

Tailoring of the career adaptabilities scale for Indonesian youth

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ABSTRACT

This research delves into the validation of the Indonesian version of the Career Adaptabilities Scale (CAAS), with a particular focus on young Indonesians aged 10 to 24 years. The original CAAS, already translated into various languages, required thorough validation for effective use among Indonesian youth. By employing Rasch analysis and involving 1953 adolescents (Mean Age = 17.2, Standard Deviation = 2.61) from 20 provinces in Indonesia, the study tested the scale's relevance to this demographic. The findings confirmed the suitability of all original CAAS items for Indonesian young people, leading to the validation of the ID-CAAS. This adaptation represents a significant advancement in assessing and fostering career adaptability in Indonesian youth, with the adaptation tailored to their unique cultural and career aspirations.

1. Introduction

Throughout their careers, individuals are confronted with a variety of obstacles and transitions in today's rapidly transforming workplace (Sullivan & Al Ariss, 2021). The evolution of the workplace is influenced by technological developments and the economic situation, as shown by the fluctuation of the Gross Domestic Product (GDP), which impacts the increase in employment (Callen, 2019). Even though Indonesia's economy grew by 5.11 % in the first quarter of 2024, compared to the first quarter of 2023 (y-on-y) (BPS-Statistics Indonesia, 2024), Indonesia's young generation continues to face an unpredictable situation in the job market. The Indonesia Talent Trends (Insights, 2023a) survey shows that post-pandemic, the work environment in Indonesia is experiencing great resignation and quiet quitting. Furthermore, Indonesia ranks second (77 %) among other countries in Asia Pacific Talent Trends (Insights, 2023b) based on the number of people looking for new jobs. The changing job choices and planning new types of work impact economic aspects and personal development. To professionally navigate these complexities, young people need to have career adaptability,

which entails the capacity to effectively navigate career transitions (Schoon & Henseke, 2023), make informed career decisions, and perceive their employability (Al-Waqfi et al., 2023). In another aspect, individuals who have career adaptability tend to be able to have decent jobs (Vilhjálmsdóttir, 2021), with higher levels of job satisfaction (Chan et al., 2016) and a reduced propensity to shift towards an alternative category of employment (Rasheed et al., 2020).

The concept of career adaptability is derived from Super Career Development, an evolution of the career maturity notion. It emphasizes an individual's proficiency in adapting to changes and maintaining stability in their career role amidst transitions within their professional path (Super & Knasel, 1981). "Career adaptation" signifies strengthening an individual's ability to navigate their career resiliently in the face of unexpected challenges, involving the implementation of essential adjustments after an in-depth exploration of these situations (Savickas, 1997, 2005). In other words, career adaptability represents a valuable asset that empowers individuals to adeptly manage through present work transformations while also anticipating forthcoming ones. These resources represent the interface between people and their psychosocial

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environment (Dike, 2015). Career adaptability, defined as a self-regulatory capacity, serves as an adaptive resource that individuals can employ to confront unexpected, complicated, and ambiguous obstacles stemming from work trauma, job transitions, career development obligations, and job changes (Tolentino et al., 2013). Individuals endowed with career adaptability possess the proficiency to evolve, enhance, and ultimately actualize their self-concept within professional capacities, thus fostering a rewarding work life, boosting overall life fulfillment, and establishing a robust occupational framework (Ginevra et al., 2018; Porfeli & Savickas, 2012).

Savickas established the four-dimensional framework for career adaptation, which includes career concern, career control, career curiosity, and career confidence. The Career Adaptability Scale (CAAS) was first developed by Savickas to evaluate a person's adaptability in a career context (Savickas & Porfeli, 2012). This scale consists of twenty-four items, with six items for each of the four dimensions: career concern, career control, career curiosity, and career confidence. This scale has been tested in 13 distinct countries and regions, including Europe, the United States, and Asia. In the Asia-Pacific region, where countries like China (Hou et al., 2012), Korea (Tak, 2012), Taiwan (Tien et al., 2012), and the Philippines (Tolentino et al., 2013) have adopted CAAS in their languages. Recent study endeavors have extended their purview to encompass cross-national evaluations of the CAAS, notably in countries such as South Korea and Japan, illustrating its robust measurement characteristics (Lee et al., 2021). The ongoing research contributes substantively to the extant knowledge of vocational adaptation. Researchers from several countries around the globe have modified the Career Adaptability Scale to accommodate local cultural characteristics, thereby developing locally applicable versions of the scale.

The validation of the instrument in different cultural contexts ensures its applicability and measurement integrity. Indonesia has a collectivistic culture, where the needs of the group are highly prioritized and firmly rooted in tradition (Hofstede, 2011). Individuals living in collectivist cultures associate various aspects of life with social support. Ataç's research suggests that collectivistic culture impacts career planning difficulties and the development of young people's career adaptability (Ataç et al., 2018). Moreover, previous study shows that social support exerts a profound and real influence on career adaptability (Rahman et al., 2024). One of the challenges faced by young people surrounded by a collectivist culture is navigating university life or cultural challenges without social support from the people around them. Social support available for young adults includes educational institutions (Wiesenberg & Aghakhani, 2008), educators (Pong & Leung, 2023), parents (Choi et al., 2024), and peers (Agoes Salim et al., 2023). In addition, research on career adaptability with different cultural backgrounds provides a new perspective that can strengthen the use of CAAS, especially in several countries with strong cultural backgrounds, such as China (Hou et al., 2012), Korea (Tak, 2012), Taiwan (Tien et al., 2012), and the Philippines (Tolentino et al., 2013). Therefore, there is a need for a validation instrument that encompasses a broader spectrum of participants hailing from diverse places within Indonesia. This may result in the creation of instruments that reflect the attributes of Indonesian society at large.

Most studies used Confirmatory Factor Analysis (CFA) to validate the CAAS, a method from Classical Test Theory (CTT). However, CFA has drawn criticism for its discriminatory tendencies, items that are difficult to test independent of the sample, and the assumption that all respondents have the same measurement error (Alagumalai et al., 2005). Meanwhile, Rensburg et al. (2022) and Sulistiani W. et al. (2018) investigated the adaptation of CAAS utilizing forward-backwards translation methods as part of their CAAS validation tests in the Indonesian samples. However, they used total item scores and Cronbach's alpha correlation to assess a CAAS variant based on the CTT method. In addition, the subjects who participated in their study were too concentrated in specific regions and education (N=277 and N=281,

respectively). In order to address this issue, the current study used a larger number of participants to examine the adaptation process thoroughly, which is essential to ensuring that the meaning remains accurate while still being relevant to local cultural conditions (Arafat et al., 2016). Accordingly, a larger sample representing the broad Indonesian population can provide more comprehensive interpretations of young people's career adaptability. This is because a career path is a life theme that is shaped by exposure to the surrounding environment, culture, and parenting attitudes of parents during growth and can be explained as a process of forming values and self-concept (Savickas & Porfeli, 2012; Super, 1957). Apart from that, students' career aspirations are also influenced by place of residence (Sofyan et al., 2013). Therefore, the involvement of respondents from different provinces with various cultural backgrounds can strengthen the results of this research.

