Aspirational-Goal Construct in Science-Related Disciplines: Content and Face Validity

Sambo Ke, Fidelis Chosa Kastuhandani
Royal University of Phnom Penh
Universitas Sanata Dharma

Abstract: The purpose of this study was to generate aspirational goal items for a future pilot testing study in the Cambodian context. The participants who were invited to fill out a questionnaire for a content-extracting process were 10 college students majoring in sciences-related disciplines. A review ofthe literature and different theoretical frameworks were conducted to develop theitem pool. The proposed items were judged by experts to determine scale content validity.A multidimensional scale comprising inspiration and ambition with 20 items was initially proposed to measure aspirational goals. Throughthe item judging process by four experts, the item pool was reduced to only 15 items prepared for pilot testing phases.

Keywords: Aspirational goal; scale development

1. Introduction

College learners are becoming mature regarding human development aspects. In this stage, students' role identification toward self, family, and society is observably different from younger ages. Thus, students' choice ofstudy discipline is considerably linked to their futureattainments and enables them to fulfill those roles set.Presently,aside from treating materialistic attainments (Ikeme, 2011) as one component of academic achievements, contributing to the society is the other students' expectation after graduation (Sowl, et al., 2022). Extending from a current success at school and aiming at obtaining better livelihood, students seek for instrumental goal endorsements which involvetentative educational continuities, career relevancies, current economic redirection, and social contributions(Nancy & Teru, 2017). Therefore, they include those factors as important factors for life success in a context of industrialized society (Katz, 1964; Quinn & Shepard, 1974; Khattab, 2015; Harrison & Waller, 2018).

An aspirational goal is one's future expectation set to inspire and motivate present activity directed to that identified goal (Quaglia & Cobb, 1996; Fraser & Garg, 2011; Reka et al., 2015; Janke & Dickhäuser, 2019). From the definition, inspiration and ambition are core contents that drive an individual tovaluean object and decide to engage in related activities. These major components are observedthrough one's perceptions and beliefs.Aspirations are considered and proposed as a psychological construct for achievement motivation in terms of educational goal orientations.

In an association with oriented values and task engagement of typical learning activity,a student's aspiration is indicated by his/her inspiration (moment interest, enjoyment, and satisfaction in current learning tasks proximally exposed to the long-term related plans)and ambition (awareness on the task importance for a distal future goal orientation)(Quaglia & Cobb, 1996). This aspiration, in turn, leads to higher intensity of engagement (Collier,1994). Aspiration involves time expressions both here and now (inspiration) and future (ambition) regarding whether short-term or long-term goals students. However, the components of aspiration cannotaffect engagement when students reflect only one dimension and time zone. In a two-way relationship, some students may engage actively in present activities without value and goal setting while others determine their goal but show less engagement. To ensure that both components are involved in an aspirational construct, behavioral traits need to be included in a construct identification (Quaglia & Cobb, 1996).

Educational aspiration goals in academic activities are set according to learners' perceived possibilities offered by the real society(Ray, 2003) and to the extent to which the related information in making choices in different academic activities is oriented sufficiently by school and family.

Different levels of aspiration, in general, were influenced by the role models of parental aspiration toward a particular value that provides children with experiences and socialization (Moody, et al., 2020). The other factors, such as individual characteristics including socio-economic background, gender, and ethnicity, are involved in correlation with aspiration (Moody, et al., 2020). Furthermore, aspiration was determined by individual differences, such as abilities and talents, and cognitions. On the other hand, environment, including school engagement and involvement in extracurricular activities, can affect and enhance individual aspirations (Gutman & Akerman, 2008).

As an antecedent, previous studies have found that aspirations are salient predictors of the educational and career attainment of college students prepared for occupation (Gutman & Akerman, 2008). Moreover, the

aspirational goal was a strong predictor of subjective task values, engagement, and choices of different activities (Eccles et. Al, 1993).

