Validity and reliability of measurement instruments of educative family life

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Abstract

This study is intended to obtain standard instruments of the educative family life. Its construct has been formulated based on the research results of family factors influencing the success of the children at school. The instruments involve children measurement instrument (CMI) and mother measurement instrument (MMI) that apply forced-choice scale inventories. The instrument calibration methods are test of construct validity, content validity–face validity, empirical validity and reliability. Through the calibration of the instruments, the results of the 573 family samples revealed the following results: 1) the construct of 12 family variables described the variations in the educational family life as 38.47% child perception and 41.15% mother perception; 2) 45.85% of the items of structure dimension of CMI are valid; 3) 70.50% of the items of process dimension of CMI are valid; 4) 45.65% of the structural dimension of MMI are valid; 5) 80% of the process dimension of MMI are valid; and 6) both instruments, CMI and MMI, are reliable.

Keywords: Children measurement instrument; instrument; mother measurement instrument; reliability; validity.

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1. Introduction

Many studies have shown that family background, in terms of family size, parental education, parental employment status, family income, home arrangement, parents' educational aspirations and family ownership, affect children's learning achievement at schools (Bridge et al., 1979; Jencks, 1972; Setiawan et al., 2020; Soedijarto, 1997). It shows that families' quality in the educational function needs attention and quality is enhanced to support student-learning achievement (Arifin & Setiawan, 2022; Djaelani, 1995; Loehlin, 1987; Setiawan & Asrowi, 2018).

Many family measurement models have been developed internationally (Olson, 1984). The developed models have received several criticisms, including family research associated with a single respondent (sole respondent) or always based on the mother, so that the term wife sociology of family appears (Alkin, 1992; Kerlinger & Pedhazur, 1973; Kim & Mueller, 1986; Larsen & Olson, 1990). For the reason above, this study focused on developing instruments for measuring the lives of educative families with respondents in the fifth to sixth grade of elementary school children and their mothers.

In the psychological data collection, Anastasi and Urbina (1997) classify data collection techniques based on the revealed substance, which consists of ability testing and personality testing or assessment of ability and assessment of personality (Aiken, 1997). Some personality testing instruments include personality inventory, attitude and interest measurement scales, and projection techniques (Anastasi & Urbina, 1997; Levinson, 1995).

Kim and Mueller (1986) describe quality instruments as some procedures that need to be carried out through steps that can guarantee the quality of used instruments. Djaali (2000) presents the steps of developing instruments that need to be carried out, including '1) determining the theory or concept used, 2) formulating an operational definition of the construct or variable to be measured, 3) developing the dimensions and indicators of the variable to be measured, 4) determining the type of instrument to be developed, 5) making a grid, 6) writing the items following the indicators specified, 7) validating concepts, including construct validation and content validity (usually done by a panel/expert justification), 8) finalising the instrument to be ready for trial, 9) doing trial as the implementation, 10) analysing the results of trials, 11) selecting items based on the results of the trial analysis and 12) finalising the instruments to be ready to use'. Allen and Yen (1979) suggested that the main steps that must be taken are 1) planning a test; 2) writing test items; 3) testing all test items for a rational number of samples, at least 50 people; 4) conducting item analysis; and 5) using the revised number of representative samples with standardised conditions to be used as a final form of test.

The instrument's validity and reliability are the main indicators of instrument quality. Related to instruments in the form of tests, Anastasi and Urbina (1997) revealed that the instrument quality indicators include 1) having high validity, 2) having high reliability, 3) being objective, 4) having a standard and 5) having high efficiency. To achieve test quality, it is stated that four things are widely used in the context of item test analysis, namely item difficulty analysis, item validity and reliability, item characteristic curves and factor analysis. As for personality measurement instruments (non-test), there is no known level of difficulty analysis (Kerlinger, 1986). Nachmias and Nachmias (1981) suggest two types of content validity: logical sampling validity and face validity. Logical validity or sample validity relates to the study of how far the points in the instrument represent representative of the overall characteristics of the object/subject to be measured. While the validity of the face, in general, is related to the format of the instrument concerning the clarity of the print, the size of the letters, the accuracy of the workspace, the accuracy of the language used and the clarity of instructions for working or filling instruments. In line with these explanations, Anastasi and Urbina (1997) remind us

not to be biased between content validity and face validity. Face validity is not only related to what is measured but also concerns what appears on the surface to be measured. They assume that the content validity is termed as sample validity or logical validity, not including face validity.

