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The development and psychometric properties of multidimensional hardiness inventory for young adults in Indonesia

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Abstract
The need to have a capacity to remain hardy despite stress and adversity, particularly in young adult groups, is an essential thing to address. However, to our knowledge, reliable and valid scales to measure the construct is still lacking, particularly in Indonesia. Thus, it encourages the development and validation of the Multidimensional Hardiness Inventory for Young Adults (MHIYA) in Indonesia to measure this capacity. MHIYA was developed through a comprehensive review of literature and a content validity testing process. The data from 326 participants aged 18-40 years old were analyzed using confirmatory factor analyses with a structural equation modelling approach. The final validated MHIYA consists of 18 items loading on three dimensions: commitment, control, and challenge. Cronbach's α ranged between 0.780 and 0.902 in each dimension indicating high internal consistency reliability for each dimension of the MHIYA. The result from item discrimination analysis indicates that all items in MHIYA could distinguish individuals with high and low levels of hardiness. Therefore, MHIYA is a valid and reliable scale for measuring hardiness among young adults in Indonesia.

Keywords: Hardiness, stress, inventory, young adult

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Introduction

The purpose of this study was to rigorously develop, validate, and evaluate the Multidimensional Hardiness Inventory for Young Adults (MHIYA) as a tool to measure young adults' hardiness in Indonesia. Although stress can be experienced at various age levels, the period of emerging adulthood (18-20 years) is a period that is specifically characterized by many stressors such as academic, social, and professional stressors (O'Rourke et al., 2018). Not only in the emerging adulthood period, the young adult period (20-40 years) also faces a stressful normative transition (Arnett, 2001; Duffy et al., 2019), both in terms of developments in the education and professionals aspect, social relations, as well as those caused by various other changes in life (Shanahan et al., 2020). The young adult period is a productive age which is characterized by dynamic transitions that occur from being a student, working, or getting married to becoming a parent in the family (Arnett, 2001). Furthermore, the young adults will be the dominant workforce group for the next decade, so understanding their well-being and how they can emerge from the pandemic is crucial for our societal functioning in the later stage.

The stress experienced by young adults is particularly salient during the COVID-19 pandemic in Indonesia. COVID-19 pandemic may bring the most profound effects to this group since it impacts various spheres of life. The restrictions on activities that were forced to be carried out to prevent the transmission of the virus resulted in an increase in the unemployment rate. The Ministry of Manpower in Indonesia (Kementerian Ketenagakerjaan) noted that as many as 2,146,667 workers were affected by this and even being laid-off (Biro Humas Kemnaker, 2020). The negative impact is not only experienced by workers, but also touches other roles such as students and even parents. Previous study conducted by cross-faculty researchers at Universitas Padjadjaran, found that of 1,465 respondents, depression symptoms experienced by college students reached 47% (Siswadi, 2020) with 32% of them experiencing mild symptoms, 12.1% moderate symptoms, and 2.5% severe symptoms (Anastasia, 2020). In addition, it was also found that 75.34% of parents with children who study from home experienced moderate levels of stress. This stress is thought to have occurred due to conflicts due to demands to work from home and

household obligations in addition to having to accompany their children to study (Susilowati & Azzasyofia, 2020).

Given the challenges faced by this age period, it is not surprising that the level of stress experienced by young adults is higher compared to other age groups. A survey in USA for example, showed that millennials (18-33 years) and generation X (34-47 years), which incidentally is the generation currently in the young adult period, reported the highest stress levels on average compared to other generations who were older (American Psychological Association, 2012). Stress also decreases with age, which is thought to be due to a decrease in social participation such as work or parenting, as well as changes in the way stress is perceived and the coping processes underlie (Aldwin & Igarashi, 2016; Charles & Luong, 2013). In facing the potential stressors, one of the capacities that may help young adults to dealing with stress is hardiness. It has been proved that individuals who have a high level of hardiness are resilient to adversity because they have the capacity to keep themselves mentally healthy despite being under pressure. This is due to their perception of stress as a less-threatening stimulus and the ability to stay optimistic to their capability in facing demands and stress (Wiebe & Williams, 1992).

Hardiness was first defined by Kobasa (1979) as "a constellation of personality characteristics that function as a resistance resource in the encounter with stressful life events". In contrast to the concept of resilience, which is defined as a person's ability to adapt in an effective way to his environment, despite being faced with menacing situations or any form of difficulty (Mohatashami et al., 2015), hardiness refers to a personality trait possessed by an individual to moderate the manner of dealing with stressful factors. Hardiness was introduced as a personality characteristic to help individual buffer stress. Furthermore, resilience is also conceptualized as an outcome that involves two parts: 1) the experience of having significant adversity and 2) a positive adaptation despite experiencing the adversity (Herrman, 2011). Therefore, hardiness is seen as an important dispositional characteristic since it may promote resilience as an outcome.

The quality of hardiness is manifested in feelings and behaviors that are characterised through the three dimensions of hardiness: commitment, control, and challenge. Commitment is expressed as a tendency to involve oneself (rather than feeling alienated from) whatever one is doing or encounters (Maddi et al., 1979). In terms of cognitive aspects, a committed person has a common sense of purpose that enables them to identify and find meaningful events, objects, and people. When it comes to action, committed people invest in themselves and their relationships within a social context and they do not give up easily in difficult situations. Control is expressed as a tendency to feel and act as if one has influence (instead of being helpless) in the face of various contingencies of life (Averill, 1973; s, 1976; Seligman, 1975). Individuals with high control have a self-perception as the one who holds control over imagination, knowledge, skill, and his own choice (Kobasa et al., 1982). Challenge is expressed as a belief that change, rather than stability, is a normal part of life and that the anticipation of change is an attractive impetus for growth rather than being perceived as a threat to security (Berlyne, 1964; Csikzentmihalyi, 1975; Maddi et al., 1965). Challenge indicates an attempt to reduce the stress by interpreting the triggering event as stimulating rather than threatening, especially because the change requires readjustment (Kobasa et al., 1982). In coping behavior perspective, challenges will help in directing someone to try to change themselves which will ultimately make a person experience growth (Kobasa et al.,1982). Challenges, coupled with increased openness and flexibility, can assist individuals in integrating and providing an effective assessment of experienced events, even the unexpected ones (Moss, 1973). Eschleman (2010) conducted meta-analysis to explore hardness and found a significant positive intercorrelation between commitment, control, and challenge. According to that research, control and commitment had a strong relationship, meanwhile the commitment-challenge and control-challenge had been found to have a moderate relationship. Thus, some research combined the three dimensions in hardiness and measured it as a total score, even though other research separated each dimension into a different score (Hull et al., 1987).