In addition, the validation of the ID-CAAS instrument in this study was conducted with a focus on young people because this age is a crucial stage in career development. Based on research by Navaitiene (2014), career adaptability in young people tends to be lower than in mature adults. Therefore, the focus of research on this age group is significant. In light of the limitation of previous validation research, the first objective of this research is to investigate the Career Adapt-Ability Scale via Rasch Model Analysis involving young Indonesians from 20 provinces in Indonesia that represent cultural differences. The diverse linguistic and cultural landscape of Indonesia exerts a profound influence on the way of thinking and behaving of its inhabitants. Regarding career adaptability, different cultures provide different demands and opportunities for developing adaptability; people exhibit different expressions of the career adaptability construct (Savickas & Porfeli, 2012). The second objective is to investigate measurements of subgroup age, gender (male and female), last education, school status (private and public school), and province. Distinguishing groups based on sub-demographics can provide an overview of the conditions of career adaptability in various demographics. The third aim was to validate the Indonesian adaptation of the Career Adapt-Ability Scale (CAAS), originally developed by Savickas & Porfeli (2012), using Rasch analysis. Rasch analysis is a statistical approach based on Item Response Theory (IRT) to determine whether elements collectively contribute to the unidimensional construction. This approach also allows calibration of the size of the difference between individual items on an interval scale and measurement of each individual along a newly defined variable. Thus, Rasch's analysis provides a comprehensive and robust psychometric evaluation and analysis framework (Fox & Jones, 1998). The research significantly contributes to the existing body of knowledge on career adaptability by confirming the reliability and validity of the scale within the Indonesian context. It provides a reliable tool for assessing an individual's career adaptability in relation to the Indonesian job market. Moreover, the application of Rasch analysis as a psychometric methodology offers a robust framework for scrutinizing the measurement characteristics of scales. The utilization of Rasch analysis enables scholars to assess the appropriateness of components, dimensions, and the dependability of a tool, thereby acquiring significant knowledge regarding its validity and practicality.

2. Method

2.1. The translation of the career adaptability scale into Bahasa Indonesia

Savickas originally developed the English version of the Career Adapt-Ability Scale (CAAS) (Porfeli & Savickas, 2012; Savickas & Porfeli, 2012). The CAAS-International Form consists of 24 items to measure career adaptability, which is defined as career adaptability abilities consisting of four dimensions (concern, control, self-confidence, and curiosity). CAAS is evaluated through the utilization of a five-point Likert scale, which encompasses responses ranging from strongly disagree to agree strongly.

The CAAS was independently translated into Bahasa Indonesia by a

professional translator and then back into English. A two-phase process was employed to ascertain that the translation aligned with the conceptual, cross-cultural, and linguistic equivalence standards outlined by CAAS (Bullinger, Anderson, Cella, & Aaronson, 1993; Gudmundsson, 2009; International Test, 2017).

2.2. Ethical approval

The Indonesian Counselor Association, based in Jakarta, Indonesia, granted ethical approval for this study under the number 78997/EC/IKI/III/2022. All participants provided their consent for participation and for the publication of the study's findings in accordance with the ethical guidelines provided.

2.3. Design, procedure, and participants

Prior to the data collection process, approval for data collection was obtained from the institutions involved. Before respondents enrolled in this study, they were provided with complete information about the objectives of the data collection. The online distribution of the questionnaires was facilitated by staff, teachers, and lecturers. The cover page of the questionnaire explicitly states that participation in the survey is both anonymous and voluntary, thereby ensuring the confidentiality and privacy of the respondents. The ID-CAAS questionnaire was thoroughly filled out by a group of 10- to 24-year-olds from 20 different provinces in Indonesia, totaling 1953 participants (average age: 17.2; standard deviation: 2.61), whom we had recruited. A comprehensive description of the participants' characteristics is provided in the Supplemental Materials.

2.4. Data and statistical analysis

George Rasch introduced Rasch analysis in 1960 (Bond & Fox, 2007). This analytical approach is based on Item Response Theory (IRT), which investigates the relationship between the attributes of assessment items and the abilities of the person responding (Cavanagh & Waugh, 2011). In addition to providing fit statistics to evaluate the extent to which these items accurately characterize a group of subjects collectively, Rasch analysis establishes a hierarchical measuring framework for items and determines how well each subject aligns with the group (Prieto et al., 2003). This analytical approach circumvents issues associated with raw total scores (Ekstrand et al., 2022; Pendrill, 2019).

Rasch analysis offers significant benefits, including the production of linear, evenly-spaced measurements and precise estimations. It identifies misfit items, assessing their alignment with expected results and uncovering respondents' misunderstandings (Sumintono & Widhiarso, 2014). In addition to identifying missing data and generating repeatable measurements, Rasch analysis can detect outlier items or individuals (independent of the parameters studied).

A Rasch analysis facilitates linear measurement by utilizing ordinal item responses from a rating scale, which indicates the disparity between the difficulty of an item and the individual's ability (Ludlow & Haley, 1995; Mari & Wilson, 2014). Additionally, more comprehensive diagnostic information is provided via Rasch analysis in order to improve the scale (Boone, 2016). The evaluation of psychometric properties that are pertinent to the framework is enhanced by this particular point of view.

The conformity of observation data with Rasch expectations was analyzed using Winsteps software version 5.1.5 (Boone, 2016). According to Rangka et al., 2023, the proposed and measurement characteristics for assessing ID-CAAS via Rasch analysis are described in the following. First, the purpose of determining whether an item regularly produces the anticipated outcomes is known as "item misfit." The data conforms to the model when the Outfit MNSQ is between 0.5 and 1.5 (Boone, Yale, & Staver, 2013; Linacre, 2006). Second, the stability of the measurement and the capacity of the items in the ID-CAAS domain to

