Adaptation of The Career Decision Ambiguity Tolerance Scale

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Abstract

The COVID-19 pandemic has led to various changes that increased the possibility for university students to experience career ambiguity. Those with a high tolerance for career ambiguity perceive ambiguous situations as advantageous and do not reject the complexity of the discrepancy. This study aimed to yield the Indonesian version of the Career Decision Ambiguity Tolerance Scale and examine the construct validity and concurrent validity of the adapted version. This study involved 1256 first-year students (58.7% female, mean age = 18.23 years, *SD* age = .66) from a public university in Central Java, Indonesia. Data were collected using measures of ambiguity tolerance in choosing a career, career decision-making self-efficacy, and vocational identity. Confirmatory Factor Analysis (CFA) was used to examine the structure of the factor of the final scale, showing good fit indices (CMIN/df = 2.93, CFI = .97, TLI = .96, RMSEA = .04). Reliability coefficients of each the three subscales were satisfactory. Concurrent validity was shown by expected associations with measures of career decision-making self-efficacy and vocational identity.

Keywords: *career decision ambiguity tolerance; scale development; first-year university students*

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Introduction

The COVID-19 pandemic has brought about various changes in many settings, including in the employment sector. The existence of COVID-19 causes economic instability, which makes companies face many obstacles to run their business (Lestari, 2021). In addition, another impact that has arisen from the pandemic situation was that many companies closed their operational activities for an indefinite period, causing an increase in unemployment due to the absence of jobs (Fahri et al., 2020). Pusparisa (2021) also stated that the number of unemployed Indonesian in 2021 will increase by 26.3% from the previous year. Pandemic situation has also transformed the way of working, many of which require a work from home, thus driving an unprecedented digital transformation (Savić, 2020).

The COVID-19 condition have led to various changes that increased the possibility for individuals to experience career ambiguity. The increase in the unemployment rate is one of the conditions that create career uncertainty at this time. The COVID-19 condition has also led to changes in previous jobs due to new information, much information, and various contradictory information (O'Connor et al., 2022). One of the groups experiencing career ambiguity due to the COVID-19 pandemic is undergraduate students. Most of the open unemployment rate came from higher education degrees, of which around 6.97% were university graduates and 6.61% were diploma graduates (Chaterine, 2021). The high unemployment rate then encourages an increase in career ambiguity in undergraduate students. They face career decision difficulties and have to demonstrate an ambiguity tolerance when choosing their careers (Xu & Tracey, 2014).

Higher education is deliberately chosen and pursued with the hope that in the future, university graduate can have adequate competence and quality (Marliani, 2013). Another hope desired by pursuing higher education is that students can more easily get the desired job after graduating. However, in reality, students must be ready to face challenges after college. They have to handle the risks if they cannot get a job in the desired field, especially during and after the pandemic situation. Career confusion or ambiguity can also arise due to concerns related to the future (Xu & Tracey, 2014).

The emergence of career ambiguity in university students needs to be considered by all parties. Kwok (2018) mentions that uncertainty can serve as an obstacle to reach career success when university students experience a developmental phase as early adults. In the early adult phase, individuals have developmental tasks to explore careers (Super, 1990). If individuals fail to explore their career possibilities, their self-identity related to work will not be formed properly, which will cause role confusion and ignorance of the career desires they want to do (Kwok, 2018).

In the exploratory phase, individuals tend to start to assess their career interests, competence, and values, and then try to plan the future by looking at possible fields of work and completing their education (Super, 1990). During this stage, exploration of individuals' interests, experiences, and values, as well as various career choices, mixed information in a rapidly changing world can potentially

leave someone to face ambiguous career situation. Level of ambiguity tolerance in making career decisions then plays an important part, as this leads individual with a more positive way of thinking (Xu et al., 2016).

Budner's (1962) revealed a tripartite model of ambiguity tolerance, which contained three constructs of tolerance toward newness, complication, and unreliable information, informed Xu and Tracey (2015b) to define CDAT as "people's evaluations of and responses to unfamiliar, complex, or inconsistent information in career decision making". Xu et al. (2016) highlight the significance of ambiguity tolerance in deciding on a career for university students, as career decisions for them are more intimidating and create anxiety than the previous phase. This happens because university students usually face cultural and social pressures and parental pressures to make good and satisfying career decisions.

