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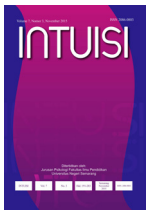

# *ASSESSING TODDLER TEMPERAMENT USING INDONESIAN VERSION OF THUMAS AND CHESS TTS IN YOGYAKARTA*

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## Info Artikel

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## *Abstrak*

*The purpose of this study (as part thesis of Muti'ah, 2009) is assessing toddler temperament by using Thomas and Chess in Yogyakarta. Mothers of the toddlers completed the Toddler Temperament Scale (TTS) and the Socioeconomic Status. Data were collected through fill-in the TTS (toddler temperament scale) from 84 toddler respondents which were living in Yogyakarta. From the data, it was found that The TTS' internal consistency of Indonesian toddlers was 0.653, considered acceptable and shows a high validity. The exploratory test obtained has shown that the temperament characteristic (activity, regularity, adaptability, mood approach, intensity, persistence, distractibility and threshold of Indonesia toddlers had no much different pattern compared to others countries using a similar scale. The socioeconomic effects upon the toddler behavior styles were found slightly influences in some dimensions. From the research done, this study has provided the evidence that the toddler behavioral styles were varied according to the cultural context and the characteristics of the raters (mothers).*



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## INTRODUCTION

Child temperament is thought as one of the major organizer of child's social emotional behavior (van Ijzendoorn, Vereijken, Bakermans-Kranenburg & Riksen-Waraven, 2004). Thomas and Chess (1963, 1977) described the temperament as a behavioral style of child in interacting with the environment, which have largely focused on the emotionality, Sroufe (1996) stated that emotions exist from birth then shift during second half-years of life whereby emotion become more differentiated, tend to be experienced subjectively and filled with a new sense of meaning. Temperament gives a strong influence on emotional development during early childhood (National Research Council and Institute of Medicine, 2000).

Temperament is characterized by moderately high level of emotional intensity, will be viewed as impulsive and active styles, easily frustrated, and most likely to exhibit reactive aggression. The highly inhibited toddlers are more likely to demonstrate socially withdrawn behavior and experience temperament that is inclined to unhappiness and regulatory styles, highly controlled and lack of flexibility. Toddlers who are optimally regulated exhibit the most positive, adaptive behavior, flexible and use adaptive means of coping with emotions. They will be seen as open and socially competent (Eisenberg, Fabes, Guthrie & Reiser, 2002). This social competent behavior is associated with individual variations in optimal regulation and a tendency to experience highly intense positive rather than negative emotions.

Temperament is determined by underlying biology, influences child's development through its interactions with environment (Thomas and Chess, 1977). It is also considered as a central factor in the development of children's personality, which consists of emotionality, self-regulation and social behavior (Rothbart, Ahadi & Evans, 2000). Even though temperament shows moderately consistent across time and situation, but the expression of temperament can be influenced by biological, maturation (Rothbart & Derryberry, 1981) and contextual factors (Thomas & Chess, 1977).

Eisenberg and colleagues (1996) discovered that negative temperament was predicted to increase the problem behavior as the levels of self-regulation declined. These findings suggest that temperament and regulation provide some unique predictions of social competence and behavior problem. The effects of their interactions appear to predict the quality of children's social functioning (Eisenberg et al., 2002). Even though researches indicated that early temperament is crucial for understanding the early behavioral adjustment, including social competence, attachment, mental health and behavior problems.

As the child development proceeds it, biological tendency of temperament is modified by the environmental inputs and a responsive mother (caregiver) (DeHart, et al., 2004). The child's temperament is not the most important consideration in his or her growth and development, but it also depends on the adequacy of mother's responses to its child temperament. The responsive and supportive mothers are connected to the conception of "goodness of fit" (Thomas & Chess, 1977). The ability of mother to interpret her child's characteristic can also prevent the increasing risk of behavior problems for a child with certain temperament styles. a 'good-enough mother' has an adaptation-capability to the baby, giving it a sense of control and comfort of being connected to the mother. This can motivate mother to have an appropriate interpretation to their child's temperament (Priel & Besser, 2000).

The temperament theory explains that a child is born with its own unique characteristic or behavioral style (biological substrates) and influenced by environmental and contextual factors in its expression during interaction. This interaction is not only influenced by the child's temperament, but also by the adequacy or 'goodness of fit' of maternal (parental) responses to the child's temperament (Thomas & Chess, 1977).