distinguish between various degrees of career adaptability are assessed using internal consistency reliability and separation indices. Excellent internal consistency (>0.70) characterizes the acceptable reliability score. In contrast, the requirements for acceptable person separation indices are logit values greater than 1.5. Third, unidimensionality and local dependence. Unidimensionality may denote that items comprising the questionnaire examine a single construct (Career Adaptability Scale). The explained variance is approximately 40 % of the principal components. Meanwhile, local dependency analysis attempts to demonstrate local dependency when the response patterns of participants are influenced by their overall trait level and the responses to test questions. Significant local dependence is indicated by a residual correlation between items > 0.70 of the average residual correlation. Fourth, item difficulty, individual capabilities, and item size as depicted on Wright maps. Fifth, the assessment of group bias on each item within the ID-CAAS domain is conducted using DIF analysis, which applies measurement criteria to detect item bias. Given a DIF Prob < 0.05 and a DIF contrast > 0.64 logits. Sixth, the utilization of precision measurements to evaluate the model's compatibility with the data using acceptable criteria at a level of precision of 0.32Pt. Cor. < 0.80 . Lastly, a diagnostic rating scale to evaluate whether respondents can differentiate the measurement categories used in ID-CAAS. Diagnostic rating scale criteria that can distinguish measurement categories are indicated by responses that provide sequential values, and the pattern follows the modeled category probabilities. This study used Wright maps to evaluate item and person ability distributions aiming to expand understanding of how item ability and difficulty were distributed among respondents in this study. Further, it also employed Differential Item Functioning (DIF) analysis on two subgroups, gender and school status. Meanwhile, to ensure data transparency and uphold methodology integrity, our data analysis and results are publicly accessible through <https://osf.io/h3jc5/> Open Science Framework.

3. Results

3.1. Summary statistics of Rasch measurement model

The obtained item reliability index (0.99) indicates an outstanding score, whereas the person reliability index (0.93) implies good person consistency. Additionally, Cronbach's alpha (0.94) indicates that the ID-CAAS possesses "excellent" internal consistency and is regarded as a trustworthy instrument. The Item Separation index is 11.31 and the Person Separation index is 3.57, as shown in Table 1. Both estimates establish the extent to which the ID-CAAS differentiates the latent abilities of individuals and the level to which the created scale's item distribution separates easy and difficult items (Tennant & Conaghan, 2007).

Consistent distribution over a diverse range of respondents and items provides evidence that the ID-CAAS is a valid and trustworthy instrument for assessing career adaptability. The average career adaptability of the respondents assessed for this study is moderate, as seen in Table 1 where the mean measure for individuals is + 1.71 logit.

Table 1
Summary Statistic of person and item (I=24, N=1953).

	Reliability	Separation index	Mean measure*)	Cronbach's alpha	Raw explained by measures**)
Person	0.93	3.57	1.71	0.94	44.6 %
Item	0.99	11.31	0.00		

*) Measure in Logit.

**) Computed via Principal Component Analysis (PCA).

3.2. Unidimensionality and local dependency

Unidimensionality denotes that the items comprising a career adaptability scale measure a single construct (Brentari & Golia, 2007). ID-CAAS has a substantial explained variance of 44.6 % (19.3. in Eigenvalue units), as demonstrated by Rasch Principal Component Analysis. This score is well above the predetermined minimum criterion of > 40 percent of the variance explained (Linacre, 2006). Furthermore, the unexplained variance in the first contrast is below 23.1 percent (5.5 %; 2.3 in Eigenvalue units). These results prove that the unidimensional assumption of the ID-CAAS has been satisfied.

The examination of the local dependency assumption yielded ten favorable correlations within the ID-CAAS. The most substantial positive correlation, with a coefficient of 0.33, was observed between pair item 23 (*Overcoming obstacles/Mengatasi hambatan yang ada*) and item 24 (*Solving problems/Memecahkan masalah*). These two items are intended to convey respondents' opinions about their ability to manage obstacles and overcome problems. Distractions in the adaptation process that are not invariably associated with the problem constitute the two distinct items in question, thereby preventing any overlap between them. Further, the results conclude that local dependency has no effect on the items based on the observation that the residual standard correlation in the ID-CAAS item pair does not exceed 0.70 in a positive direction.

3.3. Rating scale diagnostics

The respondents' ability to differentiate between the ID-CAAS measurement categories was assessed via the rating scale (Sumintono & Widhiarso, 2014). The response can generate sequential values aligned with the modeled category's probability distribution (Pallant & Tennant, 2007). Table 2 presents the logit values for each response option, which range from a low logit value corresponding to the option with the lowest score to a high logit value associated with the option with the highest score. This allows respondents to analyze the differentiations among the possible ID-CAAS responses.

The Andrich Threshold observation rate exhibits a monotonic variation for each choice, progressing from NONE to a negative logit to a positive logit at a rate of 2.60 logits. This ensures that the answer options are precise and do not deceive the individuals taking the tests. In order to enhance the understanding of how the (predicted) item characteristic curve (ICC) model contextualizes the provided response options, the relevant information is presented in Table 3 and Fig. 1.

The "Category Measure," which is presented in Fig. 1, indicates the latent variable points at which the predicted score for a specific item is identical to the modeled category probability or exhibits a comparable pattern. Rasch half-point thresholds specify when each category period concludes.

3.4. Item measure, fit indices, and precision measurement

The ID-CAAS employs a set of statistical measures, as delineated in Table 3, to appraise various characteristics of the items. These measures encompass the assessment of item suitability for facilitating measurement productivity (infit and outfit MNSQ), the accuracy of the resulting measurements (S.E. Model), and the capacity of the items to

discriminate (Point Measure Correlation).

According to Table 3, Item 13 (*Mengeksplor lingkungan sekitar saya/ Exploring my surroundings*) attains the highest difficulty (0.60 logits) for all respondents. Meanwhile, item 6 (*Memikirkan tentang karir saya/ Concerned about my career*) is the item with the lowest difficulty (−0.68 logit). In this study, all items of the ID-CAAS exhibit Outfit MNSQ scores within the range of 0.5 to 1.5, signifying that the data aligns consistently with the model.

The "S. E Model" column represents the "Standard Error of Measure" which is linked to the predicted value of individual items. It is noteworthy that the confined standard errors consistently adhere to values below the 0.5 thresholds, thereby providing robust validation for the accuracy of measurements obtained using ID-CAAS. This affirmation is further buttressed by the enumeration in Table 3 about Standard Error Items, revealing a distinct range of 0.03, which highlights a trustworthy item fit alongside a robust definition of measurement precision. Upon examination of the Pt column labeled Measure Corr, the lack of negative values has been found. Moreover, the entirety of values connected with ID-CAAS items corresponds to the stated acceptable range represented by $0.32 < x < 0.80$ (Abdullah and Lim, 2013).

3.5. Person measure and the wright-map

The person measure was examined to determine career adaptability. Table 4 presents the outcomes of Rasch's analysis, delineating the highest-ranking and lowest-ranking responses based on a participant cohort of 1953 individuals who participated in this study. In comparison to all the respondents who participated in this study, participant number 91, a 23-year-old female from West Java with a logit score of 5.82 and a standard error of 1.01, exhibited the highest career adaptability score. Meanwhile, the participant with the number 2137, who was also female, 16 years old, and from Central Java, had the lowest career adaptability (32 logits; S.E. = 0.41).

