EARLY IDENTIFICATION OF SOCIAL-EMOTIONAL COMPETENCE AMONG YOUNG CHILDREN IN MALAYSIA

by

HASNAH TORAN

A DISSERTATION

Presented to the College of Education
and the Graduate School of the University of Oregon
in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy

March 2007

"Early Identification of Social-Emotional Competence among Young Children in Malaysia," a dissertation prepared by Hasnah Toran in partial fulfillment of the requirements for the Doctor of Philosophy degree in the College of Education. This dissertation has been approved and accepted by:

This manuscript has been approved by the advisor and committee named below and by Richard Linton, Dean of the Graduate School.

Jane Squires, Chair of the Examining Committee

March 13, 2007
Date

Committee in Charge: Dr. Jane Squires, Chair
Dr. Paul Yovanoff
Dr. Mike Bullis
Dr. Jean Stockard

Accepted by:

Dean of the Graduate School

An Abstract of the Dissertation of

Hasnah Toran for the degree of Doctor of Philosophy

in the College of Education to be taken March 2007

Title: EARLY IDENTIFICATION OF SOCIAL-EMOTIONAL COMPETENCE AMONG YOUNG CHILDREN IN MALAYSIA

Approved: _____
Jane Squires, Ph.D.

The Ages and Stages Questionnaires: Social-Emotional (ASQ:SE), a parent-completed screening instrument, was translated and studied for use in Malaysia to identify young children for social-emotional problems. Psychometric properties such as content validity, internal consistency, determination of cutoff points, concurrent validity and differential item functioning analysis (DIF) of the 6-, 12-, and 18-month Malay-adapted ASQ:SE were investigated. A total of 608 Malaysian parents completed the Malay-adapted ASQ:SE, the Family Information Survey and the Parent Satisfaction Survey. Nurses who administered the ASQ:SE scored the children on the Children Global Assessment Scale (CGAS), which was the concurrent measure. The impact of training on nurses who administered the questionnaire was examined. The nurses also completed the Nurse Satisfaction Survey and Nurse Pre-Post Training Survey.

A panel of experts, parents and nurses in this study agreed that the Malay-adapted ASQ:SE was culturally appropriate for use in Malaysia. Parents found the ASQ:SE easy to understand and use. Nurses also found the ASQ:SE easy to implement and effective for screening young children for social-emotional problems. Internal consistency (i.e., coefficient alpha) results for the 6-, 12-, and 18-month Malay-adapted ASQ:SE were .61, .63, and .72 respectively. The concurrent validity with the CGAS was 93% for the 6-month questionnaire, 96% for the 12-month questionnaire, and 85% for the 18-month questionnaire. Sensitivity, comparing classifications on the CGAS and ASQ:SE for the selected intervals, was 100%, 50%, and 57% respectively. Specificity was 93%, 96%, and 86% respectively. Over-referral rates for the 6-, 12-, and 18-month Malay-adapted ASQ:SE were 7%, 4%, and 14% respectively; under-referral rates were 0%, 1%, and 2% respectively. A comparison between the Malaysia sample data and the U.S. normative sample found that the Malaysian sample had higher means, medians, interquartile ranges, and cutoff points. DIF analyses found some item bias in the three questionnaires. Results suggested that training had a positive impact on nurses' knowledge and attitude. Future psychometric studies with more diverse populations, focusing on parents' cultural contexts, are recommended for the Malay-adapted ASQ:SE.

CURRICULUM VITAE

NAME OF AUTHOR: Hasnah Toran

PLACE OF BIRTH: Bukit Mertajam, Penang, Malaysia

DATE OF BIRTH: November 13, 1968

GRADUATE AND UNDERGRADUATE SCHOOLS ATTENDED:

University of Oregon
International Islamic University, Malaysia
University of Essex, United Kingdom

DEGREES AWARDED:

Doctor of Philosophy in Early Intervention, 2007, University of Oregon
Master of Management, 1998, International Islamic University, Malaysia
Bachelor of Arts in English with Educational Studies, University of Essex

AREAS OF SPECIAL INTEREST:

Personnel Preparation
Parent Education
Assessment
Autism

PROFESSIONAL EXPERIENCE:

Graduate Teaching Fellow, University of Oregon, 2003-2006

High School Teacher, Malaysia, 1992-2002

GRANTS, AWARDS AND HONORS:

University of Oregon Fellowship Award, 2003-2007

MARA Excellent Scholar Award, 2002-2006

University of Oregon Graduate School Travel Grant for the Asia Pacific Rim Universities Doctoral Conference, 2006

Margaret McNamara Memorial Fund, World Bank Family Network, 2005

Southeast Asian Studies Scholar Award, University of Oregon, 2005

International Student Award, University of Oregon, 2005

ACKNOWLEDGMENTS

I would like to express my sincere appreciation to Dr. Jane Squires, who has advised and supported me throughout my doctoral program. Additionally, I would like to thank Dr. Yovanoff for his patience in sharing his expertise in Item Response Theory. Special thanks to Dr. Bullis for being the most encouraging professor I have ever had here, and to Dr. Stockard for always being so positive. I am also grateful to Dr. Aminah Bee Mohd-Kassim, Dr. Faridah Abu Bakar, and the nurses from the Perak State Department of Health for helping me with data collection and their encouragement. I especially want to thank my special friend here, Karen Lawrence, for her endless help and support. My appreciation also goes to: Dr. Jina Noh, Suzanne McManus, Hollie Hix-Small, Dr. Elizabeth Benedict, Hye-Young Bae, Juli Pool, Helen Sharp, Mona Ivey-Soto, Dr. Marisa Macy, Dr. Jantina Clifford, Dr. Dave Allen, and Prasong Saihong for their friendship and constant encouragement. Lastly, my special thanks to my family and friends at home in Malaysia who believe in my dream and have helped me in so many ways to make it come true.

DEDICATION

To my husband, Mohd. Suffian Noordin, without whose sacrifice and support, my endeavor in this study will never be accomplished. Moga Allah berkati usaha kita.

TABLE OF CONTENTS

Chapter		Page
I.	INTRODUCTION	1
	The Importance of Early Identification	2
	Social-emotional Early Identification	2
	Early Intervention in Malaysia	4
	Lack of Programs and Diagnostic Tools	5
	Young Children with Social-Emotional Problems	6
	Need for a Culturally-Competent Instrument	6
	Purpose of Study	9
	Research Questions	9
II.	REVIEW OF THE LITERATURE	11
	Social Emotional Competencies and Problems in Young Children	11
	Relationship and Cultural Contexts	13
	Mental Health Issues in Malaysia	14
	Cultural Concept of Mental Health	14
	Malaysian Mental Health Policy	20
	Infant Mental Health in Malaysia	24
	Socio-cultural Aspects of Infant Mental Health in Malaysia	24
	Impact of the Rapid Economic Growth on Families	26
	Policy for Young Children with Mental Health Problems	28
	Services for Young Children with Mental Health Problems	28
	Summary	32
	Barriers to Early Identification of Children with Mental Health Issues	32
	Policy	33
	Personnel	34
	Lack of Community Mental Health Resources	34
	Culture	35
	Screening and Assessment Instruments	35

Chapter Page

Rational for Using the Ages and Stages Questionnaires: Social Emotional 36
Selecting an Effective Screening Test 36
The Ages Stages Questionnaires: Social Emotional 37

III. METHOD OF STUDY 40

Participants 41
Children 41
Parents/Caregivers 42
Nurses 42
Protection of Human Subjects 42
Measures 43
Ages and Stages Questionnaires: Social Emotional 44
Children's Global Assessment Scale (CGAS) 46
Family Information Survey 48
Parent Satisfaction Survey 48
Nurse Satisfaction Survey 48
Nurse Pre-Post Training Survey 49
Procedures 51
Phase 1: Development of the Malay ASQ:SE 51
Step 1: Translation and back translation 51
Step 2: Review by an expert panel 51
Phase 2: Psychometric Study of the Malay ASQ:SE Using Professional Nurses (Group A) 53
Step 1: Recruitment of participants 53
Step 2: Training of the nurses 53
Step 3: Nurses administered the ASQ:SE 55
Step 4: Nurses completed the CGAS 56
Step 5: Nurses completed the Nurse Satisfaction Survey 56
Phase 2: Psychometric Study of the Malay ASQ:SE Using Parents (Group B) 56
Step 1: Recruitment of participants 56
Step 2: Parents completed the ASQ:SE, the Family Information Survey, and the Parent Satisfaction Survey 57
Setting 59