Xu and Tracey (2017) found that ambiguity aversion can make individuals more challenging to commit to career decision-making and more neurotic. Aversion also causes an increase in lack of readiness in deciding on careers, and will then have an impact on lower interest in new information related to a career. Xu (2017) revealed that ambiguity aversion similarly would lead to an increase in negative experiences, anxiety, and delay in making career decisions. Students' aversion to ambiguity at the beginning of college will also lead to poor satisfaction with life and self-efficacy to find job at the final stage of college (Xu & Adams, 2019).

Xu and Tracey (2015a) stated that tolerance for ambiguity in making career decision is essential because it is the key to support individual in choosing careers. The process of choosing careers is complex and requires information processing related to the working world and individual's abilities. If individuals have irrelevant or conflicting information and do not have a way of processing that information, there will be many difficulties in making career decisions. If individuals experience problems making career decisions, it will affect their future career decisions, career commitment, and academic satisfaction (Xu, 2022).

Ambiguity is an unavoidable and essential part in making career decisions. Individuals who have a low tolerance for career ambiguity will also experience anxiety in making career decisions. As a result, individuals tend to have more career doubts (Xu & Tracey, 2014). Xu and Tracey (2014) also found that students with a low career decision ambiguity tolerance will have general doubts, dysfunctional beliefs, poor information, and conflicting information in the career doubt domain. Then it was further explained that the low tolerance for career ambiguity would also make students less able to use the information obtained through the environmental exploration to solve conflicts related to inconsistent information. However, students with a high level of tolerance for career choice ambiguities will be able to use information from environment exploration results to address inconsistencies in information related to the working world.

Park et al. (2020) suggested that individuals who have high tolerance career decision ambiguity tend to demonstrate higher involvement in career exploration and higher level of psychological well-being. Conversely, those who have ambiguity intolerance are more likely to demonstrate lower psychological well-being, higher level of stress, more fatigue, or greater mental health disorders (Hancock & Mattick, 2020). A high degree of career decision ambiguity tolerance will also led students to show more appropriate behavior and better effort in searching their dream job (Kwon et al., 2020). This means that career decision ambiguity tolerance will allow students to enjoy, be more prepared, and survive in the job search process.

Considering the importance of career decision ambiguity tolerance, especially for university students, is necessary to have a psychological instrument that can be used to determine the level of tolerance for career decision ambiguity. Xu and Tracey (2015b) introduced the Career Decision Ambiguity Tolerance Scale (CDAT), which consists of 18 items. The CDAT was designed with a student sample because students are a group that is facing a career decision or a group that will experience a life transition (Xu & Tracey, 2015b). There are three dimensions in the scale to assess ambiguity tolerance in choosing careers, i.e., preference, tolerance, and aversion (Xu & Tracey, 2015b). Preference reflects individual positive assessment of ambiguous information in choosing a career, indicated by excitement and interest in changes and novel things. Tolerance covers individual tendency to accept and cope when faced with ambiguity situation when making career decisions.

Finally, aversion indicates individual negative avoidance of ambiguity tolerance in making career choices.

The CDAT has good structural and construct validity (Xu & Tracey, 2015b). The instrument has been validated or used in several cultures and countries, such as France (Storme et al., 2019) which is high in individualism and uncertainty avoidance dimension, South Korea (Park et al., 2019), which is low in individualism but high in uncertainty avoidance dimension, and China (Xu et al., 2016), which is low in individualism and uncertainty avoidance aspect. In individualistic societies, individuals are expected to prioritize and take care of themselves and their direct family, but in collectivistic settings, individuals belong to 'in groups' that care for them in exchange for a certain level of loyalty. Uncertainty avoidance has to do with the way that individuals deal with the fact that the future cannot easily be predicted. Uncertainty avoidance reflects the degree to which the society members feel intimidated by ambiguous circumstances and have constructed beliefs and institutions that show their effort to escape from these kinds of situations (Hofstede & Hofstede, 2005).

This instrument was used in a study in Indonesia (e.g., Alexsander et al., 2020), however, the steps of translation was not clearly stated and the participants were asked to make a rating on each item on a 5-point Likert-type scale varying from 1 (*strongly disagree*) to 5 (*strongly agree*).

The purpose of this research study is to adapt and present CDAT psychometric information using Indonesian undergraduate students, given that Indonesia is low in individualism and medium uncertainty avoidance dimension. Instrument adaptation and validation processes are separate but complementary processes (Borsa et al., 2012). In the adaptation process, researchers must provide evidence of the equality of meanings of the items and acceptable psychometric properties of the new version of the adapted measure (International Test Commission, 2016).