It is also a necessity to consider the wider social-economy and cultural factors of childhood studies by referring to temperament assessment and theory of ecological system (Brofenbrenner, I977). Both theories are considered to have acknowledged a range of contextual factors that can impact directly and indirectly to the toddler temperament. By looking at these possible factors, there may be found some diversities of toddlers' characteristic where the study is conducted in the different social environment others than Western countries. This point is greatly expected to contribute the toddler temperament assessment in the developing country such as Indonesia.

Toddler temperament is independent of the content of behavior or the motivation for behavior. Temperament is biologically based on and referred to how rather than what (abilities or content) or why (motivation) of behavior (Thomas & Chess, 1977). Toddler temperament scale is equated with the term of nine (dimensions) behavioral style (Thomas & Chess, 1977). It is also defined as constitutional differences in reactivity and self-regulation (Rothbart, & Derryberry, 1981). The

concept of reactivity refers to biological ability, which includes arousal in autonomic and affective systems. In contrast, a self-regulation refers to some processes that increase, decrease, maintain, and restructure the patterning of reactivity (either an anticipating or correctional manner) (Rothbart & Derryberry, 198l). Even, the neural, motor, and cognitive factors underlying reactivity and regulation are not fully developed at birth, but that maturation changes its expression (Putnam, Gartstein & Rothbart, 2003).

The toddler temperament scale (TTS) is toddler characteristics or behavior styles consisted into nine dimensions (Thomas, Chess, Birch, Hertzig & Korn, 1963). The detail disruption of the 9 dimensions are:

Activity level (low-high), how active a child generally is; always wiggle or more squirm, content of to sit and quietly watch or have difficulty sitting still, always on the go or prefer inactive/ quiet activities, etc.

Rhythmicity/regularity (very rhythmic-arrhythmic) refers to the predictability of biological functions like appetite and sleep; get hungry or tired at predictable times or unpredictable in terms of hunger and tiredness, etc.

Approach-withdrawal (approach-withdrawal) refers to the responding to a new situation or strangers; eagerly approach new situations or people, seem hesitant and resistant when faced with new situations, people or things, tend to think before they act, etc.

Adaptability (adaptive-non-adaptive) relates to how easy a child adapts to transitions and changes; like switching to a new activity, have difficulty with changes in routines, or with transitions from one activity to another take a long time to become comfortable to new situations, etc.

Mood (positive-negative), the tendency to react the world primarily in a positive or negative Way; focus on the positive aspects of life, generally in a happy mood or tend to focus on the negative aspects of life, generally serious and tend to be analytical and evaluate situations carefully, etc.

Intensity (mild-intense), the energy level of a response whether positive or negative; react strongly and loudly to everything, show pleasure or upset strongly and dramatically, just get quiet when upset, etc.

Distractibility, the degree of concentration and paying attention displayed and refers to the ease with which external stimuli interfere with ongoing behavior; easily distracted by sounds or sights while drinking or eating, easily soothed when upset by being offered alternate activity, become side tracked easily when attempting to follow routine or working on some activities, etc.

Persistence or attention span, the length of time continuing activities in the face of obstacles; continue to work on a puzzle when he has a difficulty with it or just move on to another activity, able to wait to have his/her needs met or react strongly when interrupted by an activity, etc.

Threshold of responsiveness relates to how sensitive to physical stimuli or the amount of stimulation such of sounds, taste, touch, temperature changes, etc.; react positively or negatively to particular sounds, alarm easily to sounds, a choosy eater or eat almost anything, respond positively or negatively to the feeling of clothing, etc.

## PROCEDURE

This study was designed to assess toddler temperament using TTS of Indonesia version. This study applied and adopted the instrument from Western/ developed countries While their validity and reliability have been reported empirically and cross-culturally. Applying new instrument to the Indonesian-users may cause some potential weaknesses due to the socio-culture features. In this study, the instrument's items have to be adjusted through the pilot test for anticipation. The pilot study was performed to TTS on 15 participants.

The TTS was translated from English to Indonesian by the researcher and then translated back into English by a professional translator. There were presently some sensitive items to be considered by referring to the Indonesian socio-culture and philosophy, as a distinctive characteristic of Indonesian child rearing practice, (e.g., children independence, shyness, aggressiveness). Previous researchers recommended to adopt the Asian cultural values (China, Korean, Japan, etc) (Reebye, et al., 1999; van Ijzendoorn, & Kroonenberg, 1988).