Furthermore, Fig. 2 illustrates the approach in which the ID-CAAS assesses career adaptability. A comparative analysis was conducted between the distribution patterns of survey participants as depicted on the Wright map and the distributions of survey items derived from Rasch analyses. In addition, Fig. 2 depicts the methodology employed by the ID-CAAS to evaluate career adaptability. Rasch's analysis describes a comparison of the distribution patterns of respondents depicted on the Wright. This is possible because respondents and items are represented by the same units, and logit is the equal interval unit; not only are individuals comparable to each other (Boone et al., 2013). Individuals are comparable to one another (person entry number 91 is more versatile in terms of career than item entry number 166), as well as objects and persons (item 22 was easier to agree with than item 13). Furthermore, items and persons may also be compared (person entry number 91 has a high likelihood of agreeing in some manner with Item 5, or person entry number 166 has a high likelihood of disagreeing with item 3 in some manner).

3.6. The DIF analysis

The DIF analysis results yielded interesting results, especially on the subgroup of respondents. Overall, there were no items exposed to DIF ($\text{prob} < 0.05$) for subgroups of respondents based on: (1) age group; (2) gender; (3) province; and (5) school status.

The subgroup of last education produced numerous noteworthy results, including the finding that 5 out of 24 items lack a DIF value (< 0.05). These items are item 5 – *Merencanakan cara-cara untuk menggapai tujuan-tujuan saya* (Planning how to achieve my goals); – item 6 – *Memikirkan tentang karir saya* (Concerned about my career); Item 9 – *Bertanggung jawab atas tindakan yang saya lakukan* (Taking responsibility for my actions); Item 11- *Membuat keputusan sendiri* (making decisions by myself); Item 12 – *Melakukan hal-hal yang benar untuk diri saya* (Doing what's right for me). Table 5 reveals the details of

Table 2

Item threshold and fit indices of response format (I=24, N=1953).

Category	Andrich Threshold	Observed Average	Observed Count (%)	Infit	Outfit
Not Strong	NONE	−0.80	1	1.32	1.26
Somewhat	−3.04	0.14	8	1.02	1.03
strong	−0.79	0.97	30	0.97	1.00
Strong	1.24	1.82	35	0.96	0.94
Very Strong	2.60	2.91	26	1.00	1.00
Strongest					

Table 3
The item measure summary (I=24, N=1953).

Item	Total Score	Measure	S.E Model	Infit MNSQ	ZSTD	Outfit MNSQ	ZSTD	Pt. Measure Corr.
13	6824	0.60	0.03	1.14	4.23	1.13	3.91	0.64
23	6917	0.51	0.03	0.85	-5.32	0.85	-5.04	0.70
17	6961	0.47	0.03	0.95	-1.80	0.96	-1.18	0.66
8	6970	0.46	0.03	1.22	6.58	1.26	7.48	0.60
19	7003	0.42	0.03	0.83	-5.78	0.83	-5.45	0.68
24	7019	0.41	0.03	0.94	-1.84	0.95	-1.68	0.68
21	7030	0.40	0.03	1.00	-0.04	1.00	-0.06	0.66
11	7050	0.38	0.03	0.99	-0.42	1.01	0.18	0.66
12	7213	0.21	0.03	1.40	9.90	1.44	9.90	0.52
22	7243	0.18	0.03	0.99	-0.36	0.99	-0.43	0.66
14	7459	-0.04	0.03	0.79	-7.39	0.78	-6.96	0.70
16	7464	-0.05	0.03	0.78	-8.01	0.76	-7.76	0.69
2	7465	-0.05	0.03	1.23	7.01	1.29	7.76	0.57
7	7511	-0.10	0.03	1.20	6.08	1.17	4.77	0.60
5	7582	-0.17	0.03	0.93	-2.21	0.92	-2.34	0.67
15	7623	-0.22	0.03	0.87	-4.52	0.84	-4.70	0.65
4	7626	-0.22	0.03	0.96	-1.45	0.95	-1.33	0.61
18	7718	-0.32	0.03	1.00	-0.07	0.99	-0.37	0.61
1	7748	-0.35	0.03	1.13	4.10	1.19	4.93	0.57
3	7806	-0.41	0.03	0.95	-1.54	0.94	-1.58	0.64
10	7842	-0.45	0.03	0.90	-3.24	0.86	-3.86	0.66
9	7863	-0.48	0.03	0.88	-4.11	0.84	-4.46	0.67
20	7875	-0.48	0.03	0.94	-1.98	0.93	-1.98	0.62
6	8045	-0.68	0.03	1.10	3.22	1.09	2.23	0.60