The scale is expected to be helpful for career counselors who handle undergraduate students on their career-related problems, and useful to policy makers who plan interventions to help them improve their career competence.

Method

Procedure

The Career Decision Ambiguity Tolerance Scale (CDAT) adaptation phases in this study used a cross-cultural psychological instrument adaptation guide from Beaton et al (2000). The adaptation stages involved carrying out forward translation, synthesizing the ideas, conducting backward translation, having the expert committee to review the items, and pre-testing the items.

Participants

Participants were 1256 first-year undergraduate students (58.7% female, mean age = 18.23 years, SD age = .66), enrolled in a public university in Central Java. They came from the Faculty of Psychology (26%), Faculty of Science and Mathematics (23.1%), Faculty of Engineering (22.3%), Faculty of Animal Husbandry and Agriculture (5.7%), Faculty of Social and Political Sciences (2.7%), Faculty of Fisheries and Science Marine (.4%), and another 14.6% did not mention the origin of the faculty. Most participants lived with their parents (97.5%). Fifteen students (1.2%) portrayed their socio-economic status was "much worse" than their peers, 146 (11.6%) stated "a little worse", 953 (75.9%) reported "about the same", 122 (9.7%) reported "a little better", and 20 (1.6%) indicated "much better" condition. Participants were recruited using a convenience sampling technique, a sampling procedure where samples are taken based on ease of access, availability, and based on convenience but still meet predetermined criteria (Etikan, 2016).

Materials

The online survey package contained scales tapping ambiguity tolerance for making career choice, self-efficacy for making career decisions, and vocational identity, along with several questions regarding age, gender, faculty, and subjective socio-economic status.

Career Decision Ambiguity Tolerance

The 18-item Career Decision Ambiguity Tolerance Scale (Xu & Tracey, 2015b) was used to measure participant's level of ambiguity tolerance on deciding on a career. The CDAT consists of three dimensions: preference, tolerance, and aversion. Preference is an interest or pleasure for ambiguity in making career choices. Tolerance is characterized by level of tolerance and acceptance in facing

ambiguity when making career decision choices. Then the aversion dimension is defined as avoidance or difficulty experienced in the ambiguity of choosing careers. Participants make responses to the questionnaire using a 7-point Likert-type scale varying from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores in Preference and Tolerance subscales indicated higher levels of tolerance with ambiguity in the process of making career decisions, and lower scores in Aversion subscale showed higher level of tolerance with ambiguity situation making a career decision. The Career Decision Ambiguity Tolerance Scale (CDAT) has demonstrated reliability coefficients of .70, .78, and 73, respectively, for the three subscales (preference, tolerance, and aversion) in Storme et al.'s (2019) study. This scale has also shown internal consistencies of .82, .66, and .75 in a sample of high school students and .86, .63, and .73 in a sample of undergraduate students for these subscales respectively (Xu et al., 2016).

Vocational Identity

Vocational identity was measured using 6 items out of 20 from the vocational identity measure, which showed the highest relevance to the condition of undergraduate students (Gupta et al., 2015) using a Likert type of 6 points (1 = *strongly disagree* and 6 = *strongly agree*). Cronbach's Alpha has been reported as .97. A sample items is "I know which type of occupation I would enjoy doing in the future". Green (2020) reported the internal consistencies of the measure of .92.

Career Decision Making Self-Efficacy

Self-efficacy in making career decision was assessed using a 12-item Career Decision Making Self Efficacy Scale (Fouad et al., 1997) with a Likert type 6-point scale (1=*not confident at all* and 6= *highly confident*). Cronbach's Alpha has been reported as .97. A sample items is "Make a plan of my educational goals for the next three years". The Indonesian version of the scale has been used in several studies conducted by Sawitri et al. (2014), Sawitri et al. (2015), and Sawitri and Creed (2017), which demonstrated a range of reliability coefficients of .75 - 81.