Concerning writing items in an instrument set, Kline (1993) provides the following instructions: 1) reducing the pouring of insights that subjects may have into items; 2) formulating items clearly and unambiguously; 3) referring to specific behaviour rather than general behaviour for each item; 4) containing one thing in one question or one statement for each item; 5) avoiding possible frequency terms; 6) avoiding the feeling terms; 7) writing the items related to the context of individual subjects that are subject to measurement and can generate very strong responses; and 8) making sure that the instructions made explicitly require each subject to give the first answer that comes from his mind. Coomb (1978) confirms that the best advice is to make conscious plagiarism of questions or statements that have been used and proven to be of good quality.

Underlining the educational process that occurs in the family, Vanderzanden (1996) states that the experience of socialising children first occurs in the family; therefore, parents are specifically the first and foremost social agents. Even parenting is a very dominant factor in the lives of individuals in infancy (Halim & Nipan, 2001; Odum, 1998; Woolfolk & Nicolich, 1984; Zirmansyah, 1998) and early age (Vanderzanden, 1996), especially in the first 5 years of development (Mueller, 1986). Blanchard and Biller's research comparing four groups of children found that children left by fathers before the age of 5 were significantly less likely to have academic ability compared to children whose fathers were involved in the development process of child development (Dagun, 1989; Gonzales & Pijano, 1997; Harbinson, 1978; Hanson, 1985; Mueller, 1986; Pajek & Kosir, 2021). Various educational studies prove that the background of family life, especially in terms of aspects of family size, parental education, parental employment status, family income, home arrangement, parents' educational, aspirations and family ownership, influence the child's learning achievement at school (Bridge et al., 1979; Cahyadi, 2000; Kleinbaum & Kupper, 1978; Setiawan & Asrowi, 2018). Jencks (1972) suggest that family backgrounds determine variations in IQ scores between 10% and 40%, affect almost half the variation in the attainment of educational levels, and explain 15% of the variation in income. Comparatively, Soedijarto (1997) argues that in developed countries, the influence of the family and community environment on educational outcomes in primary schools is between one-and-a-half times (RFJ) to four times (Australia) of school influence, whereas for developing countries it is only one-ninth (India) up to four-tenths (Argentina). In Indonesia, it is only slightly above India, which is one-eighth (Alkin, 1992; D'Antonio, 1983; L'Abate, 1990; Rollin & Galligan, 1978; Vanderzanden, 1996). Scott-Jones and Peebles-Wilkins (1986) classify family background factors that influence children's education in two major groups, namely biological factors and environmental factors. These environmental factors consist of status variables and process variables. Based on a review of several research results, Scott (1966) concludes that among the most dominant factors are socioeconomic status, family size and childbirth order. A study by Blood and Wolf, as cited in Loehlin (1987), showed that marriages with many children are happier than without children, while the happiest have three children.

From a variety of different family study approaches, various measurement models have been exposed which are generally intended to describe the type or profile of the family, including Olson's circumplex model (Olson, 1984), McMaster's model of family functioning (Epstein et al., 1984), Beavers system models (Beavers & Voellers, 1984), Moos' family environment model (Billing & Moos, 1984), Reiss' model (Epstein et al., 1984), Vander Veen's family concept test and BKKBN prosperous family model (Soedijarto, 1997). These various measurement models have become the essential references and are in line with the conceptual baseline for this study, which aims to obtain standard

instruments of the educative family life. Based on the background of the study mentioned above, this research is intended to obtain standard instruments of the educative family life based on the research results of family factors influencing the success of children at school.

