



SUNANDIE EKO GINANJAR

Realibility and Validity of Learning Autonomy for the First Middle School Student Based on Demography

ABSTRACT: *Autonomy, as a psychological condition, can develop well if given the opportunity to develop through training carried out continuously and done early, for example training tasks without assistance and adapted to individual abilities. The approach in this research is quantitative with a cross-sectional survey method. A cross-sectional survey was conducted to determine students' learning autonomy with the demographic factors that were present in the participants. So, this study specifically describes the reliability and validity calculation of learning autonomy instruments. Validity and reliability are the most important things in compiling research instruments, because they can show that an instrument is in accordance with the construct that will be revealed and has a certain degree of measurement results. The method used in reliability testing and validity is G. Rasch (1980)'s model. Respondents in this study were public and private Junior High School students, public and private MTs (Madrasah Tsanawiyah or Islamic Junior High School), and Junior Boarding Schools in Bandung Regency, West Java, Indonesia. The findings show that reliability test results for the learning autonomy instrument address the reliability coefficient of 0.86, which means it has good reliability. Of the 35 items tested for validity, there is 1 (one) item not invalid, so it was decided to be removed. Items that are valid and can be used in research are 35 items.*

KEY WORDS: *Learning Autonomy; Demography; Reliability and Validity Calculation.*

INTRODUCTION

Autonomy is a psycho-social issue that appears continuously throughout the individual life cycle. Autonomy comes from the word "autonomy", as an independent individual standing alone without the help of others. Autonomy is expressed based on L. Steinberg (2005) concept that autonomy is an ability to take action and establish

supportive relationships with others (cf Steinberg, 2005; Cullaty, 2011; Ryan, Deci & Vansteenkiste, 2015).

"Autonomy", as written in the *KBBI (Kamus Besar Bahasa Indonesia or the Large Indonesian Language Dictionary)*, is a situation that can stand alone without relying on others. The aspects of autonomy are intellectual aspect, social aspect,

About the Author: Sunandie Eko Ginanjar, S.Pd. is a Student of Educational Psychology at the School of Postgraduate UPI (Indonesia University of Education), Jalan Dr. Setiabudhi No.229 Bandung 40154, West Java, Indonesia. For academic interests, the Author is able to be contacted via e-mail address at: sunandie17@gmail.com

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emotional aspect, and economic aspect, that is an independent state will emerge, when someone learns or does something without any coercion or influence from others.

For example, when accepted into college, accepted to work, have a partner, or have a problem with a friend, the autonomy of individuals is ready to help deal with existing situations and problems (Weeks, 2000; TPKPB, 2005; and Darling-Hammond, 2019).

Achieving autonomy means freeing yourself from the bond of parents in order to develop self-identity, as the ability to make decisions and make individuals the source of emotional strength, so that they do not depend on others. According to Masrun *et al.* (1986), and other scholars, autonomy is an attitude that allows someone to do free, do something on their own impulse themselves for their own needs, pursuing achievements, full of perseverance, and willing to do something without the help of others (Masrun *et al.*, 1986; Nickel, 2007; and Aprilia, 2009).

Sharon K. Parker (2014); Enrique Fernandez-Macias (2018); and other scholars, explained autonomy with regard to tasks and skills how to do and how to manage them. Individuals who have high autonomy are relatively able to deal with problems, because autonomy is a very important aspect of personality (Parker, 2014; Ryan, Deci & Vansteenkiste, 2015; Fernandez-Macias, 2018; and Utari, 2019).

In the opinion of Kennon M. Sheldon *et al.* (2001), as cited also in Meilani Safitri (2017) and other scholars, autonomy is equated with the term autonomy, and conceptually is defined as *“feeling like you are the cause of your own actions rather than feeling that external forces or pressures are the cause of your action”*. Feelings determine themselves the actions taken, not because of force or pressure from outside (cf Sheldon *et al.*, 2001; Ryan, Deci & Vansteenkiste, 2015; and Safitri, 2017).

The balance between autonomy and dependence changes constantly with one's development, environmental context, time span, and changes in cultural and social values, expectations, and demands. Confident

in individuals is a developmental stage to show identity. In this context, Desmita (2013), and other scholars, stated that autonomy is a stage of individual development to break away from parents and try to find an identity that shows an attitude that does not require the help of parents or friends (Desmita, 2013; Karabanova & Poskrebysheva, 2013; and Doan, 2017).