Results

In translating the measure into Bahasa Indonesia, we followed Brislin's (1986) recommendations. For the first step, the items were transformed into Bahasa Indonesia by two native Indonesian speakers who were also speaking English. In the next step, the readability of the Indonesian version was subsequently examined by two monolingual Indonesian speakers. Then, two native Indonesian citizen who were also speaking English translated the items into English, without knowing the original version of the scale. After the items were back-translated, these items were then contrasted with the original English version to verify the precision of meaning, and any inconsistencies were then adjusted. Minor translation differences were then discussed and all translators made an agreement to yield a final version of the scale. Then, five Indonesian undergraduate students read and examined the final version in Bahasa Indonesia and assessed the level of readability. We then piloted the study by involving 35 first-year undergraduate students (62.9% female, mean age = 16.97 years, SD age = .17). From the pilot study, we found that Cronbach's Alphas for the preference, tolerance, and aversion subscales were .70, .73, and .71, respectively, and McDonald's ω for the three subscales were 70, .73, and .71, respectively. The Career Decision Ambiguity Tolerance Scale (CDAT), adapted into Bahasa Indonesia, is presented in Table 1.

Table 1

The Career Decision Ambiguity Tolerance Scale in Original and Indonesian Versions

Dimension	No.	Item
Preference (Preferensi)	1	1. It is interesting to discover new strengths and weaknesses (Sangat menarik untuk menemukan kekuatan dan kelemahan baru)
	2	I am interested in exploring the many aspects of my personality and interests (Saya tertarik untuk mengeksplorasi banyak aspek kepribadian dan minat saya)
	3	I am excited to see a creative way to match my interests with a career (Saya senang melihat cara kreatif untuk mencocokkan minat saya dengan suatu karier)
	4	I am not interested in knowing new information about myself* (R)

Dimension	No.	Item
		(Saya tidak tertarik untuk mengetahui informasi baru tentang diri saya)* (R)
	5	I am excited that I can learn new things about myself or about the world when making a career decision (Saya senang bahwa saya dapat mempelajari hal-hal baru tentang diri saya atau tentang dunia saat membuat keputusan karier)
	6	I am open to careers which I have never heard of or thought of before (Saya terbuka untuk karir yang belum pernah saya dengar atau pikirkan sebelumnya)
Tolerance (Toleransi)	7	I do not mind changing my career in the future if necessary (Saya tidak keberatan mengubah karir saya di masa depan jika perlu)
	8	I am tolerant with the possibility that my interests could change in the future (Saya toleran dengan kemungkinan bahwa minat saya bisa berubah di masa depan)
	9	I am tolerant of the unpredictability of a career (Saya toleran terhadap ketidakpastian karier)
	10	I enjoy tackling complex career decision making tasks (Saya menikmati untuk menangani tugas-tugas pengambilan keputusan karir yang kompleks)
	11	I am tolerant of the potential difference between my perception and the reality of a career (Saya toleran terhadap potensi perbedaan antara persepsi saya dan realitas karier)
	12	I am able to make a choice when multiple options seem equally appealing (Saya dapat membuat pilihan ketika banyak pilihan tampak sama menariknya)
Aversion (Keengganan)	13	People's different or sometimes contradictory perspectives about a career make me uncomfortable (Perspektif orang yang berbeda atau terkadang kontradiktif tentang karier membuat saya tidak nyaman)
	14	I try to avoid complicated career decision making tasks (Saya mencoba menghindari tugas-tugas pengambilan keputusan karir yang rumit)
	15	The career decision making process, which involves so many considerations, is just daunting

Dimension	No.	Item
		(Proses pengambilan keputusan karir, yang melibatkan begitu banyak pertimbangan, sungguh menakutkan)
	16	I find it difficult to make career decisions as things cannot be predicted clearly (Saya merasa sulit untuk membuat keputusan karir karena hal-hal tidak dapat diprediksi dengan jelas)
	17	I try to avoid a career in which the prospects cannot be foreseen clearly (Saya mencoba menghindari karir yang prospeknya tidak dapat diramalkan dengan jelas)
	18	I am afraid of sorting out the complex aspects of a career (Saya takut memilah-milah aspek-aspek kompleks dari sebuah karir)

Confirmatory Factor Analysis

We subsequently tested the Indonesian version of the measure of ambiguity tolerance in choosing careers by involving 1256 participants to examine the factor structure. We assessed whether the three factors loaded onto a second-order factor, and then compared these models with a one factor model. We utilized confirmatory factor analysis (AMOS Version 4.0; Arbuckle & Wothke, 1995) to assess how well the data fit the suggested factor structure (van Prooijen, & van der Kloot, 2001).