2. Methodology

2.1. Family characteristics

The period of home confinement that most countries faced in the first half of 2020 due to the COVID-19 health crisis has become one of the most prominent aspects for the family studied, with psychological implications. In this regard, children and adolescents in families have been among the most affected population groups, as school closures drastically changed their social and educational lives. Furthermore, past research has revealed that confinement has significantly impacted children's health-related behaviours. Similarly, parents have struggled to balance their work and childcare responsibilities. As a result, this data set contains useful information about the COVID-19 home confinement's effects on the educational community and families and the possibilities and opportunities for returning to school. There are four key groups of variables in the data. The first set of variables (A) includes 16 items about individual and family socio-demographic characteristics, such as the respondents' gender, current address, living unit features, job situation, child or children's schooling stage, school ownership and special educational needs. The second set of variables (B) includes 19 questions that examined conciliation during the home confinement period, such as information on paid labour, housekeeping, time spent assisting children with homework and time available for other activities like sports or talking to friends. Finally, a set of 34 variables (C) assessed the impact of the pandemic on the respondents' personal and family life, with a focus on how the pandemic had affected the child or children in their care. Finally, 43 items (D) assessed the characteristics of children's education and their return to school.

2.2. Participants and procedure

It included family as the unit of analysis to test the instruments' validity and reliability in this study. The subjects studied are specified as families with children aged 5 and 6 years in elementary schools in Bandung Regency, West Java Province. As comprising urban and rural areas, the research reveals that the behaviour of rural and urban communities, especially those concerning the role of parents in family life, has significant differences (Hanson, 1985; Soelaeman, 1985).

The number of respondents to reduce the standard error of its instrument, with a sample of 500, is considered more than enough (Kline, 1993). The method of taking samples and determining respondents was carried out in stages (multistage sampling) by involving each subject of the family: the child and the mother.

2.3. Data collection instrument/ data generation techniques

To test the internal consistency of an instrument, it is sufficient to use one instrument or known as single trial administration (Azwar, 1986). The most commonly used technique is the split-half method, which is based on covariance items. The analysis technique used in the split method can be carried out by applying the Spearman–Brown formula or the Rulon formula (Nur, 1987). There are three approaches in conducting a two-part split, namely, 1) odd–even method, 2) order–split method and 3) matched random subsets method (Allen & Yen, 1979). Reliability analysis based on the covariance of everyday items was carried out by applying the formula of the alpha coefficient, KR-20 or KR-21, and

the Hoyt Formula (Nur, 1987). To increase reliability, Kerlinger (1986) suggests the maxmincon principle.

2.4. Data analysis

This research was conducted through a survey. The distribution of instruments is a list of contents that will be used as an instrument model for measuring the lives of educative families using child and mother respondents. The first inventory of the child measurement instrument consists of two parts: 1) part A contains respondents' characteristics viewed from the family's physical demographic and socio-economic conditions, and 2) part B in the form of several statements relating to the climate of the family structure. Part one relates to the intimacy of the social relationships of family members; part two relates to family adaptability; and part three relates to parents' aspirations about their children's education. The second inventory of the mother's measurement instruments is related to the climate of the family process.

The educational family life satisfaction instrument's reliability and validity are investigated in this study. A survey was carried out to gauge family satisfaction. The participants were parents whose children's educational opportunities had been harmed due to the COVID-19 pandemic. The data were gathered in Bandung, the Indonesian capital of West Java. The instrument was created per family life in the form of behaviour and communication structures. It has 21 items that deal with behavioural components and 5 with communication constructs. Cronbach's alpha and adjusted item-total correlations were used to examine the instrument's reliability and validity (rit). We deemed an instrument appropriate if it had a Cronbach's alpha coefficient of 0.8 or higher (scale total) and a rit greater than 0.3.

2.5. Validity and reliability test

To test the validity and reliability, the instrument calibration procedure was carried out, covering the stages of 1) content validity test and 2) empirical validity test, consisting of limited trials intended for test readings (word try-outs) and small-scale trials carried out in two stages where the revised instrument based on the results of limited trials is used in this trial, where each stage has analysed the validity of items and reliability testing. The second phase trial (large scale) was carried out through an analysis of grain quality (item validity) using biserial point correlation and instrument reliability testing with Cronbach's alpha (Aiken, 1997). The constructed model of the educative family life in this study was carried out through several stages: interrater analysis and factor analysis (Marcinekova et al., 2020; Soedijarto, 1997).

3. Results

3.1. Construct of educational family life

From the results, experts' assessments (interrater) obtained improvements in the construct of educative family life based on the results of discussions and suggestions during a small-scale trial, where the number of dimensions changes from 3 dimensions to 2 dimensions and from 14 variables to 12 variables. All the experts involved in assessing the construct hypothesis stated that the construct was adequate. They are considered adequate constructs to explore the educative situation of family life.