Hardiness is often associated with dealing with stress through problem solving, rather than being denial or avoidance; interacting with others by giving each other help, rather than by competition or overprotection; and performing effective self-care, rather than providing excessive or deficient nutritional intake, exercise, or relaxation (Maddi, 2002). Hardiness had been shown to have a positive impact and had been identified as a protective factor in individuals facing stressful events in various research contexts. Research conducted by Abdollahi, Talib, Yaacob, and Ismail (2014) proved that hardiness could significantly reduce the perception of stress. Escolas, Safer, and Bartone (2013) in their study reported that hardiness had a negative association with PTSD in military workers. In addition, Dolbier, Smith, and Steinhardt (2007) also reported that hardiness had a negative association with stress and symptoms of illness.

In regard to the positive impact of hardiness in various contexts of conditions, a measurement tool is needed that can be used to determine the level of hardiness in Indonesia. We reviewed several scales to measure hardiness

in order to help establish the construct model and room for improvement in developing a scale with better psychometric properties.

Table 1 <Review of Hardiness Scales>

	Dispositional Resilience Scale (DRS; Bartone et al., 1989)	**Health-Related Hardiness Scale (HRHS; Pollock & Duffy, 1990)**	**Unabridged Hardiness Scale (UHS; Ouellette, 1993)**	**Revised Academic Hardiness Scale (RAHS; Benishek, et al., 2005)**	**Personal Views Survey III- R (PVS; Maddi et al., 2006)**
Dimension	- Commitment - Control - Challenge	The control dimension was changed into a sense of mastery to assess health-related stressors	- Commitment - Control - Challenge	- Affect control - Effort control - Commitment - Challenge	There is no detailed information, only explaining that the definition used was that of Kobasa (1979)
Item	Initially 50 item to a shortened version with a total of 15 items hence named as DRS-15	51 item → 34 item	71 items. The scale was then revised, resulting in 2 shorter scales: 20 items Abridged Hardiness Scale (AHS) and 36 items Revised Hardiness Scale (RHS)	80 items consisting of 20 items for each scale	18 item
Measurement scale	4-point Likert scale	No detailed information	No detailed information	No detailed information	No detailed information
Target population	No detailed information	No detailed information	No detailed information	No detailed information	Workers, high-schoolers, and college students
Reliability	α = 0.93	α = 0.91 for the total scale and α = 0.87 for each scale	No detailed information	α = 0.91, 0.88, 0.81, and 0.90 for the commitment/effort control, challenge, affective control, and total scale of RAHS, respectively	No detailed information
Validity	Confirmatory factor analysis	No detailed information	No detailed information	No detailed information	No detailed information

Table 1 < Previous Table Connection: Review of Hardiness Scales>

	Dispositional Resilience Scale (DRS; Bartone et al., 1989)	**Health-Related Hardiness Scale (HRHS; Pollock & Duffy, 1990)**	**Unabridged Hardiness Scale (UHS; Ouellette, 1993)**	**Revised Academic Hardiness Scale (RAHS; Benishek, et al., 2005)**	**Personal Views Survey III- R (PVS; Maddi et al., 2006)**
Limitation	Not yet found stable if used in certain language and population contexts. In addition, the number of dimensions measured was found to be 4 dimensions, not in accordance with the 3 dimensional model of hardiness. (Madrigal, Gill, & Eskridge, 2016)	Specifically measures people with illness thus cannot be used to measure hardiness in a wider scope	Not applicable because it is an amalgamation of various scales. In addition, the estimated scores of commitment, control, and challenge differ significantly when measured using different scales (Funk, 1992)	Specific measures in an academic context and to students thus cannot be used to measure hardiness in a wider scope	Even though it has a correlation with other measuring scales, the effect is not too large so it still leaves doubt that the scale adequately measures hardiness. In addition, the main shortcoming of PVS is on the measurement scale used to measure the challenge dimension (Maddi et al., 2006) Most of the samples used in testing this scale are specific samples, such as workers, high-schoolers, and college students

Besides the given review in Table 1, items in hardiness scale that were tested on a relatively more general population like UHS, DRS, and PVS consists of negative-toned items that are similar to neuroticism and maladjustment scale (Funk, 1992). In addition, there were also biases found in the existing hardiness scale as they did not adequately test hardiness theory (Funk, 1992). Given the importance of hardiness and the lack of reliable and valid scale to measure the construct particularly in Indonesia, the Multidimensional Hardiness Inventory for Young Adult (MHIYA) needs to be developed with an attempt to overcome the shortcomings of existing scales. In addition, the need to develop a hardiness scale in Indonesia is also based on finding that stated ability to cope with and persevere with stress might be influenced by cultural values (Mund, 2017). The development of MHIYA is also important particularly during this pandemic. It is unavoidable that pandemic causes a lot of probable long-term changes in young adults who tend to have multiple roles such as being students, workers, and/or as parents. Thus, knowing the hardiness level may help young adults to adapt positively to this long-term stressful situation (e.g. Waysman et al., 2001; Abdollahi et al., 2014). In this research, we decided to measure the hardiness into three dimensions: commitment, control, and challenge. Based on Kobasa et al. (1982), MHIYA will have a score for each dimension and also a total score as the combination of the three dimensions, taking the intercorrelation between each of the hardiness's dimensions as a consideration.

