangkok secondary schools. We evaluated the items by a test of reliability and content validity undertaken by 3 experts possessing professorships in developmental psychology as the first pilot study.

In the third phase, we revised the Thai adolescents' desirable characteristics (ACD) scale by the information we received from the first pilot; 1) the estimating for Cronbach's alpha reliability, the result of which was good with .79, .92, .90, .95, and .94 for the those five indicators respectively, 2) the content validity, and 3) the suggestions from the experts; to ensure that the items did not include problematic linguistically and structural concerns,

such as inappropriate ambiguity, double negatives, or double questions (DeVellis, 2003). We eventually screened off the three best items, as suggested by Jöreskog and Sörbom (2001), for each of the 29 initial components to develop the short form of the scale using the corrected item-total correlation (CITC); 3 items with the highest correlation scores for each component when compare with remaining items; and tried to identify each item as a declarative sentence.

Lastly, we directly sent the short form of the ADC scale for face and content validity by four professors in developmental psychology, one professor in educational psychology and one secondary school teacher in educational conduct as the second pilot test. We asked the experts to review and examine that the three items we selected could cover the classification of each desirable characteristics. After that, we improved the items in accordance with the experts' suggestions (e.g. separating item and revising the words) for the last time. We were sure that all items could reflect each of 29 components, while items were phrased in simple language with clarity of understanding.

Although, desirable characteristics existed across the lifespan, the ways in which adolescents showed these characters obviously differed from the ways of adults. Therefore, we labeled the scale for administration purposes to survey Thai adolescents' desirable characteristics.

2. Method

2.1 Participants

There were 263 students who participated in this study. These students studied in Grade 8 and 11 from 2 large secondary schools in Bangkok; Surasakmontree School and Wat Nuannoradit School. Grade 8 students (n=133; 50.57%) consisted of 65 male students and 67 female students, aged from 13 to 15 years with a mean of 13.87 (SD = 0.51), while Grade 11 students (n=130; 49.43%) consisted of 57 male students and 73 female students, aged from 16 to 17 years with a mean of 16.48 (SD = 0.50).

We set the sample sizes based on the criteria suggested by Hair, Black, Babin, & Aanderson (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 263 students (133 from Grade 8 and 130 from Grade 11, as our research sample.

2.2 Measures

The Thai adolescents' desirable characteristics (ACD) scale was a set of self-reporting questionnaires using a five-point Likert type response format ranging from 5 'mostly have' to 1 'least/never have', whether the adolescents performed in various situations or how often they acted in the past. As a result, this final developed a 5-dimensional ACD scale was written in the Thai version consisting of 5 factors, 29 indicators and 100 items based on the evidence from the literature review. 4 of the 100 items were reverse scored; ranging from 1 'mostly have' to 5 'least/never have'; which asked respondents about the frequency of using alcohol, tabacco, drug, and gambling in the past. The ADC scale consisted of 5 subscales that aimed at assessing physical, cognitive, emotional, social and moral domains following the theory of developmental psychology in the Thai social context.

2.3 Procedures

In this study, all data were collected from the respondents directly. We recruited participants from randomly selected large secondary schools in Bangkok by using the

Lottery method. The lottery method is one of simple random sampling which each member of the population at hand is assigned a unique number by researcher. The ACD scale was administered in a classroom format by the researchers, who informed the objective issue and gave instructions to students and answered any questions. Each participant was given a set of the ACD scale, as well as a form for demographic details from that gathered basic information, such as age, gender, level of education, and GPAX. It took 60 minutes for participants to complete. Participants would receive a set of stationary on submitting a completed ACD scale.

2.4 *Data analysis*

Data were analyzed in the three following stages: Firstly, we assorted the complete data, and the incomplete data with at least 15 percent of the whole missed were rejected. Second, we estimated for Cronbach's alpha reliability of the 5 factors underlying the ADC scale. Finally, we analyzed the data using the confirmatory second-order factor analysis to assess the validity of the set of sub-dimensions and check the magnitude of the second-order construct level error term. Prior to the analysis, we used a normality test and Bartlett's test for sphericity to check for the required statistical assumptions.