By the factor analysis carried out to confirm the number of hypothesised factors (confirmatory factor analysis), it obtained an overview: each number of factors designed in each part of the instrument for measuring family educative life (both structural and process parts) on form: child and

form: mother turns out to provide variances that fall below the eigenvalue criteria of 1. The analysis results can be seen in Tables 1 and 2.

Table 1. Price of kmo, bartlett's test, and variance
instrument factor analysis results form: child

No	Instrument	KMO	Bartlett	Factor	Variance
1	Structural Climate	0,63	2080,33	9	36,014
2	Process Climate				
A	Intimacy	0,775	4386,12	7	29,102
B	Adaptability	0,603	953,639	5	28,274
C	Aspiration	0, 659	1571,52	6	36,498

Source: Analysis results

The level of difference between the schools on the instrument factor analysis results from forms: child is presented in Table 1. It may be deduced that there are no substantial differences between structural and process dimensions. One of them, however, demonstrates a substantial difference: aspiration with a variance score of 36,498.

Table 2. Price of kmo, barlett test, and variance
instrument factor analysis results form: mother

No	Instrument	KMO	Bartlett	Factor	Variance
1	Structural Climate	0,668	2708,86	9	38,826
2	Process Climate				
A	Intimacy	0,778	3388,11	7	33,803
B	Adaptability	0,604	1215,08	5	30,578
C	Aspiration	0,682	1724,4	6	34,251

Source: Analysis Results

From Table 2, it can be concluded that the improvement score on those two climates was relatively stable, with an average variance of 30.000. All of the instruments reached significant values of Bartlett's test and factor analysis, with coverage from the aspects of structural, intimacy, adaptability and aspiration.

Table 3. Item validity analysis results
climate forms of family processes form: child

No	Variable	Number of Valid Items				
		Origin	AVB-1	AVB-2	AVB-3	ANAFAK
1	Intimacy	56	41	54	54	40
2	Adaptability	48	32	30	29	20
3	Aspiration	36	32	34	29	18
	AMOUNT	140	105	118	112	78

Information:

AVB: Item Validity Analysis
ANAFAK: Analysis of Factors
Source: Analysis results

The findings of the product–moment correlation study are presented in Table 3. It was determined that 140 items met the criteria for legitimacy, with a coefficient value of 0.148 for the corrected item-total correlation on each item statement. The Cronbach alpha analysis reveals that the instrument reliability coefficient of the scale of perception of family support is 0.861. This value places the scale in the category of having a high reliability. The findings serve as the foundation for children's support perception scale instruments, which may be used to examine the scale perception of family support in both structural and process settings.

Table 4. Summary of item validity analysis results climate family structure for mother

No	Aspect	Number of Valid Items				
		Origin	AVB-1	AVB-2	AVB-3	ANAFAK
1	Physical-demographic	46	36	23	20	13
2	Social-economy	46	37	25	22	14
	AMOUNT	92	73	48	42	27

Information:
AVB: Item Validity Analysis
ANAFAK: Analysis of Factors
Source: Analysis results

An item-total adjusted correlation coefficient value of 0.116 was determined for each item statement in Table 4 of the findings of the product–moment correlation analysis. To put it another way, the Cronbach alpha analysis shows that the mother's climate family structure scale has a high level of instrument reliability. The data can be utilized to develop instruments to measure mothers' perceptions of educational family support on a scale.

Table 5. Summary of item validity analysis results
climate forms of family processes form: mother

No	Variable	Number of Valid Items				
		Origin	AVB-1	AVB-2	AVB-3	ANAFAK
1	Intimacy	55	42	47	43	30
2	Adaptability	48	35	28	28	18
3	Aspiration	36	31	32	28	23
	AMOUNT	139	108	107	98	71

Information:
AVB: Item Validity Analysis
ANAFAK: Analysis of Factors
Source: Analysis results

As shown in Table 5, 139 items were found to be authentic, with an item-to-item correlation of 0.126, which is a statistically significant connection. Mother's instrument reliability coefficient is 0.642, which is considered high by Cronbach's alpha study of the scale of perception of climate forms of family processes. Climate types of family processes such as mother support perception scale instruments that may be used to measure the level of family educational support, are based on the findings.