There are some differences between MHIYA and the previous hardiness scale. First, we will adjust the item construction to a more positive-toned wording, which states the presence of rather than the absence of the indicator of the dimension. Second, we will derive the conceptual definition of hardiness and its components to

construct a theoretical based operational definition when making MHIYA's items. This research is expected to construct a hardiness scale that can be used by professionals, especially in the field of psychology, to screen the level of hardiness in each dimension of commitment, control, and challenge that young adult has to detect protective factors in these individuals. The present study aims to validate MHIYA so it can be used as a basis for consideration for clinical psychologists in determining psychotherapy intervention steps, particularly in dealing with client with salient unhealthy coping mechanism, and for psychological scientists in conducting research related to hardiness in young adults.

Method

Data were collected by administering the scale online. The inclusion criteria were Indonesian young adults in the age range of 18-40 years old and had agreed with the consent statements. Data collection was carried out for 2 weeks starting from November 25, 2020 to December 3, 2020. Out of 365 data, 326 data were analyzed after removing incomplete data and filtering the participants from the inclusion criteria. There were 216 females (66.26%) and 110 males (33.74%). Mean age of participants was 25.01 (*SD* = 4.43). Majority of the participants were private sector employees (47.24%) and college students (30.98%). Overall, the majority of participants had a bachelor's degree (64.11%), and were Chinese (29.76%).

The procedure of the development of MHIYA consisted of test conceptualization, test construction, expert judgment, peer review, readability test, try-out test, item analysis, and test revision (Cohen et al., 2013). The hardiness operationally defined in MHIYA using Kobasa (1979) which proposed hardiness as "a constellation of personality characteristics that function as a resistance resource in the encounter with stressful life events." In regard to this definition, the personality dispositions of hardiness are then categorized into the three dimensions: commitment, control, and challenge. Each dimension was represented by a different number of indicators. The definition and indicators of are written as follows:

Table 2 <MHIYA Dimensions and Indicators>

No.	Dimension	Definition	Behavior Indicator(s)
1.	Commitment	A tendency to involve oneself (rather than feeling alienated from) whatever one is doing or encounters (Maddi, Hoover, & Kobasa, 1979)	• A tendency to involve oneself in the difficulties encountered • A tendency to act actively in finding solutions to the difficulties encountered
2.	Control	A tendency to feel and act as if as if one has influence (instead of being helpless) in the face of various contingencies of life (Averill, 1973; Phares, 1976; Seligman, 1975)	• A tendency to perceive oneself as having an influence in dealing with various life difficulties • A tendency to act as if one has influence/control in the face of life's difficulties
3.	Challenge	A belief that change, rather than stability, is a normal part of life and that the anticipation of change is an attractive impetus for growth rather than being perceived as a threat to security (Berlyne, 1964; Csikzentmihalyi, 1975; Maddi, Propst, & Feldinger, 1965)	• A belief that change is a normal thing in life • A belief that change is an opportunity for self-growth

Based on the indicators, 12 target items were constructed for each dimension, which means there were 6 items for each indicator in each dimension. Thus, a total of 36 items created in MHIYA for the trial purpose. However, the total target items in MHIYA were 18 items with 6 items representing each dimension. The items were answered on a 6-point Likert scale from 1 (very unsuitable) to 6 (very suitable) to measure participants' hardiness. We adopted the 6-point Likert scale because these response options do not have neutral points in the middle and

thus possesses better measurement properties than the 5-point Likert scale (Boone et al., 2010). The MHIYA scale produces 4 scores: the commitment dimension score, the control dimension score, the challenge dimension score, and the overall score. The dimension score is obtained by adding up each item's answer score on each hardiness dimension, both favorable and unfavorable items. For unfavorable items, scoring will be done after the participant's answer scores are reversed. The higher the score on a particular dimension, the higher the level of hardiness on that dimension. Each score will be given points based on the selected scale. The total score is obtained by adding up the scores of the three hardiness dimensions, which are commitment, control, and challenge dimension. The score range for each dimension is 6-36, while the overall score range for hardiness is 18-108.

The initial 36-item MHIYA was tested by a panel of experts in psychometric to cover the accuracy, appropriateness, and the clarity of the constructs, items, and instructions of the scale. Thus, after going through revision, the items were tested to a sample group of the same inclusion criteria of the target population to see the readability of the test. the test was conducted for 12 participants aged from 18-40 years old. Minor revisions (e.g. language structure and rewording) were made to 21 items and major revisions (e.g. change the item to make it more suitable to the indicator) were made to 4 items. The results of the revision then tried out to the target population through online forums and social media. One of the example of the item in commitment dimension is *"Saya menerima perubahan yang terjadi dalam hidup saya".* The sample item in control dimension is *"Saat menghadapi masalah, saya tidak menyerah untuk mencari solusinya hingga permasalahan tersebut selesai".* Meanwhile the sample item in the challenge dimension is *"Saya berusaha untuk menyelesaikan semua masalah dalam hidup saya."* Data collection was administered online using the Google Form (https://bit.ly/MHIYA). This self-report questionnaire included introduction and brief explanation of the present study, informed consent, demographic data, the MHIYA scale, and DRS-15 to measure MHIYA's construct validity.