Model fit was examined using χ^2, Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). With more than 250 participants and 18 observed variables, a significant χ^2, CFI or TLI values more than .92, and RMSEA less than .07 demonstrate an acceptable fit. We also considered χ^2/df (with values less than 3 indicating an acceptable fit), as χ^2 is sensitive to sample size, (Hair, et al., 2010). Confirmatory factor analysis results show that the model fit is satisfactory, with indicators of CMIN/df = 2.93, CFI = .97, TLI = .96, and RMSEA = .04. Table 1 reports summary data, zero-order correlations, and correlations among the latent variables.

Table 2
Summary Data, Zero-Order Correlations (Above Diagonal), and Correlations among Latent Variables (Below Diagonal); N = 1256

	Variables	Cronbach's α	McDonald's ω	*M*	SD	1	2	3	4	5
1.	Preference	.71	.71	27.81	2.64	-	.46**	-.09**	.49**	.36**
2.	Tolerance	.72	.72	28.25	3.29	.64***	-	-.22**	.49**	.38**
3.	Aversion	.82	.82	21.53	5.07	-.29***	-.43***	-	-.25**	-.31**
4.	CDMSE	.84	.84	58.42	6.17	.65***	.69***	-.40***	-	.66**
5.	Vocational identity	.88	.88	29.06	4.02	.78***	.56***	-.41***	.69***	-

**p < .01 ***p < .001, CDMSE = career decision-making self-efficacy

The loading factor of the items on Preference Subscale ranged from .28 - .83, Tolerance Subscale varied from .32 - .66, and Aversion Subscale ranged from .34 - .82. Confirmatory factor analysis result displays in Figure 1.

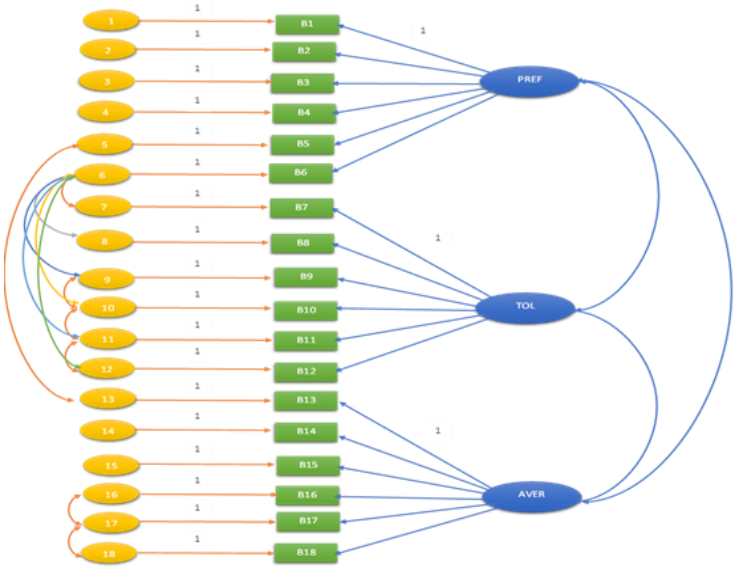

Figure 1. Results of Confirmatory Factor Analysis

Second Order Confirmatory Analysis

Second-order confirmatory factor analysis was used to examine the associations among factors at the former level (Hair et al., 2010). In this study, we examined whether the three latent variables of preference, tolerance, and aversion are associated in such a way these latent variables can be signified by a single construct.

Second order confirmatory factor analysis demonstrated that the model is fit, with indicators of CMIN/df = 2.93, CFI = .97, TLI = .96, GFI = .97, RMSEA = .04, showing that aspects of preference, tolerance, and aversion are part of a broader ambiguity tolerance in making career choice domain.