Table 6. Distribution of quality points before factor analysis
instrument form: mother and form: child

No	Dimension	Form: Mother	Form: Child
1	Climate Structure Family	42	42
A	Physical-demographic	20	20
B	Social-economy	22	22
2	Climate Process Family	*98*	112
A	Intimacy	43	54
B	Adaptability	28	29
C	Aspiration	28	29

Source: Analysis results

The findings of the product–moment correlation study are presented in Table 6. It was determined that a total of 140 items met the criteria for legitimacy, with a coefficient value of 0.148 for the corrected item–total correlation on each item statement. According to the findings of the Cronbach alpha analysis, the instrument reliability coefficient of the scale of perception of instrument form: mother and form: the kid is 0.750. This value places the scale in the category of having a good level of reliability. The findings serve as the foundation for instrument form: mother and form: child support perception scale instruments that may be used to examine the scale perception of family educative support in both structural and process settings. These instruments can be obtained here.

Table 7. Distribution of number of item form: child and form: mother
based on factor analysis results

No	Instrument	Factor	Form: Mother	Form: Child
1	Climate Structure			
A	Physical-demographic	Family Size	5	5
		Distribution of Child Sex	0	1
		Birth Order	1	1
		Residence	6	6
B	Social-economy	Nutrition/Family Health	4	3
		Parental Education	4	2
		Parents' Job	2	2
		Family Income	0	2

		Ownership/ investation	2	5
2	Climate Process			
A	Intimacy	1. Intellectual	7	7
		2.Recreational	6	4
		3. Social	6	5
		4. Aesthetic	7	4
		5. Emotional	7	3
		6. Spiritual	7	5
		7. Sexual	1	2
B	Adaptability	1. Rule change	3	4
		2. Change in structure	5	2
		3. Conflict Resolution	6	5
		4. Role Changes	2	4
		5.Change of Management	4	2
C	Aspiration	1. Physical	4	3
		2. Sociocultural	6	4
		3. Economy	2	4
		4. Moral-Religion	1	2
		5. Achievement	1	5
		6. Intellectual	5	5

Source: Analysis Results

A corrected item-total correlation coefficient value of 0.190 on each item statement indicates that the results of the product–moment correlation analysis from the distribution of items form child and from mother are valid. This scale's Cronbach alpha reliability coefficient is 0.950, which falls into the "excellent reliability" category according to Cronbach. As a result of these findings, scale instruments to measure the scale perception of family educational support in structural and process contexts can be developed to measure the perception of mother-child support.

From the results above, in classifying study approaches to the family, Hoffman and Lippit (1970) divided three major groups: sociological–anthropological studies, psychological studies and family taxonomic descriptions. Sociologically and anthropologically the family is often seen as a social system. According to Ihromi (1999), three major approaches are often used: the structural–functional approach, the interactionist symbolic approach and the conflict approach. Hill and Hansen (1969) identified five widely used frameworks in conducting family studies: 'institutional frameworks, structural functions, situational, symbolic interactions and development'. From the explanation of the framework, it appears that the main focus of family studies refers to the structure, process, solidarity, development and spatial planning. Ihromi (1999) looks at the dimensions of the quality of family life from biological, economic, social, environmental and humanistic variables.

4. Discussion

Validity based on criteria (criteria-related validity) is also called empirical validity. To test the validity of these criteria, it can be achieved by predictive validation and concurrent validation. Prediction validity shows the effectiveness of a measurement in predicting individual performance in certain

activities in the future. A measurement instrument is considered to have high predictive validity if the measurement results accurately estimate the state of the individual subject to measurement later. In comparison, concurrent validity is relevant for the measurements used to diagnose the person's current status. Thus, an instrument is considered to have high concurrent validity if the measurement results are true, revealing the state of the individual subject to measurement at the time of measurement.

Construct validity is related to the extent to which an instrument can measure constructs that are theoretically arranged. Construct validity is very important in the behavioural sciences instruments and social sciences in general, considering that many studies relate to conceptual rather than attribute variables. In the context of the instrument in the form of a test, Allen and Yen (1979) and Anastasi and Urbina (1997) suggest that the construct validity of a test is a degree or the extent to which the test measures the theoretical construct or characteristic trait of the design to be measured.