In this study, the reliability, validity, and item analysis were conducted per dimension and for the total scale. The reliability of the scale was measured by Cronbach alpha to measure the internal consistency of the test. The validity was measured by using construct validity which were the confirmation of the factorial structures and correlation with the other test. The factorial structures of the MHIYA were examined using confirmatory factor analysis (CFA). The test used in this study to determine the construct validity is Dispositional Resilience Scale-15 (DRS-15) in Indonesian version by Lukman (2008). The Indonesian version is reliable (α = .67) and valid (Lukman, 2008). The item analysis of MHIYA was conducted by using several methods: the factor loadings of each item, correlation indices method, and the proportion of endorsement. The data analysis was conducted using JASP ver. 0.14.1.

Results and Discussion

The overall reliability of the MHIYA with 36 items was Cronbach's α = 0.89. According to Kaplan and Saccuzzo (2009), the Cronbach's α values for this model shown in Table 3 indicate good internal consistency for each dimension of the hardiness in the MHIYA.

Table 3 <36-item MHIYA Reliability Coefficients>

	Item	*α*	*M*	*SD*
Commitment	12	.781	58.23	6.62
Control	12	.806	47.55	6.56
Challenges	12	.793	53.84	6.94
Total	36	.899	159.61	17.09

CFAs were conducted to confirm and refine the factorial structures identified from the MHIYA. The revisions of the CFA model were performed based on the goodness-of-fit indexes, modification indexes, and an integrative item analysis. The CFA were conducted with structural equation modeling (SEM) in JASP version 14. The following fit indices with the proposed cut-off criteria were used to assess the fit between hypothesized models and the data: CFI >.90, TLI >.90, RMSEA <.06, SRMR <.06, GFI >.90 (Hair et al., 2019; Hu & Bentler, 1999; Schumacker & Lomax, 2015). The $\chi 2$ is reported but not used as a fit criterion because it tends to reject the models that are based on a large sample size (Bentler & Bonett, 1980). Since the hardiness construct is a

multidimensional construct identified based on the theoretical framework discussed earlier, we hypothesize that the second-order model would be confirmed in the measurement model.

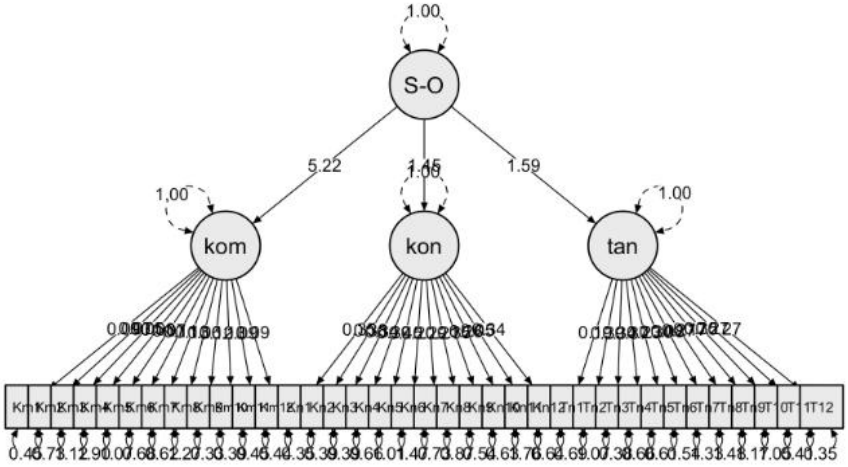

Figure 1 <Second-Order Model of MHIYA>

The CFA results of this model show no good fit indexes in the model and the data collected. The table is as follows:

Table 4 <Model Fit>

	Chi-Square (>.005)	CFI (>.90)	TLI (>.90)	RMSEA (<.06)	SRMR (<.06)	GFI (>.90)	Interpretation
MHIYA	.001	.737	.720	.074	.073	.765	Model does not fit

An analysis of interdimensional and corrected item-total correlation was performed based on its discriminatory power among the other items. According to Nunnally and Bernstein (1994), the discriminatory power of items is divided into 3 categories as shown in Table 5. Most of the items in each dimension which were control (91.7%), commitment (83.3%), and challenge (83.3%) dimensions have good discrimination power in terms of being able to distinguish individuals who have a high level of and low level of hardiness on each of the dimensions: commitment, control, and challenge.

Table 5 <Interdimensional-Item Correlation Indexes (crITD) >

Index	Category	Commitment	Control	Challenge
r ≥ .30	Good discrimination power	13, 14, 16, 17, 18, 19, 20, 21, 22, 23, 24	25, 26, 27, 28, 29, 30, 31, 33, 34, 36	1, 2, 3, 4, 5, 6, 8, 10, 11, 12
.20 ≤ r < .30	Moderate discrimination power	-	32	9
r < .20	Poor discrimination power	15	35	7

Most of the items in each dimension, which were commitment (66.7%), control (83.3%), and challenge (75%) have good discrimination power, which is able to distinguish individuals who have high and low levels of hardiness on the overall dimensions.

Table 6 <Total-Item Correlation Indexes (crITT) >

Index	Category	Commitment	Control	Challenge
r ≥ .30	Good discrimination power	13, 14, 18, 19, 21, 22, 23, 24	25, 26, 27, 28, 29, 3 32, 33, 34, 36	2, 3, 4, 5, 6, 8, 10, 11, 12
.20 ≤ r < .30	Moderate discrimination power	16, 17, 20	30	1, 9
r < .20	Poor discrimination power	15	35	7

Categorization of items based on proportion of endorsement (PoE) values as in Table 7, was based on the criteria proposed by Domino and Domino (2006) and Kendall and Brockington (1980, in Millon & Bloom, 2008). Most of the items in each dimension have a PoE index >85% on the commitment (75%), control (66.7%), and challenge (50%) dimensions. This showed that most of the items in each dimension on the MHIYA scale tended to be approved by the participants.