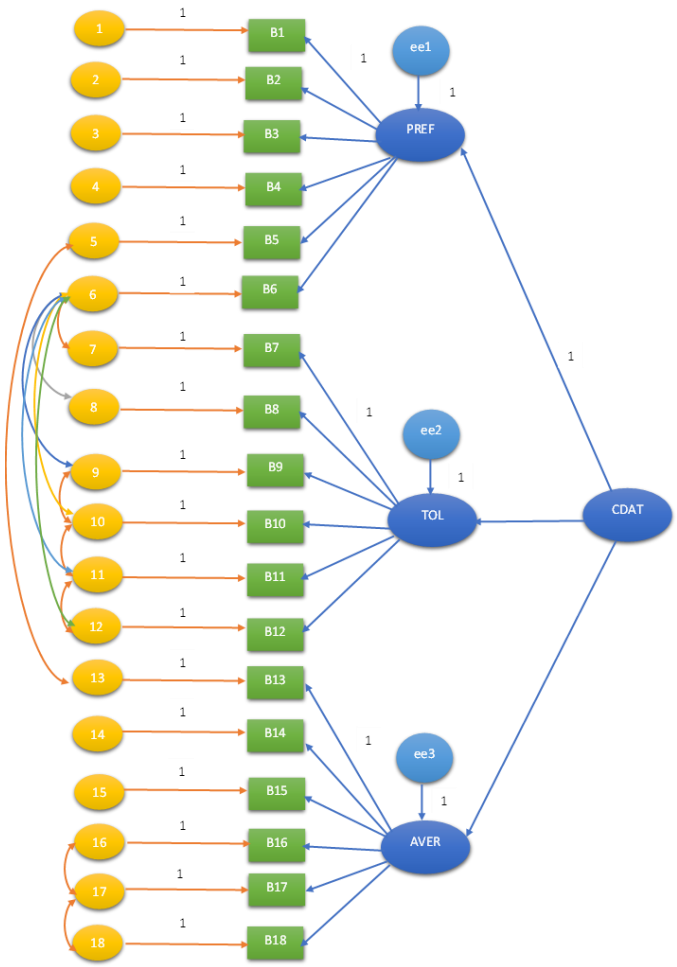

Figure 2. Second Order Confirmatory Factor Analysis Results

Discussion

The adaptation process in this study was conducted by involving first-year university students from a public university in Central Java. The internal consistencies of all of the sub-scales in the Career Decision Ambiguity Tolerance Scale ranged from .71 - .81. Hair et al. (2010) stated that a value of reliability coefficient of > .70 is good, although a value of .60 is acceptable. This means that all sub-scales in the CDAT Scale are reliable. In their study, Storme et al. (2019) also obtained excellent reliability coefficients for the sub-scales of preference (.80), tolerance (.77), and aversion (.78).

Construct validity of the CDAT scale was supported by demonstrating factorial independence with a confirmatory factor analysis and second-order confirmatory factor analysis. Findings from this study are consistent with the results of Storme et al.'s (2019) study using a confirmatory factor analysis with first-year undergraduate students in France and found that the three-factor structure was in line with the original research.

Evidence for concurrent validity of the scale was shown by the significant expected relations between Preference, Tolerance, and Aversion Subscales and measures of self-efficacy in making career decisions and vocational identity. Preference and Tolerance subscales showed significant positive relationships, while the aversion subscale showed a significant negative relationship with self-efficacy in choosing careers. Preference and tolerance subscales showed a significant positive relationship, while the aversion subscale showed a significant negative relationship with vocational identity.

Various changes in the form of the industrial revolution and pandemics also present uncertainty and require tolerance so that individuals can have an obvious career or vocational identity. Individuals who have a great vocational identity will have a clear and established picture of their career aspirations, interests, values, and competence (Hermina, 2019). Utari (2019) demonstrated that individuals with tolerance for ambiguity in decision-making will show cognitive complexity. The Career Decision Ambiguity Tolerance Scale was found to demonstrate expected directions in Storme et al.'s (2019) study. Ambiguity tolerance in making career choices plays an essential role in social learning experiences, shaping self-confidence in choosing careers, which then affects the difficulties experienced by individuals when facing the phases of choosing careers (Storme et al., 2019).

Although this study shows that the CDAT scale demonstrate a good reliability, limitations of this study present several prospects for future study. First, participants in this study were freshmen from one university. Further research could possibly involve more diverse populations to corroborate the findings of the current study. Second, we examined construct and concurrent validity in this study. Further research could pay attention to studies that will establish the predictive validity of the CDAT Scale.

Conclusion

We adapted the Career Decision Ambiguity Tolerance Scale and found that the Indonesian version of the scale is valid and reliable so that it can be used in Indonesia. The reliability coefficients of each sub-scale are satisfactory, indicated by the Cronbach's Alpha coefficients and McDonalds' ω of above .70. The construct validity has demonstrated by the factor structure of the scale, and the concurrent validity is supported by expected associations between each of the subscales with the measures of self-efficacy in choosing careers and vocational identity. Further research suggests using the Indonesian version of the Career Decision Ambiguity Tolerance Scale to conduct research on more diverse participants.

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Conflict of Interest

The authors do not have conflicts of interest to declare. All co-authors have read and agree with the manuscript contents and there is no financial interest to convey. We confirm that the submission is an original work and is not under review at any other publication.

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