Individual activities are motivated by motives for doing tasks or jobs that can show identity. According to M.A.W. Brower (1980), as cited also in M. Darmawan (2013) and other scholars, learning autonomy is an autonomous feeling in the learning process in managing strategies, carrying out learning, and evaluating learning outcomes. The attitude of autonomy is generally influenced by the self-confidence possessed by individuals. Someone, who has an independent attitude, must be able to actualize optimally and not depend on others (Brower, 1980; Darmawan, 2013; and Gholami, 2016).

The difficulty of individuals to fight for autonomy lies in efforts to break infantile ties that have developed and enjoyed comfortably during childhood. F.P. Rice (1999), as cited also in Eka W. Pratiwi (2009) and other scholars, explained that termination of infantile ties often results in an elusive reaction or misunderstood for both children and parents (Rice, 1999; Pratiwi, 2009; and Pruett & DiFonzo, 2014).

Difficulty is deciding the nodes of the emotional bond of childishness logically and objectively. L. Steinberg (2005), as cited also in Junianti (2015) and other scholars, asserted that for most adolescents, establishing a sense of autonomy is an important part of becoming an adult as establishing a sense of identity (Steinberg, 2005; Murphy *et al.*, 2008; and Junianti, 2015).

The first autonomy appears in the individual is autonomy that is autonomy, namely the release of individual infantile emotional bonds, so that he/she can determine something without always having emotional support from parents. In this context, L. Steinberg (2005)'s analysis, as cited also in Junianti (2015) and other scholars, said that if teenagers,

especially early adolescents, are able to break the knots of infantile ties, then, they will do separation, namely separation from the family. This success in carrying out separation is the basis for achieving autonomy, especially autonomy that is autonomy oneself (Steinberg, 2005; Pruett & DiFonzo, 2014; and Junianti, 2015).

In an adolescence, there is a dynamic movement of autonomy from the individual's lack of autonomy in childhood towards more autonomous autonomy in adulthood. Autonomy, as a psychological condition, can develop well if given the opportunity to develop through training carried out continuously and done early, for example training tasks without assistance and adapted to individual abilities (Walgito, 2010; Ryan, Deci & Vansteenkiste, 2015; Kobak *et al.*, 2017; and Tasaik & Tuasikal, 2018).

In the context of learning autonomy, autonomy in learning is not just the freedom of students to learn and choose the competencies they choose, but also up to the evaluation. It is also emphasized that learning autonomy is a form of learning, where each individual has his/her own responsibility to plan, implement, and carry out self-learning evaluations (Hiemstra, 1994; Reinders, 2010; and Meyrista, 2014).

Autonomy of learning can be interpreted as the activity of the teaching and learning process and takes place, because it is driven by self-will, own choice, and own responsibility in the learning process. In this context, Haris Mujiman (2007), and other scholars, stated that independent learning is an active learning activity, which is driven by motives for mastering competencies, and is built on the knowledge or competencies, that have been possessed students are said to be able to learn independently if they are able to do learning tasks on their own initiative without dependence on other people (Mujiman, 2007:1-2; Baghat, Vyas & Singh, 2015; and Budiyan & Sujarwo, 2019).

The autonomy of student learning is closely related to learning habits at home. Some student habits that indicate low learning autonomy include: when teachers give homework, do not do it at home, they

tend to do it at school, and rely on friends' answers. In this sense, Martinis Yamin & Bansu I. Ansari (2009), and other scholars, stated that students do not dare to express opinions and are lazy to ask. Most students show symptoms should be appointed in answering questions in a discussion, copying the work of others, telling others to make homework, always complaining with additional tasks, and being less responsible (Dunne *et al.*, 2007; Yamin & Ansari, 2009; and Holdcroft, 2014).

The problem of learning autonomy is cheating activities, always found in various student learning activities, even among teachers when conducting examinations. Research conducted by Yuli Fitria (2019), and other scholars, said that cheating cheats as a manifestation that people who cheat do not believe in their own abilities, so they choose to see the work of others, aware and not aware that it makes the perpetrators tend to depend on other people and do not try to do the tasks or tests accordingly ability (Beasley, 2014; Fitria, 2019, and Ramberg & Modin, 2019).