Table 7 <Proportion of Endorsement Indexes>

Index	Category	Commitment	Control	Challenge
PoE < 15%	Item tends to be disapproved (An indication of social desirability)	-	-	7
15% ≤ PoE ≤ 85%	Item triggers evenly distributed responses	15, 16, 19	28, 29, 30, 35	2, 4, 8, 9, 10
PoE > 85%	Item tends to be approved (An indication of social desirability)	13, 14, 17, 18, 20, 21, 22, 23, 24	25, 26, 27, 31, 32, 33, 34, 36	1, 3, 5, 6, 11, 12

Integrative item analysis was performed on the 36-item MHIYA to produce a final 18-item MHIYA with good psychometric properties in accordance with the test specification as proposed. The cr_{ITD} , cr_{ITT} , PoE, and the factor loadings were put into consideration to test the model fit of 18-item MHIYA. The priority to maintain the item was based on the cr_{ITD} and cr_{ITT} to maximize the items' discriminatory power and the factor loadings to see the correlation of the item and measured dimension, as well as the content of the item qualitatively. The consideration to revise the item was based on a poor psychometric property of the item, PoE index to determine the response distribution, and on the relevance and the suitability of the underlying dimension. The revised item was item 14 in the commitment dimension.

Table 8 <Integrative Item Analysis>

Dimension	Selected Item	Eliminated Item	Revised Item
Commitment	13,18,19,21,22	15,16,17,20,23,24	14
Control	25,26,27,31,33,36	28,29,30,32,34,35	-
Challenge	3,4,6,10,11,12	1,2,5,7,8,9	-

After the revision was made, the 18-item MHIYA was reanalyzed for its psychometric properties. The overall reliability was Cronbach's α = .90. This indicated a better internal consistency in each dimension housed in the 18-item MHIYA compared to the 36-item MHIYA.

Table 9 <18-item MHIYA Reliability Coefficients>

	Item	*α*	*M*	*SD*
Commitment	6	.780	29.71	3.89
Control	6	.806	27.18	4.35
Challenges	6	.784	28.09	4.24
Total	18	.902	84.99	10.90

A three-factor model on MHIYA was imposed. We performed modification indices by correlating the residual covariances on several items to modify the model to be fitter in the measurement. It showed that the model fits well with the data, with the factor loadings were between .354 and .730 and the fit indexes similar to those in the previous second-order model indicated a model fit. Based on the results of factor analysis using CFA, it was found that the model on the MHIYA was in accordance with the theoretical model of hardiness according to Kobasa (1979) which indicated that the MHIYA was proven to measure the hardiness construct. Table 10 contains the indexes of the model measured.

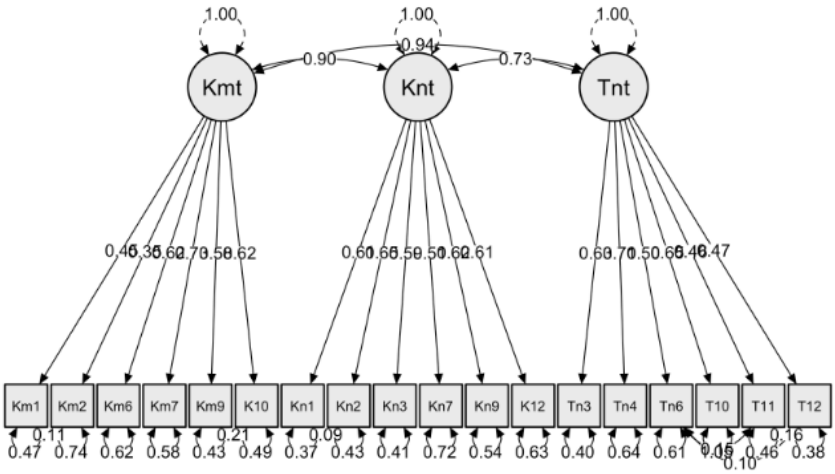

Figure 2 <Three-Factor Model of MHIYA>

The correlation with each dimension of DRS-15 to test the MHIYA's construct validity was also conducted. Each dimension of MHIYA was significantly correlated with each dimension of DRS-15, which were the MHIYA commitment dimension (*M* = 29.71, *SD* = 3.89) with the DRS-15 commitment dimension (*M* = 21.33, *SD* = 3.16, *α* = .577) (*r* = .510, *p* < .01), MHIYA control dimension (*M* = 27.18, *SD* = 4.35) with DRS-15 control dimension (*M* = 15.95, *SD* = 2.02, *α* = .68) (*r* = .379, *p* < .01), and the MHIYA challenge dimension (*M* = 28.09, SD = 4.24) with the DRS-15 challenge dimension (*M* = 13.00, *SD* = 2.32, α = .675) (*r* = .404, *p* < . 01). The MHIYA total score (*M* = 84.99, *SD* = 10.91) was also found to have a significant correlation with the DRS-15 total score (*M* = 50.29, *SD* = 5.25, *α* = .736) (*r* = .716, *p* < .01). The results indicate that each dimension in MHIYA: commitment, control, and challenge dimension, as well as the total score of MHIYA are valid to measure hardiness based on its significant correlation with another valid hardiness measurement scale, which is DRS-15.

Through validity and reliability testing, it was found that the MHIYA is valid and reliable scale for each of its dimensions; commitment, control, and challenge, as well as on the overall dimensions. One of the factors that influence the reliability of an scale is the scale itself (Urbina, 2004). MHIYA was proved reliable because the items in each dimension consistently measure the same construct since the items were constructed according to the theoretical framework from literature review.