Chapter Page

Data Analysis 59
Research Question 1: Is the Malay Version of the ASQ:SE a Culturally Appropriate Instrument to Screen 6-Month-Old, 12-Month-Old, and 18-Month-Old Young Children in Malaysia for Social-Emotional Problems? 61
Research Question 2: What is the Reliability and Validity of the Malay Version of the 6-Month, 12-Month, and 18-Month ASQ:SE? 62
Research Question 3: How Do the 6-Month, 12-Month, and 18-Month ASQ:SE Scores of Children on the Malaysian ASQ:SE Compare to the Scores of Children on the U.S. Version? 67
Research Question 4: Is There Differential Item Functioning in the Malay Version of the 6-Month, 12-Month, and 18-Month ASQ:SE When the Item Response Theory-based Statistical Procedures Are Used? 68
Research Question 5: What is the Impact of Training on the Knowledge and Attitudes of Nurses in Malaysian Government Well-Baby Clinics Towards Screening in General and in Administrating the AQS:SE? 69

IV. RESULTS 70

Participants 70
Children 70
Parents/Caregivers 73
Nurses 75
Research Question 1 77
Cultural Appropriateness: The Panel of Experts 77
Cultural Appropriateness: Parents' Responses 78
Cultural Appropriateness: Nurses' Responses 81
Research Question 2 85
Reliability of the Malay-Adapted ASQ:SE 85
Internal consistency 85
Inter-rater reliability 86
Validity of the Malay-Adapted ASQ:SE 86
Research Question 3 97

Chapter Page

Research Question 4 98
Item Difficulty 99
Item Fit 100
DIF Analysis 106
Research Question 5 110

V. DISCUSSION 115

Interpretation of Results 115
Participants 115
Research Question 1: Content Validity of the Malay-adapted ASQ:SE 117
Research Question 2: Reliability of the Malay-adapted ASQ:SE Internal Consistency 119
Research Question 3: How Do the 6-Month, 12-Month, and 18-Month ASQ:SE Scores of Children on the Malaysian ASQ:SE Compare to the Scores of Children on the U.S. Version? 122
Research Question 4: Is There Differential Item Functioning in the Malay Version of the 6-Month, 12-Month and 18-Month ASQ:SE When Item Response Theory-Based Statistical Procedures Were Used? 123
Research Question 5: Does Training Have a Positive Impact on the Knowledge and Attitudes of Nurses in Malaysian Government Well-Baby Clinics Towards Screening in General and in Administering the ASQ:SE? 124
Limitations of the Study 126
Contributions of the Findings 129
Implications for Future Directions 130

APPENDIX

A. SAMPLE RECRUITING FLYERS (ENGLISH AND MALAY VERSIONS) 132
B. PARENT/CAREGIVER AND NURSE CONSENT FORMS (ENGLISH AND MALAY VERSIONS) 135
C. MEASURES 140
D. SAMPLE OF THE CONTENT VALIDITY CHECKLIST 149

BIBLIOGRAPHY 151

LIST OF FIGURES

Figure		Page
1.	An illustration of the semi-interquartile range	64
2.	An illustration of an ROC curve	65
3.	ROC curve generated for the 6-months ASQ:SE using 1.50, 2.25 and 3 semi-interquartile ranges	93
4.	ROC curve generated for the 12-months ASQ:SE using 1.50, 2.25 and 3 semi-interquartile ranges	94
5.	ROC curve generated for the 18-months ASQ:SE using 1.50, 2.25 and 3 semi-interquartile ranges	94
6.	Example of good category response curves for the Malay-adapted ASQ:SE under the partial credit model	105
7.	Example of moderate category response curves for the Malay-adapted ASQ:SE under the partial credit model	105
8.	Example of poor category response curves for the Malay-adapted ASQ:SE under the partial credit model	106