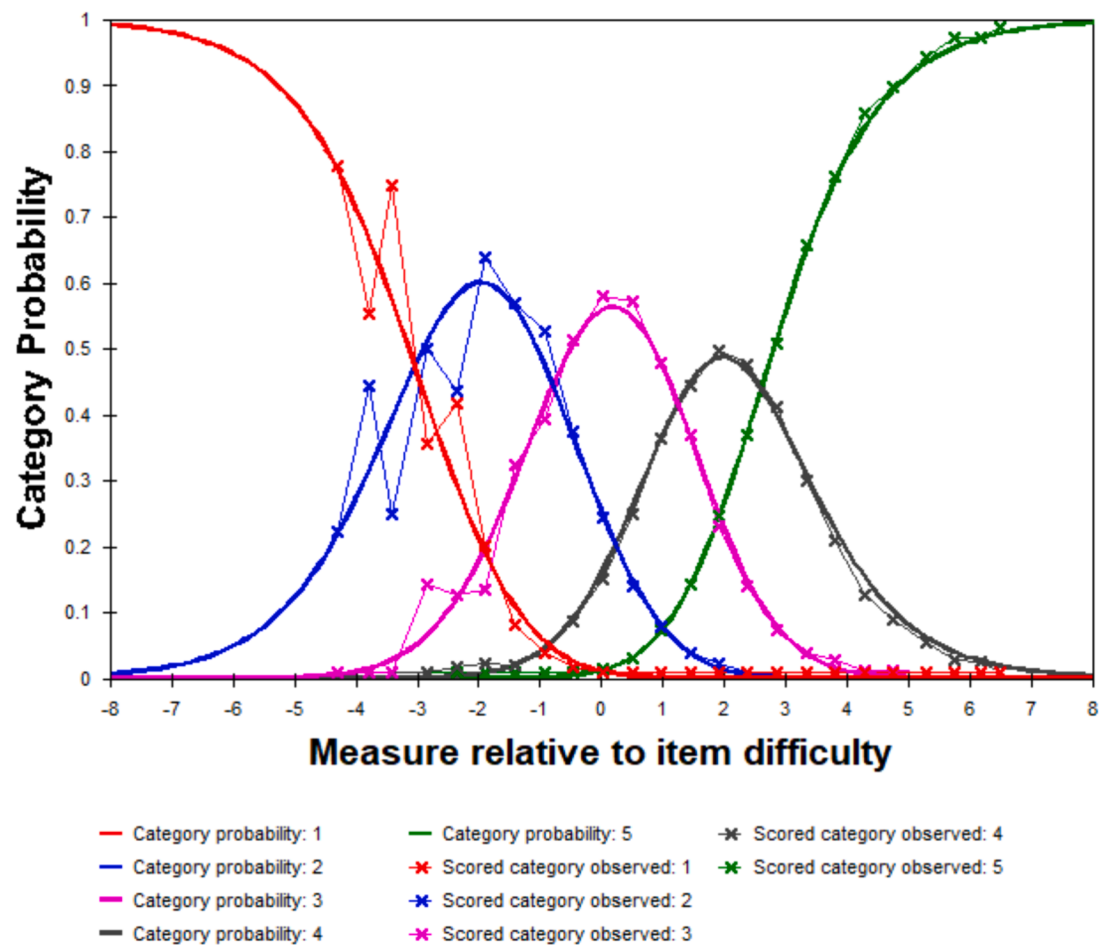


Fig. 1. Probability and empirical categorical curves.

Table 4

The summary of person measure (I=24, N=1953).

Person Entry Number	Total Score	Measure	Model S. E	Infit MNSQ	ZSTD	Outfit MNSQ	ZSTD	Pt. Measure Corr.
91	119	5.82	1.01	0.99	0.32	1.10	0.44	-0.03
104	119	5.82	1.01	0.94	0.27	0.65	-0.02	0.26
135	119	5.82	1.01	0.92	0.25	0.57	-0.13	0.33
166	119	5.82	1.01	0.94	0.27	0.66	-0.01	0.25
280	119	5.82	1.01	0.92	0.25	0.57	-0.13	0.33
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425	47	-2.06	0.32	1.44	1.49	1.43	1.47	0.50
1154	44	-2.37	0.32	0.93	-0.18	0.92	-0.23	-0.24
2036	43	-2.48	0.33	1.10	0.45	1.13	0.55	0.04
63	38	-3.04	0.35	1.18	0.76	1.14	0.62	0.55
2137	32	-3.88	0.41	0.89	0.29	0.90	-0.24	0.13

the DIF analysis and DIF contrast of items.

In addition, the analysis results revealed interesting findings concerning the DIF items. However, based on Table 5, the item indicated as biased with DIF Prob < 0.05 and effect size greater than DIF Contrast (>0.64 logits) is item 6 in the Madrasah Tsanawiyah and Madrasah Aliyah groups. These findings must be interpreted with caution, as they may not be indicative of an “unfair” item. According to Boone et al., 2013, DIF on an item does not necessarily mean that the item is “unfair” for different subgroups of respondents. These results must be interpreted in the context of residual correlations, which are used to identify dependent items. Items with local dependency (Corr >+ 70) exhibit a considerable positive correlation. Items with local dependency (Corr >+ 70) are only one of two items that can be used (Boone et al., 2013). In this research, the residual correlation value for item 6 was < 0.70 logits, namely 0.25 logits. Therefore, this item was retained because it did not decrease measurement accuracy.

3.7. Comparison of ID-CAAS in contrast to CAAS worldwide

Fig. 3 illustrates the comparison of the CAAS score from 2012 to 2023. The use of CAAS in research on career adaptability varies by country. Papua New Guinea has the highest score (4.39) of any country (de Guzman and Choi, 2013). Furthermore, China has conducted most CAAS studies (13 times), with the newest study conducted (Lin & Jiang, 2023) with a score of 4.23; Wang & Liu (2022) with a score of 3.87; Song et al., (2022) with a score of 3.87; Prasad et al., (2021) with a score of 3.65; Hui et al., 2018 with a score of 3.47; with a score of 3.87; Tien et al., (2014) with a score of 3.70; Hou et al., 2012 with a score of 4.01. Meanwhile, Savickas and Porfeli (Savickas & Porfeli, 2012) conducted CAAS research across 13 countries, including Belgium, Brazil, China, France, Iceland, Italy, Korea, the Netherlands, Portugal, South Africa, Switzerland, Taiwan, and the USA, with a mean score of 3.81 across countries.

In regard to Asia, the CAAS score varies, as seen in studies conducted on Singaporeans with a score of 3.47 (Chan et al., 2015). Moreover, the CAAS mean score of Taiwanese is 4.04 (Tien et al., 2012). Meanwhile, studies involving Korean and Japanese participants by Lee et al., 2021 showed scores of 2.99 (Korea) and 3.41 (Japan). Moreover, in Western Asia, studies were conducted in Jordan with a score of 3.65 (Mazahreh et al., 2019) and in Iran with scores of 3.86 (Jahani et al., 2022) and 3.58 (McKenna et al., 2016). In other regions of Asia, Turkey conducted some studies with scores of 3.22 (Güngör Tavsanlı and Nehir, 2023), 3.75 (Bölükbaşı and Kırdök, 2019) and 3.74 (Buyukgoze-Kavas, 2014). Meanwhile, the mean CAAS score for Australia is 3.26 (Zacher, 2014).

The CAAS score in Europe exhibits disparate results in each country. In southern Europe, different mean scores were recorded, such as in Italy, with scores of 3.47 (Di Fabio & Kenny, 2016), 3.83 (Di Maggio

et al., 2015), and 3.71 (Soresi et al., 2012). Meanwhile, in Portugal, the scores are 4.10 (Monteiro & Almeida, 2015) and 4.04 (Duarte et al., 2012). The rest of southern Europe includes Serbia, with a score of 3.08 (Mirković et al., 2020), and Spain, with a score of 3.86 (Merino-Tejedor et al., 2016). In Western Europe, Switzerland conducted some studies with scores of 3.46 (Johnston et al., 2013) and 3.70 (Rossier et al., 2012). Other results of mean CAAS scores include the Netherlands with a score of 3.75 5 (van Vianen et al., 2012); France with scores of 3.50 (Pouyaud et al., 2012) and 3.75 (Atitsogbe et al., 2019); and Belgium with a score of 3.68 (Dries et al., 2012). In the center region of Europe, the mean CAAS score in the Czech Republic is 3.72 (Hladío et al., 2019). In the last region of Europe, the Northern region, the mean CAAS score in Lithuania is 3.85 (Navaitienė, 2014), and in Iceland, several studies were conducted with scores of 3.46 (Vilhjálmsdóttir, 2021); 3.94 (Einarsdóttir et al., 2015); and 3.91 (Vilhjálmsdóttir et al., 2012).