Table 10 <Model Fit>

	Chi-Square (>.005)	CFI (>.90)	TLI (>.90)	RMSEA (<.06)	SRMR (<.06)	GFI (>.90)	Interpretation
MHIYA	.001	.952	.942	.050	.044	.930	Model fit

Table 11 <Standardized Factor Loadings, crITT, and, crITT of the MHIYA>

Dimension	Item	Factor Loading	Std. Error	cr_{ITD}	cr_{ITT}
Commitment (Indicator 1)	Q13.	.446	.044	.520	.532
	Q14.	.354	.053	.361	.377
	Q18.	.615	.053	.488	.569
Commitment (Indicator 2)	Q19.	.730	.054	.589	.640
	Q21.	.575	.045	.618	.653
	Q22.	.618	.048	.610	.646
Control (Indicator 1)	Q25.	.608	.045	.656	.616
	Q26.	.646	.048	.637	.611
	Q27.	.586	.045	.601	.565
Control (Indicator 2)	Q31.	.510	.055	.425	.492
	Q33.	.619	.051	.542	.581
	Q36.	.609	.054	.556	.498
Challenge (Indicator 1)	Q3.	.626	.047	.580	.607
	Q4.	.714	.057	.547	.559
	Q6.	.504	.052	.557	.489
Challenge (Indicator 2)	Q10.	.653	.068	.450	.480
	Q11.	.462	.046	.561	.552
	Q12.	.469	.043	.582	.570

Furthermore, through reliability testing using Cronbach's alpha technique, each dimension in the MHIYA was reliable, or in other words, had good interitem consistency. Other factors contributing to the properties of the scale also originate from the participants, since the performance of the participants may affect the reliability of the test, such as fatigue, lack of motivation, the influence of drugs use, indifference attitude to the test, efforts to maintain a good impression, and many others (Urbina, 2004). We had tried to minimize the influence of these factors by ensuring that prospective participants were voluntarily willing to take the test by submitting informed consent to the research scale. Furthermore, the data collection was done online so that participants can determine for themselves when was the best time to fill out the scale questionnaire. The existing items had also gone through the process of readability testing, peer review, and revision, thus the instructions and word diction of each item were easy to understand.

Through CFA analysis, it was found that MHIYA is valid in measuring the hardiness construct. The items in MHIYA are arranged based on indicators derived from the hardiness theoretical framework by Kobasa (1979). The number of samples obtained in this study was adequate to carry out various psychometric testing methods, including CFA, which is a minimum of 75-100 people (Mundfrom et al., 2005). With regard to sample representativeness (Gravetter & Forzano, 2012) which is the extent to which the characteristics of the sample accurately reflect the characteristics of the population, in this study, the sample of young adults was quite heterogeneous based on age, gender, occupation, level of education, culture, and domicile thus it may also have an effect in the validity and reliability of MHIYA.

In addition, based on its correlation with DRS-15, this further strengthens the finding that MHIYA is able to represent each dimension in hardiness well. Thus, MHIYA is valid to measure each of the hardiness dimension and the total scale of the hardiness dimension as well. This is in line with the original theoretical formulation of hardiness as a general personality style comprising three interrelated dimensions, resulting in separate subscale scores for each dimension and the total scale score (e.g. Bartone et al., 1989; Kobasa et al., 1982). Based on the results of the item discrimination test conducted using the corrected item-total correlation, it was found that most of the items in each dimension and overall in the MHIYA had good discriminating power. Most of the MHIYA items also have a corrected item-total correlation value above 0.2, indicating that the items in this scale adequately represent the same content domain.

There are several limitations found in the present study. First, in regard to the item analysis by using the item endorsement index, the responses on the commitment, control, and challenge dimensions were unevenly distributed. This could be improved by producing a more unambiguous, factual, and to make a distinction between favorable and unfavorable item harder. The construction of an item that followed those characteristics were stated to be probable to trigger a more even distribution of responses (Anastasi & Urbina, 1997). Second, it is also worth mentioning that in this study, it was found that the control and challenge dimensions in the Indonesian version of DRS-15 were not correlated with each other. In fact, theoretically, the dimensions of the hardiness measurement on the DRS-15 should be correlated with each other. However, to our knowledge, there are not a lot of scales that have good reliability and validity other than the DRS-15 in measuring hardiness in Indonesia. Therefore, a further in-depth review is needed regarding other hardiness measurement so that there are other alternative scales that might be used as comparisons.

For further research, there are many avenues to improve the quality of the MHIYA. First, by having other hardiness scales that have been proven valid and reliable in Indonesia as a reference for testing validity using the correlation with other test method. Second, to test criteria validity to find out the test scores ability to draw conclusions about the individual's position on other measurements (Cohen & Swerdlik, 2009). Third, since stress level was found associated with hardiness (e.g. Wiebe & Williams, 1992), future research may also conduct construct validity testing using a stress level scale (e.g. Perceived Stress Scale; Cohen et al., 1983) to see how far hardiness can predict stress levels in young adults. Fourth, items with an unsatisfactory item endorsement index can be revised to improve the psychometric properties of the MHIYA items and elicit more evenly distributed responses. For example, item 18 could be revised to "I feel that I am able to overcome the tough days I'm going through (*Saya merasa mampu melewati hari-hari sulit yang saya hadapi*)". Finally, in the reference to the revised item based on the cr_{IT} index, factor loading, and PoE, it is necessary to retest the MHIYA to ensure an increase in the quality of the item in particular and the improvement of the MHIYA in general in measuring individual hardiness.

Conclusion

Based on the psychometric properties of this study, it can be concluded that MHIYA, both in each dimension and in total score, have a high internal consistency and valid in measuring hardiness in young adults in Indonesia. In addition, MHIYA's items have the ability to differentiate between individuals of high level and low level of hardiness. The MHIYA is a potential scale to be used by professionals in the psychology field as a measurement to screen the hardiness level of individuals in the commitment, control, and challenge dimension to detect the protective factors among young adults in Indonesia. The MHIYA is also expected to be a consideration for clinical psychologists to determine intervention plans and steps and to conduct theoretical research in hardiness topics in young adults for scientists.