There are three indicators of learning autonomy, as L. Steinberg (2005) revealed, and cited also in Junianti (2015) and other scholars, namely: behavioral autonomy, value autonomy, and emotional behavior (Steinberg, 2005; Junianti, 2015; and Jacobs, Renandya & Power, 2016). Based on the results of a survey conducted by Santi Utami (2015), and other scholars, it was shown that girls had a presentation of around 55.7% in independent behavior compared to adolescent boys (Chen & Liu, 2014; Utami, 2015; and Douthwaite *et al.*, 2019).

Utari Sumarmo (2013), and other scholars, stated that individuals, who have high learning autonomy tend to learn more actively, are able to monitor, evaluate, and manage learning more effectively, which saves time in completing tasks, arranges study time efficiently, and gets the highest score. Students also look for information useful to help the learning process, appropriate material, and observe what is needed in the learning process. Furthermore, students also have to be brave to ask problems that are lacking in the learning process, so that the teacher

Table 1:
Profile of Respondents

No.	Schools	Participants
1.	SMPN (Public Junior High School) Rancaekek 2	90
2.	SMP (Private Junior High School) Bhakti Nusantara 666	90
3.	MTsN (Public Islamic Junior High School) Cikancung	90
4.	MTs (Private Islamic Junior High School) Cikancung	90
5.	Boarding School of Bhakti Nusantara 666	90

is a student facilitator according to their needs (Sumarmo, 2013; Tasaik & Tuasikal, 2018; Fajriah, Gani & Samad, 2019; and Rahmawati, Listiyani & Damayanti, 2019).

The developmental aspects of learning autonomy, according to Masrun *et al.* (1986); Umi Latifa (2017); and other scholars, are indicated by: firstly, responsibility, as the ability to complete tasks, is able to account for the results of work. The ability to explain new roles has principles about what is right and wrong in thinking and acting. Secondly, work on his/her own task or work, in which conditions shown by actions and carried out on their own are not due to others and do not depend on others, and have self-confidence and ability to take care of themselves. Thirdly, the initiative is shown by the ability to think and act creatively. Lastly, fourth, strong self-control is shown by controlling actions and emotions able to overcome problems and the ability to see points of view (*cf* Masrun *et al.*, 1986; Ryan, Deci & Vansteenkiste, 2015; and Latifa, 2017).

Autonomy consists of several aspects, namely: *Personal Attributes* are aspects of self-motivation; *Processes* are aspects relating to process autonomy; and *Learning Context* is an aspect relating to environmental factors and how the environment affects the level of autonomy (Kormos & Csizer, 2014; Ryan, Deci & Vansteenkiste, 2015; and Latifa, 2017).

Bimo Walgito (2010), and other scholars, explained the factors that influence autonomy are as following here:

Firstly, *Exogenous Factors*. It is related to factors that come from outside the individual, such as family, school, and society. Factors that come from the family, for example, the condition of parents, many children in the family, socio-economic

conditions, and so on. Factors originating from the school, for example, education and guidance obtained from the school; while the factors from the community are the conditions and attitudes of the people, who pay less attention to education issues (Conger, Conger & Martin, 2010; Walgito, 2010; and Chen *et al.*, 2018).

Secondly, *Endogenous Factors*. It is related to factors that originate from students themselves, namely physiological factors and psychological factors. Physiological factors include the physical condition of students, healthy or unhealthy; while psychological factors, namely: talent, interest, autonomy, motivation, intelligence, and others. Independent learning is an effort made by individuals to carry out independent learning activities on the basis of their own motivations to master and prepare certain material and/or competencies, so that they can be used to solve the problems they face (Walgito, 2010; Sulistiyarini & Sukardi, 2016; and Sukendar, Endroyo & Sudarman, 2018).

METHODS

Respondents. They were Public and Private Secondary School students, Public and Private MTs (*Madrasah Tsanawiyah* or Islamic Junior High School), and Islamic Boarding School of Secondary Schools in Bandung Regency, West Java, Indonesia, around 450 students, were netted as respondents. Data collection is carried out for 2 months. Profile of respondents from each school is able to see in table 1.