In addition, several studies reported the mean CAAS scores for the Americas for example, scores of 4.0 (Leong et al., 2023), 3.72 (Levin & Lipshits-Braziler, 2022), 3.47 (Xu, 2020), 4.04 (Nye et al., 2018), and 3.83 (Porfeli & Savickas, 2012). Meanwhile, for Brazilians, the mean scores are 3.88 (Cammarosano et al., 2019), 3.91 (Ambiel et al., 2016), 2016), 3.73 (Audibert & Teixeira, 2015), and 4.12 (Teixeira et al., 2012). Moreover, in South Africa, the mean CAAS scores are 4.09 (Maree, 2019), 4.16 (Ismail et al., 2016), and 3.88 (Maree, 2012). The rest of the African region shows a mean score for Ghanaians of 3.75 (Affum-Osei et al., 2021).

A trend line spanning the years 1998 to 2023 is constructed in Fig. 2 using extrapolated ID-CAAS and CAAS versions from many nations. Indonesia ranks 26th among all countries in the context of career adaptability, as evaluated by ID-CAAS (3.80), which is above the global average. Meanwhile, two previous studies obtained a mean score of 3.78 (van Rensburg et al., 2022) and 3.91 (Sulistiani et al., 2018).

4. Discussion

The objective of this research is to substantiate the validity of the career adaptability measurement scale within the context of Indonesia. The validation and psychometric property measurement using Rasch analysis represents a novel approach to validating the CAAS, which differs from the previous procedures. The findings indicate that the ID-CAAS has demonstrated sufficient psychometric properties to assess the career adaptability of the population of Indonesia.

Furthermore, the findings indicate that the ID-CAAS is unidimensional, devoid of any local dependencies, and provides a valuable evaluation, as there is no misfit item compared to the optimal modeling size under examination. Additionally, the developed ID-CAAS offers excellent dependability for both persons and items. The empirical evidence also demonstrates that the 5-point Likert scale (from strongest to

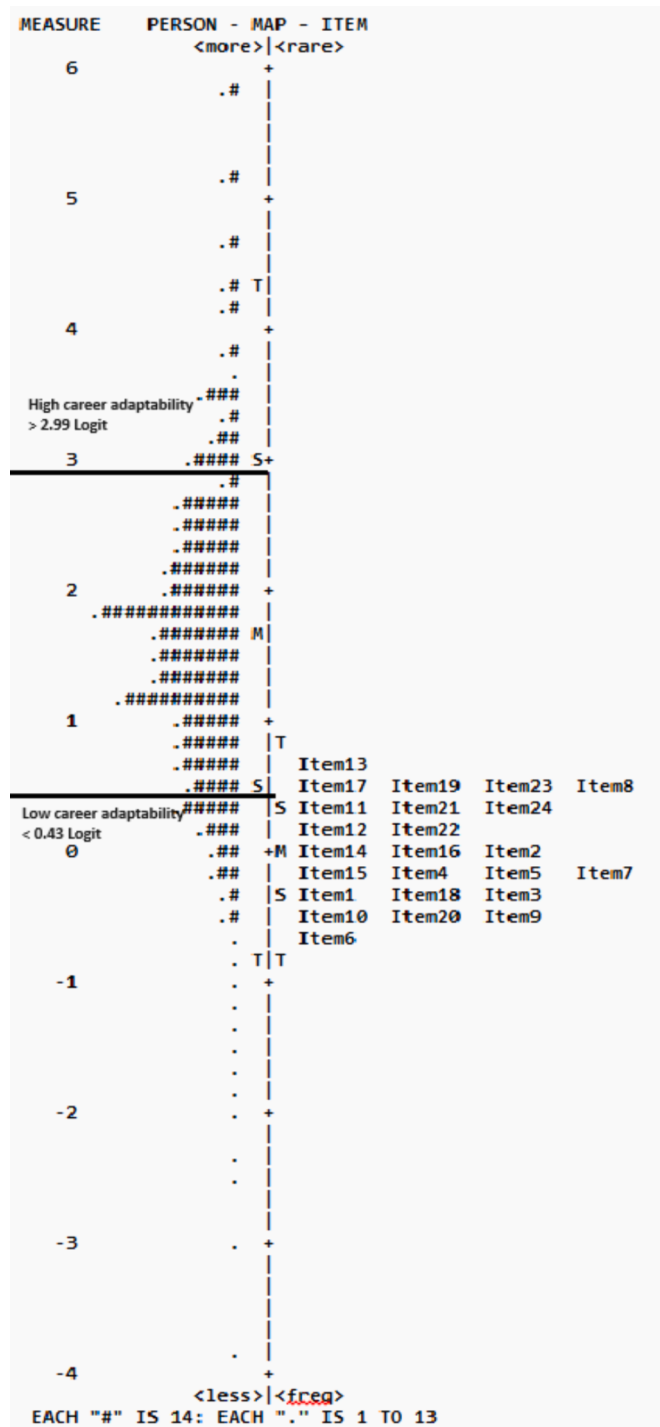


Fig. 2. Wright Person-Item Rasch Map ($n = 1953$) for ID-CAAS. The Wright Map element depicted in Fig. 2 illustrates the distribution of item difficulty and the distribution of respondent ability. The figure's right-hand side illustrates the arrangement of the least difficult elements at the bottom and the most challenging ones at the top. The distributed skills of the respondents are depicted on the left side of the map, with the least able at the bottom and the most able at the top. The two are compared directly in a single logit Rasch "bar". The image is the output of Winsteps Software version 4.5 for the Rasch model.

weakest) utilized in the CAAS does not cause responders to get distracted. In addition, our findings reveal that the respondents' career adaptability is average, suggesting that Indonesians possess adequate aptitude for managing careers. However, this study also reveals that respondents continue to encounter challenges while attempting to

Table 5
Result of DIF Prob and DIF Contrast Analysis on ID-CAAS Item ($I=24$, $N=1953$).

School	DIF Contrast				
	Item 5	Item 6	Item 9	Item 11	Item 12
Madrasah Tsanawiyah	0.11	0.77*	0.28	−0.10	−0.58
Junior High School	−0.05	0.35	−0.03	0.27	−0.05
Madrasah Aliyah	−0.11	−0.77*	−0.28	0.10	0.58
Senior High School	0.16	0.24	0.00	0.04	−0.18
Vocational High School	0.28	0.26	0.09	0.09	−0.12
University Student	0.34	0.14	−0.26	−0.14	−0.26
DIF Prob	0.0001	0.0008	0.0017	0.0016	0.0044

explore their immediate surroundings. Additionally, career planning services in school can help students develop curiosity in the career exploration process (Diogo et al., 2020). Despite a number of substantial concerns regarding the measurement and the subject matter, that study enhanced our understanding, awareness, and knowledge of the present research.