Results

3.1 Preliminary analysis

Descriptive statistics of all variables are shown in Table 1, and while most variables were skewed they still had acceptable variability. The majority of the bivariate correlation between desirable characteristics variables were significantly positive with each other. However, some pairs were weak and negligible ($r < .30$), because of the condition of statistically estimation. From the results, all variables were non-multicollinearity (correlation metrics$< .08$).

Of interest, there were 2 indicators among Thai adolescents in the physical domain that were sport and nutrition, and avoiding vices. Because the means of all remaining variables were above the midpoint (3 = moderated have), but those 2 variables were less than 3 (2.35 for sport and nutrition, and 2.16 for avoiding vices). If we took these data at face value, they mean that the adolescents had exercised a few times a month and often eaten non-healthy food and nutrition. Some adolescents also used alcohol, tobacco, and drugs, as well as gambling.

3.2 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.

Table 1. *Definitions and descriptive statistics of Thai adolescents' desirable characteristics variables.*

Var.	Definitions	*M*	*SD*	*α*
Physical development				
1 Physical health	Having good health and their organs are functioning well	4.11	0.47	.87

	Var.	Definitions	*M*	*SD*	*α*
2	Sport and nutrition	Caring for themselves with exercise, sport, and healthy diet and nutrition	2.35	0.50	.87
3	Vices avoiding	Not using alcohol, tabacco, and drug, not gambling, and participating in vices resistant campaigns	2.16	0.87	.88
4	Safe sex	Knowing the way to save themselves from unsafe sex and unwanted pregnancy	4.04	0.91	.88
Cognitive development					
5	Learning behavior	Being enthusiastic in reading and learning activities, and applying what they learn in their daily lives	3.73	0.52	.86
6	Thinking skills	Being able to think with some purpose, such as analyzing, synthesizing, comparing, and creating	3.75	0.68	.85
7	Communication skills	Being able to capture the essence of what was heard in its entirely, to use the words appropriately for age and circumstance, to construe the reading information, and to write clearly and accurately in accordance with the language	3.93	0.55	.85
8	Computer skills	Using the necessary tools and technology, such as computer and internet, in communicating, searching information and studying	4.15	0.58	.86
9	Aesthetic skills	Being a member of art or music club or having hobby about arts and appreciation	3.32	0.87	.86
10	Working skills	Organizing tasks well and planning for successful goals	3.90	0.61	.85
Emotional development					
11	Self-regulation	Controlling what they feel and do in situations and not becoming frustrated when meeting the unexpected	3.96	0.55	.85
12	Others-awareness	Being aware of others' feelings and sympathizing with others	3.87	0.54	.85
13	Self-awareness	Being aware of themselves and recognizing their self-emotional changes	4.14	0.60	.86
14	Be joyful person	Being optimistic, having a sense of humor and finding peacefulness	4.20	0.54	.86
Social development					
15	Good membership	Respecting and obeying their parents, and cooperating in family activities	4.93	0.59	.86
16	Environment preservation	Concerned about nature and resources and using them efficiently	3.29	0.48	.86

|	Var.	Definitions	*M*	*SD*	*α*
17	Peer acceptance	Being generous and kind with their friends, being a mentor and a helper, and having good peer relationships	4.07	0.58	.85
18	Social skills	Adapting to others and being a good leader	3.90	0.55	.85
19	Public mind	Participating willingly in beneficial social activities	3.96	0.57	.85
20	Religious persistence	Being a good religion follower,? participating in religious activities, and applying the culture and tradition in their daily lives	4.02	0.58	.86
21	Democracy adherent	Accepting the equality and individual differences and using reasons and democratic principles in living	4.12	0.75	.85
Moral development					
22	Gratitude	Appreciating of how others behave toward them and helping their patrons willingly	4.34	0.38	.86
23	Faithful	Not lying and exploiting others	4.25	0.43	.86
24	Discipline	Following the law and social rules	4.01	0.44	.86
25	Sacrifice	Having regard for public benefit rather than for their private benefit.	4.19	0.45	.86
26	Responsibility	Attempting to finish what has been entrusted to them.	4.24	0.42	.86
27	Patient	Emphasizing and persisting with obstacles, solving the undesirable events with conscience	3.76	0.66	.87
28	Industrious	Working with intention and effort and developing themselves	4.08	0.51	.86
29	Sufficiency	Having life planning and realizing changes	4.07	0.55	.86