In Indonesian (Javanese) family and parenting, mothers have more ability, influenced and responsibility than their husbands, and at the same time they receive more affection and loyalty (Geertz, 1961), and high in nurturing of younger children. They also bring up their children to respect the cultural values of others (hormat) and harmonious social relations (rukun). Hence, those items are interpreted into more acceptable manner and reflecting the Indonesian's familiar concepts which are derived from the operational definition of the study without ignoring the social-cultural context.

To ensure that the original content was maintained when the TTS had been transla-

ted into the Indonesian language, the translated instrument was verified by the Indonesian child and clinical psychologists/professionals. Once the content was confirmed, the instrument was translated back into English by a professional translator. This procedure was essentially done to establish the validity content (items of the instrument) of the instruments for the new users in Indonesia.

## METHOD

TTS contains 97 items and 10 items of mother general impression of her child temperament which are rated on a 6-point scale of frequency rating from almost never to almost always. The scores are then averaged over the scale item ratings to score the child on each of the 9 dimensions (Thomas & Chess, 1977). The nine dimensions of child behavior styles are Activity, Rhythmicity, Approach-withdrawal, Adaptability, Mood, Intensity, Distractibility, Persistence and Threshold. Toddler Temperament Scale (TTS) (Fullard, et al., 1984) is valid for 1-3 years old children. This scale is set to obtain the mother s report of toddler temperament. The TTS is rated by caregivers/mothers who spend a substantial amount of time with the child being assessed.

According to Howitt and Cramer (2005) in the psychological research methods, the sample-size is expected statistically significance at the two tailed of 0.05 level needed of a minimum requirement over than 40. The sample-size of this study is 84 children. This was achieved based on the purposive With proportional quota and convenience sampling of families from two different social-economic status (SES) groups, from low SES families to middle SES families. Rationally, this sample size was considered having high participation and contribution during the research. The 84 dyad participants were approximately able to satisfy the requirement and the sample target.

At the beginning, the respondents were asked for their willingness and availability to participate in the study. The scale TTS were given to the respondent's mothers to till-in for a few days. The 84 toddlers (24-35 months) was grown-up in a relative stable social-cultural environment and physically-mentally normal.

The data which were collected through the questionnaires forms, then the exploratory test was obtained to establish valid and reliable instruments. The study was conducted in DIY, because of its miniature representation of Indonesia and Javanese ethnic (Indonesian biggest ethnic).

The TTS' internal consistency of lndonesian toddler was 0.653, which was considered acceptable (Nunnally, l978) and comparable with the earlier standard published, whereas the TTS has a high validity. This instrument has also reported being used in Malaysia (no reliability score was reported) (Banks, l98l). The TTS was

**Table.1** Description of Respondents (n=84)

| Characteristics | Frequency | Percent |
|---|---|---|
| Mother education | | |
| <high school | 10 | 11.9 |
| high school> | 39 | 46.4 |
| Graduate (degree) | 35 | 41.7 |
| | 84 | 100.0 |
| Family Income (monthly) | | |
| Low (≤1 million Rupiah* ) | 25 | 29.8 |
| Middle (>1 million Rupiah) | 59 | 70.2 |
| | 84 | 100.0 |
| Child-Gender | | |
| male | 43 | 51.2 |
| female | 41 | 48.8 |
| | 84 | 100.0 |
| Categories of Child Age | | |
| 24 – 27 months | 31 | 36.9 |
| 28 – 31 months | 27 | 32.1 |
| 32 – 35 months | 26 | 31.0 |
| | 84 | 100.0 |

also applied to the 3486 China toddler with high reliability and validity (Qi, 2001). In Western countries the internal consistency (Cronbach's alphas) scale was ranged from .53 (Threshold) to .86 (Approach/Withdrawal), with median of .70 (Fullard, et al., 1984). In this study, the range was found from 0.26 (Persistent) to 0.67 (Approach/ Withdrawal).

**RESULT**

Toddler temperament scale (TTS) profile differentiates 9 dimensions of child behavioral style and computed from the 9 dimensions. Table.2 shows the mean distribution score of toddler behavioral style. The distribution scores of behavioral styles are generally toward normality. Buss and Plomin (1984) suggested that score in the middle range of any temperament dimensions could be influenced by the family and cultural environment.

Previously, there was an exploration of TTS pattern that appeared to exist across cultures. Figure.1 shows the pattern of Indonesian (mother) rating of TTS as compared to Japanese and U.K. mothers. From that figure, it shows that the Indonesian toddler was more active; adaptable, more positive in mood (low), higher level of intensity, distractibility, compare than the toddler in the UK. and Japan (Arbiter, Sato-Tanako, Kolvin & Leitch, 1999).