First, the findings from the person separation index reveal a score of 3.57 logit and a person reliability of 0.93 within the relevant sample. The scale demonstrates an adequate level of sensitivity to differentiate among respondents with varying career adaptability levels, whether high, medium, or low (Linacre, 2022). Based on Rasch analysis in this research, the categorization of career adaptability is divided into three, namely high, medium and low. High career adaptability in a person or group is described when they have a score if they get a score > 1.71 logit $+ 1.28$ SD (2.99 logit). Furthermore, someone who falls into the medium career adaptability category has a score in the range of 2.99 logit $- 0.43$ logit. Finally, someone who has a score < 1.71 logit $- 1.28$ SD (0.43 logit) is considered to have low career adaptability (Fig. 2). Second, the DIF analysis yielded interesting results. The item indicated as biased with DIF Prob < 0.05 and effect size greater than DIF Contrast (> 0.64 logits) is item 6 in the Madrasah Tsanawiyah and Madrasah Aliyah groups. These findings also indicate differences in the ability of students from different levels of Islamic high school to respond to and adapt to their careers.

Third, the career adaptability of Indonesian people is in the medium category, ranking 26th worldwide, which indicates that it is still below other countries. This finding is significant because it indicates that the career adaptability of Indonesian people remains below that of other countries. A number of factors contribute to this phenomenon. One such factor is that Indonesia, as a multicultural country, is influenced by the parenting style that dominates teenagers in the process of making career decisions. Okubo et al. (2007) explains that parents' academic and career expectations influence young people's career decisions in multicultural families. Therefore, early intervention with an interest in career incompatibility for the multicultural young generation is needed (Argyro, 2019), significantly to increase career adaptability. Apart from that, Indonesia, which has communal and spiritual characteristics, is related to the level of career adaptability of teenagers. This condition is based on research by Pong (2024), which suggests that the personal and communal domains are the strongest predictors of career adaptability in youth.

This research offers several implications for the career development of Indonesia's young generation. First, carrying out the CAAS Indonesian version, which was validated in this research, can be a basis for increasing the career adaptability of young people in Indonesia. ID-CAAS positively impacts the younger generation because schools and universities can use it as a measuring tool to assess the level of adaptability of young people. Schoon's research (2023) suggests that school-based career preparation activities are associated with more career adaptability resources (H1), lower career uncertainty (H2), and higher life satisfaction (H5). Second, mapping the career adaptability of the younger generation using scales adapted to the Indonesian context can be the basis for developing and determining policies in career assistance interventions (Muslihati, 2017). Moreover, the career planning