Research Design, Variable, and Instrument. The approach in research is quantitative with a cross-sectional survey method. A cross-sectional survey was conducted to determine students' learning

Table 2:
Indicators of Learning Autonomy

Aspects	Indicators
Perilaku (Behaviour)	- Kemampuan Membuat Keputusan (Decision Making Ability) - Tidak Mudah Terpengaruh Orang Lain (Not Easily Influenced by Others) - Memiliki Kepercayaan Diri (Have Confidence) - Memiliki Potensi dan Percaya Diri (Have Potential and Confidence) - Mampu Menemukan Solusi Masalah (Being Able to Find Solutions to Problems)
Emosi (Emotion)	- Mampu Melepaskan Diri Atas Ketergantungan dari Orangtua atau Guru (Able to Break Out of the Dependence of Parents or Teachers) - Mampu Melakukan Hubungan Baik dengan Orangtua (Able to Have Good Relationships with Parents) - Menentukan Sikap dan Bertanggung Jawab (Determine Attitude and Responsibility)
Nilai (Value)	- Memiliki Keyakinan Didasarkan Benar-Salah dan Baik-Buruk (Have Beliefs Based on True-False and Good-Bad) - Memiliki Keyakinan yang Prinsipil (Have Principal Belief)

autonomy with the demographic factors that were present in the participants. Participants numbered eight demographics, so that included the type of comparison group (Sukmadinata, 2013; Creswell, 2014; and Johnson & Christensen, 2014).

The dependent variable in the study is *Student Learning Autonomy*; and the independent variable is *Demographic Factors*. The Demographic Factors, seen in the study, were gender and age.

The instrument used in the study refers to the dimensions of learning autonomy, with the number of statements 34 and the answer choices as many as 5 items. In the form of scale, research is semantic differential. This scale is used to measure the attitudes, events, or meanings of a particular concept that everyone has (cf Sukmadinata, 2013; Ciabuca, 2015; Verhagen, Hooff & Meents, 2015; and Dinawisda, 2017).

Differential romantic scales consist of five or seven points arranged on a continuum line, where very positive answers are located at the right end and negative are at the end of the line. This is specifically for positive items, if the item is negative then vice versa (Johns, 2010; Verhagen, Sukmadinata, 2013; Ciabuca, 2015; and Hooff & Meents, 2015). The grid of learning autonomy disclosure instruments is presented in the table 2.

RESULTS AND DISCUSSION

The reliability and validity of student learning autonomy instruments are

obtained using the G. Rasch (1980)'s model calculations with the help of Winstep 3.73 software. Validity refers to whether an instrument can measure what attributes should be measured. Reliability refers to reliability or stability, how far the measurement if done many times will produce the same information (cf Rasch, 1980; Sumintono & Widhiarso, 2015; Razali *et al.*, 2016; and Tabatabaee-Yazdi, 2018).

Validity Test. The instrument was tested on 450 respondents. The data obtained were then tested for item validity (item measure) through G. Rasch (1980)'s analysis. Item measure aims to determine the quality of each item by measuring the logit items tested. The parameters used to measure the validity of items by checking the MNSQ (Mean Square Outfit), ZSTD (Z-Standard Outfit), and Pt Measure Corr (Point Measure Correlation), as cited in B. Sumintono & W. Widhiarso (2015), with the criteria as following here:

Received Mean Square (MNSQ) Outfit value:
 $0.5 < MNSQ < 1.5$

The Z-Standard Outfit (ZSTD) value received:
 $-2.0 < ZSTD < +2.0$

Value of Point Measure Correlation (Pt.Meas Corr): $0.4 < Pt. Mean Corr < 0.85$ (Sumintono & Widhiarso, 2015).

A summary of the item measure calculation to test the validity of the learning autonomy instrument is explained in the table 3.