The independent-samples t-test was conducted to compare the mean temperament score for toddler gender. It was found no significant differences in the general mean behavior style in score of Activity, Rhythmicity, Approach, Adaptability, Intensity, mood, Distractibility, Threshold, for male and female toddlers. It only shows a significant difference in Persistence for male (M = 3.89, SD = .534) and female toddler (M = 3.643, SD = .429; t (82)=2.332, p =.()22) with the magnitude of the differences in the mean are moderate (eta-squared = .062). This might be caused by the mothers' less perception to their child capacities in having 'attention focusing' and 'control' (This was also noticed earlier from the persistence's low internal consistency). Figure.2 shows the obvious similarity of male and female toddler behavior styles.

An Independent sample t-test was used to compare the mean behavior styles' scores between low and middle family incomes. From the results, they were found no significant difference in the mean behavior styles of Activity, Rhythmicity, Approach, Adaptability, Mood, Persistence, Distractibility, Threshold for low and middle family incomes except for Intensity [low: M = 3.892, SD = .536; middle :M = 4.317, SD = .649; t (82) = -3.11, p =.005]. This shows that toddlers in the middle family income are more intense compared than the toddler in low family income. The eta-squared value of intensity obtained ( 2 = .106) was considered a bit large (Cohen' criteria). This effect suggests that the mean difference of intensity score for low and middle family incomes of the toddler was a bit large.

ANOVA test was performed to investigate the mothers' occupation differences in the mean of child temperament score and found that two behavior styles of Persistence and Distractibility did not meet the equality assumption. From the statistical test, it was revealed that there was no significant differences in the mean of temperament test score to three mothers' occupation.

**Table.2** Description of Dimension of Toddler Temperament

| Dimensions | Range | Mean | Std. Deviation |
|---|---|---|---|
| Activity | 1.4 – 5.7 | 4.05 | 0.71 |
| Rhythmicity | 1.8 – 5.1 | 3.45 | 0.69 |
| Approach | 1.8 – 5.3 | 3.53 | 0.77 |
| Adaptability | 1.2 – 5 | 3.67 | 0.66 |
| Intensity | 2.8 – 5.9 | 4.19 | 0.65 |
| Mood | 1.6 – 4.7 | 3.2 | 0.62 |
| Persistence | 2.6 – 5.1 | 3.77 | 0.5 |
| Distractibility | 2.6 – 5.6 | 3.98 | 0.63 |
| Threshold | 2.6 – 6.0 | 4.0 | 0.75 |

The respondent (mothers) education background was investigated through ANOVA to differentiate the mean score of toddler behavior styles. This reveals a significant difference in the two mean test score of Mood to the three mothers education background F (2, 81) =3.13, p=.049 (Mood). The actual difference in mood means score between the mother education groups was moderate ( 2=.072 for mood). The Bonferroni Post-Hoc multiple comparison tests showed that there was a statistically significant difference in the mean mood score for high school and graduate but not for others. This suggested that respondents with the high school education background showed higher mean of Mood score than the graduate and less than high school.

The explanation above achieves the socioeconomic factors show almost similarity on the toddler temperament dimensions, except for the persistence dimension (in toddler gender), intensity dimension (in family income), persistence and distractibility dimensions (in mothers occupation), and mood (in mother education).

## DISCUSSION

In this study showed that the low Persistent' internal consistency value has been identified from the less rating perceptions (Indonesian mothers) to their child capacities for the attention focus and control as a basis for voluntary behavior. This general low reliability score might be also caused by the physical and social setting in which the child lives due to the Indonesian culture of child care and child rearing, and the psychology of caregivers (Super & Harkness, 1986). From the Martin, Wisenbaker and Huttunen (1994)' factor analyses suggested that those nine dimensions were separated into five robust factors and two factors were less consistent across measures and ages and showed a redundancy among the dimensions. The five robust factors were inhibition (approach-withdrawal), negative emotionality, adaptability, activity level, and persistence. Meanwhile, the two less consistent factors were: threshold and biological rhythmicity. As a comparison, Thomas and Chess (1977) behavioral