Similar to the previous construct of aspiration proposed by Quaglia & Cobb (1996) which aspirational goal was dimensioned in two categories known as inspiration and ambition in abroad educational context—the aspirational goal of engaging in education), this proposed scale used the existing definition and dimensions to specify the object of aspiration—engagement in a discipline. This scale development is aimed at goals endorsed toward related disciplines, and it attempts to narrow aspiration construct down into science-related disciplines,targetingthe college student population in the Cambodian context and culture.

There were existing related theories forming the aspirational goal construct. Under Role Theoretical perspectives, aspirational goals were separated according to age differences(Dragastin & Elder, 1975). When children grow older, approximately from the adolescence stage, their social roles and responsibility are remarkably observed (Riley, et.Al, 1969). For instance, college students usually prepare themselves to achieve future occupations and change existing lifesituations. In Lewin's Field Theory, the aspiration construct, defined as goal-setting behaviors toward a particular object, was correlated to the possibilities of success via personal values (Lewin, 1951). Furthermore, the aspirational goal was discussed specifically in Achievement Motivation Theory developed by McClelland and Atkinson (1949). This theory, based on the ideas of Murray (1938), stated that human behaviors are influenced by oriented goals, and to understand one's behavioral intensity is to identify one's directed aspiration and related needs.

The aspirational goal construct in this study is defined as the inspiration and ambition (Quaglia & Cobb, 1996) students perceive toward returning benefits from engaging in science-related disciplines that respond to their personal needs such as continuity of studies, planned occupations (Bynner, 2001), response to the current trend of industrialized society,social contribution, andexpectation of achieving social eminence. This aspirational goal scale measures college students' desires toward their proposed immediate and future goals that drive them to value and engage in science-related disciplines; in turn, engagements in science-related activities are expected to benefit their upcoming achievements, such as possibilities of pursuing further related educations, future career consistency, job market relevance, and social contribution. Perceived levels of inspiration and ambition are revealed through some anticipated traits such as hope, willingness to, plan for, desire for, like, want, etc.

In its nomological network, aspirational goal construct can be discriminated from other social goal orientations, although they are similarly targeted since willingness to achieve something are forthe sake of others. For instance, the social status goal is separately defined as a sense that individuals want to achieve to mobilize their current social positions and enhance wealth (Dowson & McInerney, 2004) that is associated with materialistic than idealistic purposes. Furthermore, the construct is clearly distinguished from the social approval goal, which is defined as an individual's willingness to achieve to gain values given by peers, parents, and teachers (Dowson & McInerney, 2004). However, in aspirational goals, individuals want to achieve to gain eminence returning from their contribution to society.

The purpose of the study was to generate an item pool used for the next phases of aspirational-goal scale development. It tentatively identifiedthe contents of each item that correctly represent and measure the latent construct. Extending from the previously proposed construct that the aspirational goal focused on education in general, content domains in this aspirational-goal construct were designed to conform to the study context (science-related disciplines) and reflect a specific population (college students in Cambodia).

2. Method
Aspirational goal scale development in this study ended at the content validity phase.This content validity process ranged from defining the construct through a literature review, looking at related theories and frameworks, extracting contents from target participants, and refining items after judging by experts. The aspirational goal scale was designed for a proposed future study wherein it will function as a predictor of academic engagement in science-related disciplines.

3. Sampling design
Ten college students from different science-related disciplines in Cambodia were invited to fill out a survey questionnaire about their perception ofthe term aspirational goal toward their preference in a particular study major.The participants were from mathematics (3 participants), information technology (2 participants), chemistry (2 participants), physics (2 participants), and biology (1 participant). The purpose of the study, informed consent, and statement of confidentiality were clearly stated and attached to the questionnaire.

4. Data collection tools
There were several open-ended questions prepared for students to fill in. The contents of the question

intended to gather students' perceived inspiration and ambition and the expected benefits receive from engaging in science-related disciplines. For instance, "(1) Do you actively engage in academic activities in your academic program? If yes, why do you participate in academic activities? (2) What are the things didyou consider before deciding to choose this study major?" (See Appendix A)

A table of item pools was prepared for experts to make a judgement (Appendix B). It also attached the objectives of the scale development study, the definition of the construct, the proposed dimensions, and the definition of each dimension. In the other column, descriptive comments on each item were requested so that the scale developer would be able to refine them. A 4-rating scale was set as answer choices for experts to make judgments. It ranged from 1 = not relevant, 2 = somewhat relevant, 3= quite relevant,and 4= highly relevant. An Excel form was created to calculate the rating scores for a Content Validity Indexes(CVIs) analysis.