References

Abdollahi, A., Abu Talib, M., Yaacob, S. N., & Ismail, Z. (2014). Hardiness as a mediator between perceived stress and happiness in nurses. *Journal of Psychiatric and Mental Health Nursing*, *21*(9), 789-796. https://doi.org/10.1111/jpm.12142

Abdollahi, A., Talib, M. A., Yaacob, S. N., & Ismail, Z. (2014). Problem-solving skills and hardiness as protective factors against stress in Iranian nurses. *Issues in Mental Health Nursing, 35*(2), 100–107. https://doi.org/10.3109/01612840.2013.843621

Aldwin, C. M., & Igarashi, H. (2016). Coping, optimal aging, and resilience in a

sociocultural context. In V. Bengston & R. A. Settersten, Jr., (Eds.), *Handbook of the theories of aging* (3rd ed., pp. 551–576). New York, NY: Springer.

Anastasi, A., & Urbina, S. (1997). *Psychological testing.* (7th ed.). USA: Prentice-Hall, Inc.

Anastasia, T. (2020). 47 persen mahasiswa di Indonesia alami gejala depresi akibat COVID-19. Klikdokter.com. Retrieved from https://www.klikdokter.com/info- sehat/read/3638747/47-persen-mahasiswa-di-indonesia-alami-gejala-depresi-akibat- covid-19

Arnett, J. J. (2001). Conceptions of the transition to adulthood: Perspectives from adolescence through midlife. *Journal of Adult Development*, *8,* 133–143. https://doi.org/10.1023/A:1026450103225

Averill, J. R. (1973). Personal control over aversive stimuli and its relationship to stress. *Psychological Bulletin, 80*, 286-303. https://doi.org/10/1037/h0034845

Bartone, P. T., Ursano, R. J., Wright, K. M., & Ingraham, L. H. (1989). The impact of a military air disaster on the health of assistance workers. *Journal of Nervous and Mental Disease, 177*(6), 317-328. https://doi.org/10.1097/00005053-198906000-00001

Benishek, L. A., Feldman, J. M., Shipon, R. W., Mecham, S. D., & Lopez, F. G. (2005). Development and evaluation of the revised academic hardiness scale. *Journal of Career Assessment, 13*(1), 59-76. https://doi.org/10.1177/1069072704270274

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, *88*(3), 588. https://doi.org/10.1037/0033-2909.88.3.588

Berlyne, D. E. (1964). Novelty. *New Society, 87*, 23-24.

Biro Humas Kemnaker. (2021). *Kliping: Berita ketenagakerjaan.* Retrieved from http://perpustakaan.kemnaker.go.id/admin/assets/product_img/pdf/4_Februari_2021.pdf

Boone, W. J., Townsend, J. S., & Staver, J. (2010). Using Rasch theory to guide the practice of survey development and survey data analysis in science education and to inform science reform efforts: An exemplar utilizing STEBI self-efficacy data. *Science Education*, *95*, 258–280. https://doi.org/10.1002/sce.20413

Charles, S. T., & Luong, G. (2013). Emotional experience across adulthood: The

theoretical model of strength and vulnerability integration. *Current Directions in Psychological Science, 22,* 443– 448. http://dx.doi.org/10.1177/0963721413497013

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 386-396.

Cohen, R. J. & Swerdlik, M. E. (2009). *Psychological testing and assessment: An introduction to tests and measurement.* (7th ed.). New York, NY: McGraw-Hill Higher Education.

Cohen, R. J. & Swerdlik, M. E., Sturman, E.D. (2013). *Psychological testing and assessment: An introduction to tests and measurement.* (8th ed.). New York, NY: McGraw-Hill Higher Education.

Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety.* San Francisco: Jossey-Bass.

Dolbier, C. L., Smith, S. E., & Steinhardt, M. A. (2007). Relationships of protective factors to stress and symptoms of illness. *American Journal of Health Behavior, 31*(4), 423-433. https://doi.org/10.5993/AJHB.31.4.9

Domino, G., & Domino, M. L. (2006). *Psychological testing: An introduction*. Cambridge University Press.

Duffy, M. E., Twenge, J. M., & Joiner, T. E. (2019). Trends in mood and anxiety symptoms and suicide-related outcomes among U.S. undergraduates, 2007–2018: Evidence from two national surveys. *Journal of Adolescent Health.* https://doi.org/10.1016/j.jadohealth.2019.04.033

Eschleman, K. J., Bowling, N. A., & Alarcon, G. M. (2010). A meta-analytic examination of hardiness. *International Journal of Stress Management, 17*(4), 277–307. https://doi.org/10.1037/a0020476

Escolas, S. M., Pitts, B. L., Safer, M. A., & Bartone, P. T. (2013). The protective value of hardiness on military posttraumatic stress symptoms. *Military Psychology, 25*(2), 116–123. https://doi.org/10.1037/h0094953

Funk, S. C. (1992). Hardiness: A review of theory and research. *Health Psychology, 11*(5), 335-345. https://doi.org/10.1037/0278-6133.11.5.335

Gravetter, F. J. & Forzano, L. B. (2012). *Research method for the behavioral science.* Belmont: Cengage Learning.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis. A global perspective.* (7th ed.). Upper Saddle River, NJ: Person-Hall International.