Of the 35 items tested, item number 21 proved invalid, because it has a value of ZSTD (Z-Standard Outfit) 3.8 and Pt Mean

Table 3:
 Validity of the Learning Autonomy

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL		INFIT		OUTFIT		PT-MEASURE		EXACT MATCH		Item
				S.E.	MNSQ	ZSTD	MNSQ	ZSTD	CORR.	EXP.	OBS%	EXP%		
15	1212	550	1.10	.05	1.04	.8	1.10	1.9	.38	.39	35.8	35.8	15	
34	1344	550	.82	.05	1.85	9.9	1.86	9.9	.02	.40	27.1	37.9	34	
6	1356	550	.80	.04	1.52	8.0	1.61	9.2	-.20	.40	31.6	38.4	6	
24	1424	550	.66	.04	.94	-1.1	.94	-1.1	.50	.40	45.6	40.2	24	
27	1552	550	.42	.04	.69	-6.2	.69	-6.2	.43	.41	49.6	42.0	27	
33	1581	550	.36	.04	.66	-6.8	.67	-6.7	.40	.41	53.8	42.2	33	
10	1595	547	.32	.04	2.01	9.9	1.99	9.9	.40	.41	22.1	42.2	10	
3	1609	550	.31	.04	.67	-6.6	.67	-6.6	.31	.41	55.1	42.2	3	
32	1616	550	.29	.04	1.00	.0	.99	-.1	.48	.41	34.7	42.3	32	
9	1634	550	.26	.04	2.75	9.9	2.73	9.9	.34	.41	13.8	42.1	9	
14	1636	550	.26	.04	1.13	2.2	1.13	2.2	.46	.41	38.2	42.1	14	
17	1644	550	.24	.04	.74	-5.1	.74	-5.0	.50	.41	52.0	42.1	17	
16	1660	550	.21	.04	.67	-6.7	.66	-6.8	.45	.41	47.3	41.9	16	
1	1684	547	.14	.04	.55	-9.7	.55	-9.7	.25	.41	58.3	41.9	1	
7	1708	548	.11	.04	.81	-3.6	.81	-3.7	.36	.42	45.6	41.4	7	
22	1718	550	.10	.04	.49	-9.9	.49	-9.9	.52	.42	58.0	40.9	22	
5	1723	550	.09	.04	1.85	9.9	1.85	9.9	.41	.42	23.3	40.9	5	
4	1767	546	-.01	.04	1.03	.6	1.04	.7	.43	.42	33.7	40.4	4	
2	1785	550	-.02	.04	.74	-5.3	.73	-5.4	.30	.42	48.0	39.8	2	
21	1793	547	-.06	.04	.69	-6.5	.69	-6.3	.42	.42	48.3	39.0	21	
31	1784	544	-.06	.04	.82	-3.4	.83	-3.4	.58	.42	40.8	39.0	31	
23	1846	550	-.14	.04	.64	-7.7	.64	-7.7	.55	.42	46.5	37.5	23	
30	1847	550	-.14	.04	.88	-2.3	.88	-2.3	.51	.42	37.5	37.5	30	
26	1875	550	-.19	.04	.78	-4.5	.77	-4.6	.58	.42	38.2	36.2	26	
25	1897	550	-.23	.04	.84	-3.2	.84	-3.2	.48	.42	39.5	35.2	25	
18	1917	550	-.27	.04	.98	-.3	.98	-.4	.60	.41	34.0	34.6	18	
28	1952	550	-.34	.04	.97	-.5	.97	-.6	.52	.41	34.7	34.1	28	
29	1988	550	-.41	.04	.79	-4.3	.80	-4.0	.53	.41	39.8	33.5	29	
8	1989	545	-.44	.04	.90	-1.9	.91	-1.8	.40	.41	40.2	33.1	8	
20	2072	550	-.57	.04	.87	-2.5	.89	-2.1	.37	.41	29.6	32.2	20	
12	2197	550	-.83	.05	.99	-.1	.97	-.5	.42	.40	30.2	32.3	12	
19	2200	550	-.84	.05	1.09	1.7	1.11	2.0	.35	.40	31.6	32.3	19	
13	2250	550	-.95	.05	.86	-2.6	.84	-3.0	.54	.39	34.5	32.8	13	
11	2261	550	-.98	.05	.94	-1.1	.89	-1.9	.53	.39	38.5	33.2	11	
MEAN	1768.1	549.2	.00	.04	1.00	-1.4	1.01	-1.4			39.3	38.2		
S.D.	251.3	1.6	.49	.00	.47	5.5	.47	5.5			10.3	3.6		

Corr (Point Measure Correlation) 0.16, which means it does not meet the criteria for item validity in G. Rasch (1980)'s model. As for further explanation of the level of item suitability and discrimination power of items can be explained as follows:

Firstly, the MNSQ (Mean Square Outfit) outfit and ZSTD outfit are used to check the level of suitability of items with constructs/models. While Pt Measure Corr is used as a measure of Power Discrimination items (Rasch, 1980; Andrich, 2010; and Akhtar, 2017).