5. Data gathering

A three-phase-data analysis was set for this content validity. Firstly, descriptive responses collected from participants were read carefully and coded into categories and indicators. Then, the combined concepts were considered and extracted to generate the items. Secondly, the drafted items were refined and checked for their redundancy, wording certainty, and grammar error before they are sent to experts. Ultimately, the returned items from experts were examined in their content validity through Content Validity Index(CVI) methods, refined, and removed some biased items suggested by experts.

6. Result

As stated in the conceptualization section, the aspirational goal was hypothesized as multidimensional scales comprise of inspiration and ambition dimensions (Quaglia & Cobb, 1996) in specific object—science-related disciplines. The construct seemed to cover many various aspects of existing goal orientation scales (social and achievement goal orientation) and value scales. However, the actual concept and definition were separately determined, and differences among those similar constructs were clarified by analyzing their definitions and looking at each existing item. These processes were double-checked by a few scale developers.The aspirational goal in this study was measured by inspiration and ambition factors that were indicated through psychological traits such as hope, willingness to, planning for, desire for, liking, and wanting toward expected achievement such as ongoing education, related occupational plans, and social contributions. These expected benefits attend to intensify their engagement with science-related programs or disciplines. Furthermore, since it is an aspirational goal, it focuses on immediate (proximal) and future (distal) goals.

In the conceptualizing phase, aspirational goal definition was distinguished from social status goal orientation. Some suspicious items which may overlap with each other were removed in the content analysis phase. For instance, "I believe that there will be more and better job opportunities if I graduate from this science-related discipline" was decided to delete from the item pool as the researchers thought that its meaning was directed to individuals' expectations toward job opportunities. Notably, in aspirational goals, the term occupation was also involved, but it was critically associated with the idea that the current study program was a path to achieve the related job they planned.

Throughout the item judgment phase, the researchers primarily attempted to modify item contents following experts' comments to avoid overlapping with other items in the same scale and measuring other constructs.From this important step, three items were decided to be deleted for a reason of redundancy (e.g."I believe that attaining a degree program in this science-related discipline will provide me more opportunities to continue further education" and "I hope that graduating from this current study program will bridge me to study another science-related program". One other item was suggested to be restructured as it was too broad and confusing for the respondents (e.g."I like to relate my potential ability in sciences to other related studies in the future to achieve academic success"). The rest of the comments were related to the appropriateness of grammar and words used. The items were reduced from 20 items (item pool) to 18 items (See appendix B), and finally to 15 items (after the content validity step).

Regarding CVI result, the score rated by experts were mostly at 3(quite relevant) and 4 (highly relevant); however, some experts scored 1 (not relevant) and 2 (somewhat relevant) in a few items which needed to be deleted or revised as mentioned earlier.The total scores of the Content Validity Index (CVI) were optimal to move on to the next following phases. Among those, scores of each typeof CVI were observed in Scale-Level Index (S-CVI) = 1 and Item-Level-Scale CVIs(I-CVIs) = 1 (Table 1).