Herrman, H., Stewart, D. E., Diaz-Granados, N., Berger, E. L., Jackson, B., & Yuen, T. (2011). What is resilience?. *The Canadian Journal of Psychiatry*, *56*(5), 258-265. https://doi.org/ 10.1177/070674371105600504.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Hull, J. G., Van Treuren, R. R., & Virnelli, S. (1987). Hardiness and health: A critique and alternative approach. *Journal of Personality and Social Psychology, 37,* 1–11. https://doi.org/10.1037/0022-3514.53.3.518

Kaplan, R. M., & Sacuzzo, D. P. (2009). *Psychological testing: Principles, application, and issues.* Belmont, CA: Wadsworth, Cengage Learning.

Kobasa, S. C. (1979). Stressful life events, personality, and health: An inquiry into hardiness. *Journal of Personality and Social Psychology, 37*, 1-11. https://doi.org/10.1037/0022-3514.37.1.1

Kobasa, S. C., Maddi, S. R., & Kahn, S. (1982). Hardiness and health: A prospective study. *Journal of Personality and Social Psychology*. https://doi.org/10.1037/0022- 3514.42.1.168

Lukman, A. (2008). *Adaptasi* Dispositional Resilience Scale-Short Form *pada pramu sosial usia dewasa muda di Panti Sosial Bina Laras Harapan Sentosa.* Depok: Universitas Indonesia.

Maddi, S. R. (2002). The story of hardiness: Twenty years of theorizing, research, and practice. *Consulting Psychology Journal: Practice and Research*, *54*(3), 173. https://doi.org/10.1037/1061-4087.54.3.173

Maddi, S. R., Kobasa, S. C., & Hoover, M. (1979). An alienation test. *Journal of Humanistic Psychology, 19*, 73-76. https://doi.org/10.1177/002216787901900407

Maddi, S. R., Harvey, R. H., Khoshaba, D. M., Lu, J. L., Persico, M., & Brow, M. (2006). The personality construct of hardiness, III: Relationships with repression, innovativeness, authoritarianism, and performance. *Journal of Personality*, *74*(2), 575-598. https://doi.org/10.1111/j.1467-6494.2006.00385.x

Maddi, S. R., Propst, B. S., & Feldinger, I. (1965). Three expressions of the need for variety. *Journal of Personality, 33,* 82-98. https://doi.org/10.1111/j.1467-6494.1965.tb01373.x

Millon, T. & Bloom, C. (Eds.). (2008). *The Millon Inventories: A practitioner's guide to personalized clinical assessment.* New York, NY: Guilford Press.

Mohatashami, A. R., Tajari, F., & Rad, M. R. A. (2015). Studying the relationship between hardiness and resilience personality traits an academic achievement among students of Kashan University in 2014. *Cumhuriyet Üniversitesi Fen Edebiyat Fakültesi Fen Bilimleri Dergisi*, *36*(3), 3294-3301. ISSN: 1300-1949

Moss, G. E. (1973). *Illness, immunity, and social interaction.* New York: Wiley.

Mund, P. (2017). Hardiness and culture: A study with reference to 3 Cs of Kobasa. *International Research Journal of Management, IT and Social Sciences*, *4*(2), 152-159. ISSN: 2395-7492.

Mundfrom, D. J., Shaw, D. G., & Ke, T. L. (2005). Minimum sample size recommendations for conducting factor analyses. *International Journal of Testing, 5(2)*, 159-168. https://doi.org/10.1207/s15327574ijt0502_4

O'Rourke, E. J., Halpern, L. F., & Vaysman, R. (2020). Examining the relations among emerging adult coping, executive function, and anxiety. *Emerging Adulthood*, *8*(3), 209-225. https://doi.org/10.1177/2167696818797531

Oullette, S. C. (1993). Inquiries into hardiness. In Goldberger, L., & Breznitz, S.(eds.). *Handbook of stress: Theoretical and clinical aspects.* (2nd ed.). New York: Free Press.

Phares, E. J. (1976). *Locus of control in personality.* Morris Town, NJ: General Learning Press.

Pollock, S. E., & Duffy, M. E. (1990). The Health-Related Hardiness Scale: Development and psychometric analysis. *Nursing Research, 39*, 218-222. https://doi.org/10.1097/00006199-199007000-00008

Seligman, M. E. P. (1975). *Helplessness.* San Francisco: Freeman.

Schumacker, R. E. & Lomax, R.G. (2015). *A beginner's guide to structural equation modelling.* (3rd ed.). Routledge.

Shanahan, L., Steinhoff, A., Bechtiger, L., Murray, A., Nivette, A., Hepp, U., . . . Eisner, M. (2020). Emotional distress in young adults during the COVID-19 pandemic: Evidence of risk and resilience from a longitudinal cohort study. *Psychological Medicine,* 1-10. https://doi.org/10.1017/S003329172000241X

Siswadi, A. (2020). Covid-19, gejala depresi mahasiswa lebih tinggi dari tenaga kesehatan. Tempo. Retrieved from https://gaya.tempo.co/read/1368093/covid-19-gejala-depresi-mahasiswa-lebih-tinggi-dari-tenaga-kesehatan

Susilowati, E., & Azzasyofia, M. (2020). The parents' stress level in facing children study from home in the early of COVID-19 pandemic in Indonesia. *International Journal of Science and Society, 2(3)*, 1-12. https://doi.org/10.200609/ijsoc.v2i3.117

Urbina, S. (2014). *Essentials of psychological testing.* (2nd ed.). New Jersey, USA: John Wiley & Sons, Inc.

Waysman, M., Schwarzwald, J., & Solomon, Z. (2001). Hardiness: An examination of its relationship with positive and negative long term changes following trauma. *Journal of Traumatic Stress: Official Publication of the International Society for Traumatic Stress Studies*, *14*(3), 531-548. https://doi.org/10.1023/A:1011112723704

Williams, P. G., Wiebe, D. J., & Smith, T. W. (1992). Coping processes as mediators of the relationship between hardiness and health. *Journal of Behavioral Medicine*, *15*(3), 237-255. https://doi.org/10.1007/BF0084