Secondly, the expected Mean Square value is 1 (one). The mean-square value (in the outfit) is greater than one, indicating that the observed data has 30% more variation than predicted by G. Rasch (1980); D. Andrich (2010); and H. Akhtar (2017).

Thirdly, the ZSTD value is very sensitive to the number of samples, if the sample used amounts to (>500), there is a tendency for the ZSTD value to show a value above 3. Therefore, some experts

recommend not using this ZSTD criterion if the sample used is large enough (Rasch, 1980; Andrich, 2010; Sumintono & Widhiarso, 2015; and Akhtar, 2017).

Reliability Test. The reliability of G. Rasch (1980)'s model illustrates two things, namely: item reliability and person reliability. Reliability will be high if the research sample and item difficulty level have wide reach and produce small measurement errors (Rasch, 1980; Sukmadinata, 2013; Creswell, 2014; and Akhtar, 2017).

Items have difficulty levels from the easiest to the most difficult. Likewise in the study sample, the sample has a scattered reliability from the smartest to the least intelligent. The criteria for item reliability in G. Rasch (1980)'s modeling are as shown in table 4.

A summary of the calculation of the reliability test of the learning autonomy instrument is explained in the table 5.

The reliability test results show the value of the item reliability with L.J. Cronbach

Table 4:
Criteria for Item Reliability in G. Rasch (1980)'s Modeling

The Amount of Value	Interpretations
< 0.67	Lemah (Weak)
0.67 – 0.80	Cukup (Enough)
0.81 – 0.90	Bagus (Good)
0.91 – 0.94	Bagus Sekali (Very Good)
> 0.94	Istimewa (Excellent)

Source: G. Rasch (1980); and B. Sumintono & W. Widhiarso (2015).

Table 5:
Reliability Test of the Learning Autonomy Instrument

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	1768.1	549.2	.00	.04	1.00	-1.4	1.01	-1.4
S.D.	251.3	1.6	.49	.00	.47	5.5	.47	5.5
MAX.	2261.0	550.0	1.10	.05	2.75	9.9	2.73	9.9
MIN.	1212.0	544.0	-.98	.04	.49	-9.9	.49	-9.9
REAL RMSE	.05	TRUE SD	.49	SEPARATION	10.25	Item	RELIABILITY	.99
MODEL RMSE	.04	TRUE SD	.49	SEPARATION	11.01	Item	RELIABILITY	.99
S.E. OF Item MEAN = .09								

(1943 and 1951)'s alpha value 0.86. In accordance with the criteria in the table, the reliability of items for learning autonomy instruments is in a good category (cf Cronbach, 1943 and 1951; Vehkalahti, 2000; and Shah & Brown, 2020).

CONCLUSION ¹

Based on the results of calculations and analysis of research data, then, in this section the conclusions are as follows: Reliability

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with regard to the level of permanence or the determination of the results of measurements, one instrument has an adequate level of reliability, if the instrument used measures the measured aspects several times, the results are the same or relatively the same. Instruments, that can be trusted will produce data, can also be trusted. Instrument reliability is shown as a degree of consistency.

The scores obtained by the research subjects with the same instruments are under different conditions in this study, and validity testers use G. Rasch (1980)'s model. The reliability test results for the learning autonomy instrument address the reliability coefficient of 0.86, which means it has good reliability.

Of the 35 items tested for validity, there is 1 (one) item not invalid, so it was decided to be removed. Items that are valid and can be used in research are 35 items. There

is no negative value Pt Mean Corr (Point Measure Correlation), indicating there are no misleading item items; meaning also that the item has good discrimination.²

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Junior High School Students in Indonesia and Learning Autonomy

(Source: <http://sekolah.data.kemdikbud.go.id/>, 27/12/2019)

The aspects of autonomy are intellectual aspect, social aspect, emotional aspect, and economic aspect, that is an independent state will emerge, when someone learns or does something without any coercion or influence from others. For example, when accepted into college, accepted to work, have a partner, or have a problem with a friend, the autonomy of individuals is ready to help deal with existing situations and problems.