Table 1. Content Validity Indexes

No	Items	R1	R2	R3	R4	NA	I-CVI
1	I hope that graduating from this current study program will bridge me to study another science-related program.	3	4	4	4	4	1
2	I hope that graduating from this current study program will bridge me to study another science-related program.	4	4	4	4	4	1
3	I aspire to receive admiration from society when I am able to study science-related disciplines.	3	4	4	4	4	1
4	I hope I will be given the honor when I can promote science-related knowledge to the next generation after graduation.	4	4	4	4	4	1
5	I hope I can contribute to my society the needed human resources after graduating from science-related disciplines.	4	4	4	4	4	1
6	I am plan to have an occupation related to science-related discipline after graduation.	3	4	4	4	4	1
7	I hope I can respond to the current job demands if I engage in science-related studies.	4	4	4	4	4	1
8	I am interested in science-related activities at school because I hope that I will achieve my academic plans.	4	4	4	4	4	1
9	I am satisfied with science-related activities given by the program because of their usefulness to my current living situations.	4	4	4	4	4	1
10	I am proud of studying science-related discipline because I believe that it is needed for the current development in my country.	4	4	4	4	4	1
11	I like studying science-related programs because it is highly valued by people in the society.	4	4	4	4	4	1
12	I love science-related discipline because I want to do something innovative for my country.	4	4	4	4	4	1
13	I am willing to pursue competitive exams related to science-related disciplines.	4	4	4	4	4	1
14	I like to study science-related disciplines because I want to adapt myself to current modern society.	4	4	4	4	4	1
15	I like to relate my prior ability in sciences to existing related studies to achieve academic success.	4	3	4	3	4	1

Note: R = Rater; NA = Numbers of Agreement, I-CVI = Item-Content Validity Index

7. Discussion

The objective of this scale development study was to create an aspirational-goal scale applicable to a context (science-related disciplines), population (college students), and culture (Cambodia). Although similar scales were found in the previous studies, the differences were observed in their content domains which are clearly stated by the construct definition. The content domain of the existing scale may measure only a small part of aspirational-goal-construct but not be defined and categorized as the same. However, many types of content and construct validityneed to be conducted in the other phases of scale development tohelp address this complexity.

The retained items (15)would continue to be reduced in the pilot testing phase, wherein the result of factor loading would have judged, and in internal-consistency-reliability analysis in which the low-level Cronbach Alpha would be cut out. The numbers of items in each dimension were notequal; however, they would be altered when the scale would be finalized. In the pilot testing phase, participants would be asked to fill out the questionnaire by deciding on the given 5 Likert-rating scales ranging from 1 = very untrue to me to 5 = very true to me. In a form of a self-administrative questionnaire, students would base their decision on each item through a self-reflective process. The maximum of the raw scores could be up to 75 points. The scores would be standardized based on the norming scores when finalized items would be conducted in the last phase of this proposed study.The standardized norming scores would indicate every quartile percentage such as the score at 25%, 50%, and 75% in this population.

8. Conclusion and Recommendation

From a thorough content validity analysis, the items were generated, and they are ready for item analysis. The result in this phase indicated a critical conceptualization. However, the study showed its limitations which

needed to be fulfilled in the next studies. The number of experts invited for conducting item judgmentwas limited; therefore, more experts preferably needed to be added. Samples (10 college students) used to answer the open-ended questions are also limited. With limited amounts of respondents, it is hard to extract the contents which represent perceptions of the target population. Furthermore, to be insightful of aspirational-goal construct, understanding other related constructs or nomologicalnetworks would be essentially in need to accurately definingand determine its dimensions and contain clarities. Regarding this concern, reviewing more literature is strongly suggested so that researchers can look deeper into content differences and similarities to other constructs.Researchers may need to look at the existing task value scale and clarify conceptual parallels between both constructs. Exploratory Factor Analysis, Confirmatory Factor Analysis, and Internal Consistency Reliability Testing, Correlational Analysis will be conducted in the next study to develop an aspirational goal scale.

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Authors Profile

Sambo Ke received the B.A. in Teaching English, M.A. in Clinical and Counseling Psychology, and Ph.D. in Educational Psychology from De La Salle University, the Philippines in 2003, 2011, and 2020, respectively. He has taught subjects related to academic skills and applied psychology for 20 years at higher education. He has been affiliated at Royal University of Phnom Penh, Cambodia since 2010. Motivation, self-regulated learning, and academic achievement were his research areas.

Fidelis Chosa Kastuhandani is an assistant professor at the English Language Education Study Program, Sanata Dharma University. He was granted Faculty Development Scholarship (2016-2020) to study for his doctoral at De la Salle University, Manila, Philippines, majoring in Educational Leadership and Management. His research interests include AI in education, educational technology, and educational leadership and management.