3.3 Confirmatory factor analysis

The underlying structure of the measurement model of the ADC short form is displayed in the Figure1. Before CFA analysis, we tested the skewness and kurtosis of variables and found that the results indicated a normal distribution of all 29 indicators. In addition, 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 correlation metrics were significantly different from identity matrix. The result of the second-order confirmatory factor analysis 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: physical health (.64) and avoiding vices (.41) for physical domain, thinking skills (.79) and computer skills (.34) for cognitive domain, others awareness (.72) and self-regulation (.53) for emotional domain,

public mind (.80) and Religious persistence (.64) for the social domain, and discipline (.81) and faithful (.55) for the moral domain.

Chi-square = 383.08, *df* =350, *p*-value = 0.10787, RMSEA = 0.022
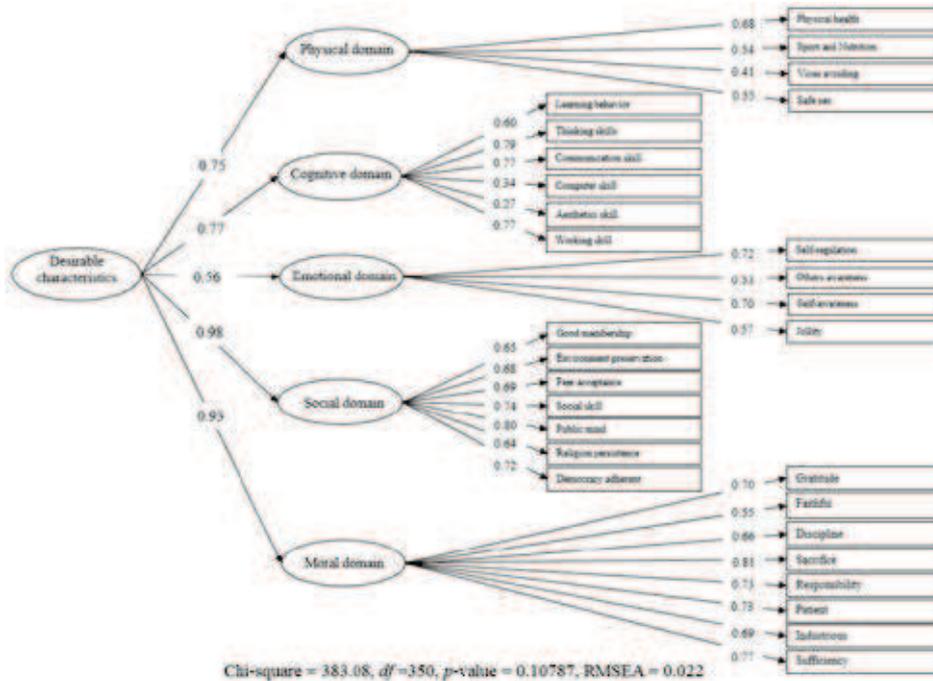
Figure2. Final second-order measurement model of Thai adolescent's desirable characteristics

Discussion and conclusion

We present a new questionnaire to assess desirable characteristics in Thai adolescents; using 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 of adolescents. 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 263 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 model of good fit.

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 character. They are less concerned about self (gamma 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 about 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 gain 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 groups). 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 those who concerned with developing practical programs or activities to promote and retain the good characters of students. In addition, understanding how much desirable characteristics in adolescent students can help the teachers improve students with complete developmental domains.

The strength of this study 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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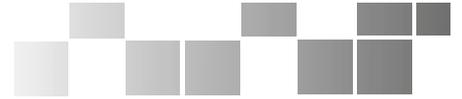
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