To get high construct validity from an instrument, Fraenkel and Wallen (1993) reveal three steps that must be taken, namely 1) clearly defining the variables to be measured; 2) making a hypothesis based on a theory that underlies the variable determined by how someone will behave in a special situation; and 3) testing the hypothesis both logically and empirically. In connection with the test instrument, Gronlund and Linn (1985) suggest that the construct validation process includes the following steps: 1) identifying and describing the understanding of the construct to be measured through a theoretical framework; 2) establishing a hypothesis regarding test performance of the theory underlying the construct; and 3) verifying the hypothesis through analytical and empirical studies.

As explained earlier, construct validity is related to the extent to which the operational definition is based on a conceptual theoretical study of a construct that is empirically tested to measure what it wants to measure with that construct. The operational definition of one construct differs from the other, among others, in the complexity of variables and indicators to be measured. Factor analysis is very useful for testing construct validity (Alkin, 1992; Kerlinger & Pedhazur, 1973; Kim & Mueller, 1986). Loehlin (1987) revealed that factor analysis is often distinguished between exploratory factor analysis (confirmatory factor analysis) and confirmatory factor analysis (affirmation factor analysis). According to Djaelani (1995), Spearman's work on intelligence testing introduced the initial factor analysis, which is famous for its two-factor theory. When referring to the structure of factors, Kim and Mueller (1986) suggested a three-factor model: a one-factor model; an oblique two-factor model; and an orthogonal two-factor model.

The correlation matrix is the initial input to conduct factor analysis. The main requirement for factor analysis to be carried out is the correlation matrix, which shows that the variables interact with each other, and the determinant of the matrix is not equal to zero. To see this determinant, there are several commonly used methods, namely 1) Bartlett's test for sphericity; 2) KMO; 3) measure of sampling adequacy; and 4) anti-image correlation matrix (Zirmansyah, 1998). The second step in factor analysis is how to find factors that can explain the correlation between existing variables. The method of determining the extraction of the most popular factors used is principal component analysis (Kleinbaum & Kupper, 1978). Several criteria can be used to determine the number of factors used in the model and which will be extracted, namely 1) minimum eigenvalue criteria (default = 1); 2) criteria for the number of factors based on a theoretical framework; 3) criteria for the number of iterations (default = 25); 4) criteria for convergent extraction (default = 0.001); and 5) scree procedure (plotting between eigenvalue with many variables) (Halim & Nipan, 2001; Odum, 1998; Zirmansyah, 1998). In this second phase of work, two things need to be considered: the load factor or factor loading and the

commonality of each variable. This community represents or reflects the proportion of variants of each variable to these factors (common factors).

If the second stage at the initial factor results is still difficult to interpret or simple, then it is necessary to carry out a transformation by rotation. There are two types of rotations, namely 1) orthogonal rotation, with the varimax method (simplifying the structure of the column), quart max (simplifying the structure of the row), equimax (combination of rows and columns), and biquirtimax; and 2) non-orthogonal rotation or oblique, with the methods of oblimin, quartimin, biquartimin, covarimin and direct oblimin (Kleinbaum & Kupper, 1978). Some experts agree that the family as an institution at the beginning of its understanding was born from the bond of marriage of two people of different sexes to live in one household (Alkin, 1992; D'Antonio, 1983; L'Abate, 1990; Rollin & Galligan, 1978; Vanderzanden, 1996).

Cahyadi (2000) makes the family classification into 'conjugal units' and 'consanguine'. Similarly, it is called nuclear family and extended family (Harbinson, 1978; Hanson, 1985; Mueller, 1986; Gonzales & Pijano, 1997). In the development of the industrial society era, especially in Western countries, the form of a developing family is a married nuclear family, unmarried nuclear family, families with single parents (separated or divorced), families without children, extended families and so on. Vanderzanden (1996) argues that most of life in America is in the form of one-parent households, households without children, gay and lesbian households and households of male and female partners without marriage; all of these are ignored by family sociologists and are grouped as sexually bound primary relationships.