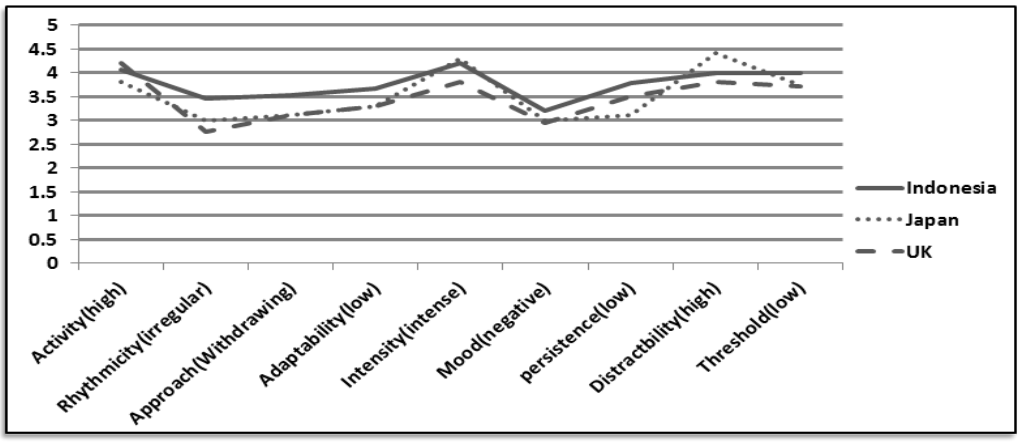


**Figure.1** Indonesian TTS means score pattern compare to Japan and U.K.

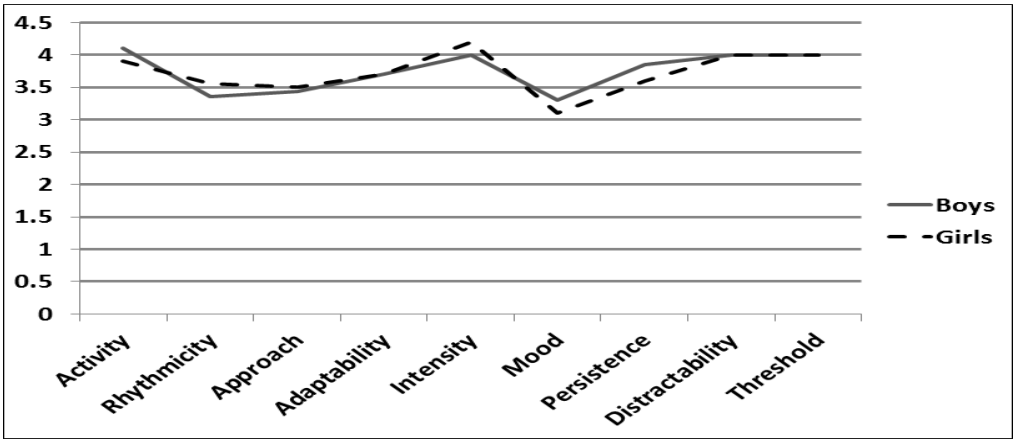


**Figure.2** TTS means score for male and female toddlers

styles had several limitations in past and present temperament research (Shiner & Caspi, 2003).

To check the possible anomalies in the data, the reliability test showed that the item-total statistics were moved about 0.653 (Cronbach's alpha). The validity and appropriate use of TTS have been universally approved through the literature on the clinical evidence and the temperament data researches (e.g., Wu et al., 2002). The arguments have been written in 'Coping with Children's Temperament' (Carey & McDevitt, 1995), and in 'Developmental Behavioral Pediatrics' (Levine, et al., 1991). They reported that this instrument has approached a high inter-judge reliability, moderate internal consistency, and test-retest reliability, however, inter-parent agreement coefficients were found to be low (Hubert, Wachs, Peters-Martin & Gandour, 1982).

The influence of socio-economic factor to toddler temperament or behavior styles showed the equality among male and female toddler's behavior styles except in the persistence dimension. This illustrates that Indonesian male toddlers have short attention spent (gave-up easily) than the female. The family income had no effect to the toddler temperament except the intensity of toddler from the middle family income that showed relatively high. However, the education background of the mothers have made any differences on the toddler characteristic of mood and of self-regulation, which showed that the better education background proposed to better positive mood and self-regulation for the

toddlers. Those socioeconomic effects upon toddler behavior styles were found inconsistent with the previous studies done by Fullard (1984). It is also inconsistent with studies in other cultures (American, Canada, Australian, British, and Japanese) (Oberklaid, Prior, Sanson, et al., 1990; Arbiter, et al., 1999). This study has provided the evidence that the toddler behavioral styles were varied according to the cultural context and the characteristics of the raters (mothers). Those differences of toddler behavioral styles found in this study could be due to the relatively small number of samples used. However, the Fullard's study (1989) has proven that the influence of temperament by the family's socio-economic circumstances was crucial.

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