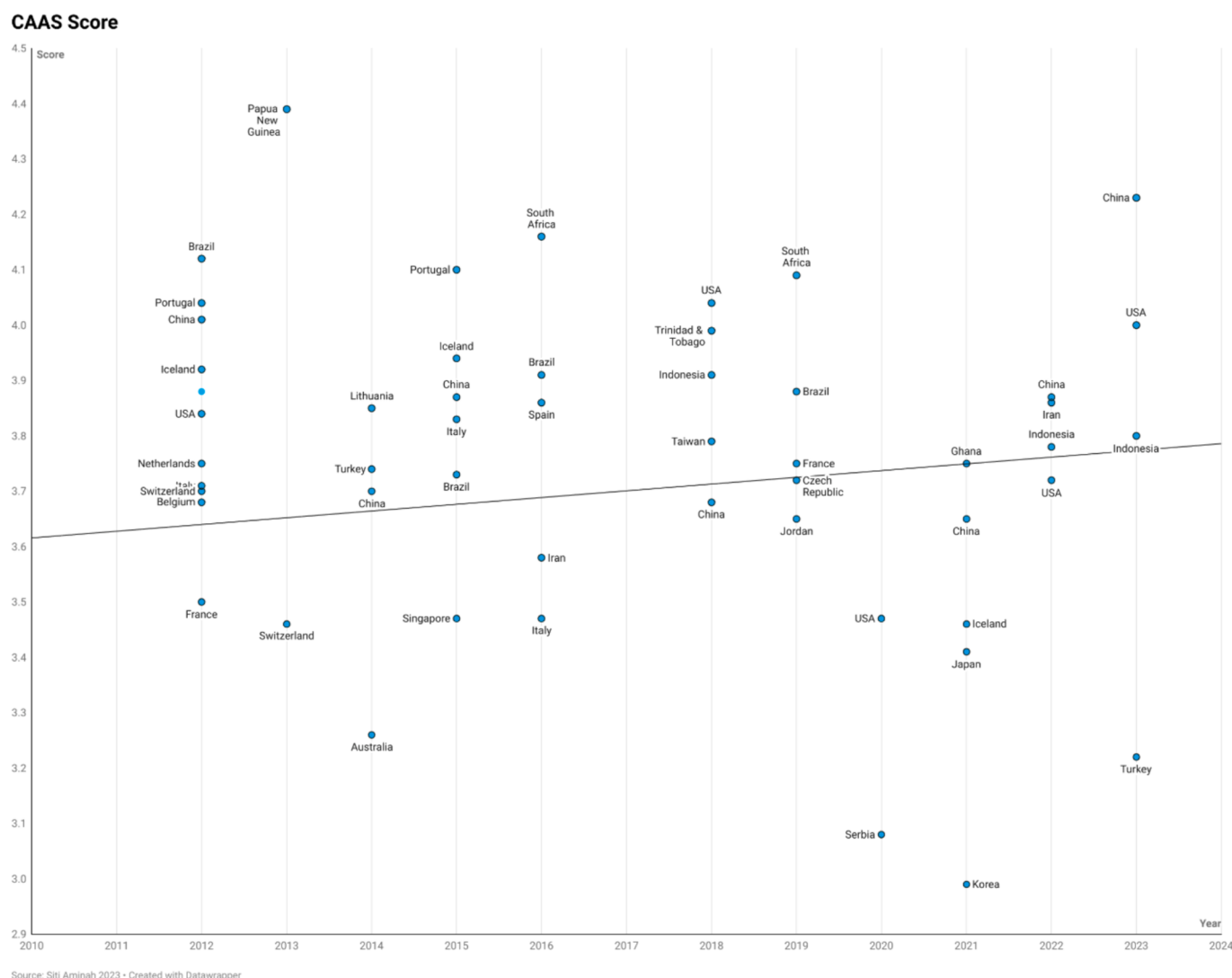


Fig. 3. The present CAAS score was documented in research conducted across many countries and years utilizing an identical scale (24 items, 5-point scale range). Note: This figure illustrates the mean CAAS Scores obtained from the study of (Affum-Osei et al., 2021; Ambiel, Carvalho, Martins, & Tofoli, 2016; Audibert & Teixeira, 2015; Bölükbaşı & Kırdök, 2019; Buyukgoze-Kavas, 2014; Cammarosano, Melo-Silva, & Oliveira, 2019; K.Y. Chan et al., 2015; S.J.H. Chan & Mai, 2015; de Guzman & Choi, 2013; Di Maggio, Ginevra, Laura, Ferrari, & Soresi, 2015; Dries, Van Esbroeck, van Vianen, De Cooman, & Pepermans, 2012; Duarte et al., 2012; Einarsdóttir, Vilhjálmsdóttir, Smáradóttir, & Kjartansdóttir, 2015; Güngör Tavsanli & Nehir, 2023; Hou, Leung, Li, Li, & Xu, 2012; Hui, Yuen, & Chen, 2018; Ismail, Ferreira, & Coetzee, 2016; Jahani, Tabrizi, Dadashzadeh, Sarbakhsh, & Hosseinzadeh, 2022; Johnston et al., 2013; Lee, Sovet, Banda, Kang, & Park, 2021; Leong, Gardner, Nye, & Prasad, 2023; Levin & Lipshits-Braziler, 2022; Maree, 2019; Mazahreh, Stoltz, & Wolff, 2019; McKenna, Zacher, Sattari Ardabili, & Mohebbi, 2016; Merino-Tejedor, Hontangas, & Boada-Grau, 2016; Mirković, Suvajdžić, & Dostanić, 2020; Monteiro & Almeida, 2015; Navaitienė, 2014; Nye, Leong, Prasad, Gardner, & Tien, 2018; Pouyaud, Vignoli, Dosnon, & Lallemand, 2012; Prasad, Gardner, Leong, Zhang, & Nye, 2021; Rossier, Zecca, Stauffer, Maggiori, & Dauwalder, 2012; Savickas & Porfeli, 2012; Song, Mu, Zhang, & Fu, 2022; Soresi, Nota, & Ferrari, 2012; Teixeira, Bardagi, Lassance, Magalhães, & d. O., & Duarte, M. E., 2012; Tien, Lin, Hsieh, & Jin, 2014; van Rensburg, Perera, McIlveen, Asad, & Hoare, 2022; van Vianen, Klehe, Koen, & Dries, 2012; Vilhjálmsdóttir, 2021; Vilhjálmsdóttir, Kjartansdóttir, Smáradóttir, & Einarsdóttir, 2012; Xu, 2020; Zacher, 2014; Atitsogbe, Mama, Sovet, Pari, & Rossier, 2019; Di Fabio and Kenny, 2016; Hlad'ó et al., 2019; Lin and Jiang, 2023; Sulistiani et al., 2018; Wang and Liu, 2022). Datawrapper generated the map using the data Source <https://www.datawrapper.de/>.

strategies based on cultural impact career orientation on Generation Z in Indonesia (Muslihati et al., 2023). Additionally, there are several impacts of school-based career assistance interventions that can support adaptive cognition regarding careers and life satisfaction among the younger generation (Schoon & Henseke, 2023). They can also assist in identifying the direction of career choice (Rangka, 2015). In a university setting, career interventions in career counseling and university programs can also help young people with the university-to-work transition (Chiesa et al., 2024). Consequently, efforts to increase career adaptability are of paramount importance because young people who have high career adaptability are better equipped to make career decisions (Hirschi & Läge, 2016; Perdrix, Stauffer, Masdonati, Massoudi, &

Rossier, 2012) and have good self-efficacy efficacy (Chuang, Huang, Lin, & Chen, 2022; Topino, Svicher, Di Fabio, & Gori, 2022; Agoes Salim et al., 2023).

Furthermore, equipping Indonesia's younger generation with the requisite skills and psychological capital to navigate the demands of the modern workplace will have a positive impact on the quality of human resources in the demographic bonus era (Rokhman et al., 2014), thereby supporting the country's progress in the economic sector. Indonesian youth must possess the requisite skills and psychological capital, including adaptability skills (Pudyanti & Pham, 2023). Efforts are needed to increase the career adaptability of Indonesian people and demonstrate the quality of Indonesian human resources at the world

level. Tomlinson (2017) suggested that individuals with higher levels of career adaptability tend to make proactive decisions when faced with destabilizing job market conditions. Therefore, improving young people's career adaptability is essential to increase their ability to face various competitive and unpredictable situations. Additionally, technological changes impact burnout and unexpected careers in the remote work era. Consequently, adaptability is needed to prevent problems in one's career development (Aminah et al., 2023) and support career continuity (Pribadi et al., 2024). Career adaptability measuring tools appropriate to the local context are critical. Previous studies have shown that CAAS is a good indicator of adaptability (Savickas & Porfeli, 2012).

In addition, this research differs from previous CAAS validations in that it employs Rasch analysis to translate and validate into Indonesian. This approach enables a comparison of each respondent's response patterns with the entire sample's response patterns. The use of Rasch analysis in instrument validation for the Indonesian context demonstrated effectiveness and robust evidence of reliability (Folastri et al., 2023). Moreover, the Rasch analysis in this study also revealed the response threshold or item bias in the ID-CAAS (Bond & Fox, 2007; Sumintono & Widhiarso, 2014).

However, this research has several limitations. First, the respondents involved in this research were predominantly from areas on the island of Java such as Jakarta, Central Java, Yogyakarta, and West Java. Meanwhile, regions outside Java are not yet represented in a representative manner. This is important to consider regarding the role of diverse ethnic and cultural backgrounds on career adaptability. Second, based on age group, the majority of respondents were < 20 years old from a total of 1953 respondents. Accordingly, the findings in this study cannot represent the age group above 20 years in a representative manner. Further research is needed to be able to see career adaptability in more diverse age groups. Moreover, previous research shows that career adaptability is influenced by factors such as perfectionism (Chen et al., 2022), self-efficacy (Chuang, Huang, Lin, & Chen, 2022; Topino, Svicher, Di Fabio, & Gori, 2022; Agoes Salim et al., 2023), resilience (Zhang et al., 2023), emotional intelligence (Pong & Leung, 2023), self-esteem (Gori et al., 2022; Parola and Marcionetti, 2023), ability to compromise (Parola, 2023), ability to build self-character (Lin & Jiang, 2023); and self-concept (Rusu et al., 2015). In connection with the findings of this research, the use of additional instruments, such as career decision self-efficacy (Winingsih et al., 2023), will facilitate the generation of a comprehensive understanding of the relationship between career adaptability and other comparable aspects, thereby enhancing the validity of the measurement aspects.

5. Conclusion

The Rasch-based validation of the Career Adaptability Scale in Indonesian revealed adequate psychometric properties and reliability of measuring career adaptability in the Indonesian context. The availability of a valid and reliable scale enables career counselors, researchers, and organizations to assess and improve individuals' career adaptability, resulting in enhanced career decision-making, job satisfaction, and well-being.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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