Dewantara (1977) reminded us that, '... the family is a place of education that is more perfect in nature and form than other centres, to carry out education towards intellectual intelligence (the formation of individual character) and as a supply of social life and as a supply of community life'. Only the organic feels obliged to educate children who are not their children. As cited in Dagun (1989), Freud states that, 'his early childhood experience very much determines a person's social development... the child's relationship with his mother is very influential in the child's formation and social attitudes in the future'. This is also emphasised by Bowlby's perspective, which places the mother's role as central in the child's early development.

Regarding reliability, Anastasi and Urbina (1997) suggest that reliability refers to the consistency of the score obtained by the same person by using the same instrument in different situations or using a different instrument with an equivalent set of items. This is in line with the definition of reliability by Fraenkel and Wallen (1993) where reliability refers to the consistency of scores obtained by individuals from one instrument with another instrument and one set of items with another device. Kerlinger (1986) suggests three approaches that can be taken, namely 1) asking the question: 'If we measure the same set of objects over and over again with the same or comparable measurement instruments, will we get the same or almost the same results?' This question leads to the definition of reliability related to stability and predictability; 2) asking the question: 'Does something that is obtained from measurements with the correct instrument measure the characteristics measured?' This question deals with reliability in the dimension of accuracy; and 3) question how much the error of measurement occurs in using a measurement instrument. With such an approach, two conclusions about reliability are statistically made, namely 1) reliability is the proportion of true variance to the total variance of data obtained by using a measurement instrument; and 2) reliability is the proportion of error variance to the total variance produced with a measurement instrument subtracted from 1, where index 1 shows perfect reliability.

Gronlund and Linn (1985) remind that reliability is related to the results obtained from an instrument and not related to the instrument itself, so it is more appropriate to use the term reliability test score or measurement reliability rather than the term test reliability or instrument reliability.

Considering the range of reliability scopes put forward by experts, there are three indications of reliability that can be tested against a measurement result: stability, equivalence and internal consistency to estimate the stability of the retest method (test–retest). This method will produce an estimate of the stability of a measurement that is very reasonable, but it is important to be aware of the 'carry-over effect' (Allen & Yen, 1979). Indicative equivalence in measurement reliability is obtained through the correlation between scores obtained from two measurements using different instruments but containing a set of equivalent or similar items. Statistically, two tests are called parallel if they both have the same averages, variances and correlations with the others.

There is no doubt that family plays an important role in developing children's ability to maintain a healthy life balance. They will perform better in a convenient, flexible environment and obtain social support from their nearest circle, resulting in greater harmony, less stress and less conflict. The findings contribute to a better understanding of the consistency and validity of the items used to assess how family influences children's quality of life satisfaction. According to the study's findings, the family determines that internal support and constructive behaviour are the dimensions that influence the stability of their growth in varied aspects.

5. Conclusion

The construct of 12 family variables has described the variations in the educational family life with child and mother perceptions. The items of structural dimensions of the children measurement instrument (CMI) are valid. The items of the process dimensions of the CMI are also valid. The items of structural dimensions of the mother measurement instrument (MMI) are valid. The process dimensions of the MMI items are also valid. CMI and MMI are reliable. These instruments indicate and show the standard of educative family life by reflecting on the relationship between mother and child and the influence of a father figure. By using logit models of probability to achieve a CMI, systematically including both parents in the measurement of social origin, this paper addressed the validity and reliability measurement instruments of educative family life by parental education in Indonesia and its trend over time. In this way, the measurement of social origin has become more consistent with the stratification theory, which emphasises the family as the primary unit of social stratification, whereas traditional operationalisation of social origin is based on the father (conventional approach) or a choice between the parents (dominance approach), while operationally simpler, which is hardly consistent with the theory.

6. Recommendations

This study recommends that future research investigate how other dimensions or mechanisms of the family and environment influence the quality of children's lives in the future. Furthermore, the findings of this study suggest that future research should look into factors other than environments that influence children's ability to maintain a healthy life balance. In addition, practitioners can use these instruments to gain preliminary data regarding the educative family life issue with regard to their child's mental growth correlated with the roles of parents.

7. Limitations

There are two main limitations to this research that can be discussed in future research. First, the study focused on only one area in Indonesia. It was only carried out for a short time and mostly involved statistics lecturers confirming the data collected from the respondents.

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