LIST OF TABLES

Table		Page
1.	Measures and Respondents	50
2.	The Nurse Training Module	55
3.	Procedures of the Psychometric Study Phase	58
4.	Research Questions, Measures, and Analyses	60
5.	Formula for Calculating Possible Cutoff Points Using Medians and Semi-interquartiles	64
6.	Possible Classifications on the ASQ:SE in Comparison to the CGAS	66
7.	Formula to Calculate Sensitivity, Specificity, Over-referral, and Under-referral	67
8.	Demographic Characteristics of Children in the Malaysian ASQ:SE Sample	72
9.	Demographic Characteristics of Parents/Caregivers in the Malaysian ASQ:SE Sample	74
10.	Demographic Characteristics of Nurses	76
11.	Summary of Parent Satisfaction Survey Result	80
12.	Summary of Nurses' Satisfaction Survey	83
13.	Cronbach's Coefficient Alpha for the 6-, 12-, and 18-Month ASQ:SE	85
14.	Median and Interquartile Range of the 6-, 12-, and 18-Month ASQ:SE	87
15.	ASQ:SE Cutoff Points Derived Using Semi-Interquartile Ranges	87

Table Page

16. Contingency Tables Comparing Classifications on the ASQ:SE and CGAS for the 6-Month ASQ:SE at 3 Points of the Semi-Interquartile 89

17. Contingency Tables Comparing Classifications on the ASQ:SE and CGAS for the 12-Month ASQ:SE at 3 Points of the Semi-Interquartile 90

18. Contingency Tables Comparing Classifications on the ASQ:SE and CGAS for the 18-Month ASQ:SE at 3 Points of the Semi-Interquartile 91

19. Classification Statistics by Semi-Interquartile Range (S-IQR) for the 6-, 12-, and 18-Month ASQ:SE 92

20. Classification Agreement Between the ASQ:SE and CGAS at the 6-Month Interval 96

21. Classification Agreement Between the ASQ:SE and CGAS at the 12-Month Interval 96

22. Classification Agreement Between the ASQ:SE and CGAS at the 18-Month Interval 97

23. The Range, Mean, Median, Interquartile Range and Cutoff Scores of the 6-, 12-, and 18- Month ASQ:SE from Malaysian and U.S. Data 98

24. Six-Month ASQ:SE Rasch Item Statistics 101

25. Twelve-Month ASQ:SE Rasch Item Statistics 102

26. Eighteen-Month ASQ:SE Rasch Item Statistics 103

27. Six-Month ASQ:SE DIF Item Statistics 107

28. Twelve-Month ASQ:SE DIF Item Statistics 108

29. Eighteen-Month ASQ:SE DIF Item Statistics 109

30. List of Questions in the Nurse Pre-Post Training Survey 111

31. Paired Sample Correlations, Means Scores, Standard Deviations and t-Statistics of Nurses Pre- Post-Survey 113

CHAPTER I

INTRODUCTION

Early intervention is a range of supports and services provided to young children with disabilities, and those who are at risk for disabilities, to lessen the impact of their disabling conditions (Bowe, 2004; Farran, 2000; Meisels & Shonkoff, 2000). The services provided include special instruction and therapy, assistive technology services and devices, family training, counseling, home visits, medical diagnostic, nursing, nutritional, transition, coordination and recreation services.

In the United States, comprehensive early intervention services for young children from birth through five years of age with disabilities and those who are at risk for developmental delays, as well as their families are mandated under the Individual with Disabilities Education Act (2004). Public Law 99-457 (1986) for the birth to three year old population, states that the goals of early intervention are 1) enhancing children's development and reducing potential delay, 2) reducing the need for subsequent special education and related services, 3) minimizing the likelihood of institutionalization and maximizing independence, and 4) providing support to families to meet their child's need (Bailey, Aytch, Odom, Symons, & Wolery, 1999).

Research has firmly supported the benefit of early intervention for young children with disabilities and those who are at risk for developmental problems (Farran, 2000; Guralnick, 1997). Neural research in recent years supports the theory that the experiences

in the early years form an important foundation for a child's development (Nelson, 2000; Shonkoff & Phillips, 2000; Shore, 1997).

The Importance of Early Identification

In order to provide early intervention services effectively, early identification of young children who may need services is vital. Without early identification, it might be too late to prevent these delays from becoming more serious or from leading to additional problems (Odom & McEvoy, 1988, Squires, 2000). Research has also found that early identification that is implemented before the age of five may positively increase the long-term effectiveness of intervention (Dawson & Osterling, 1997; Dawson, Ashman & Carver, 2000).

The importance of early identification is recognized by the U.S. legislation. Under the Individuals with Disabilities Act (IDEA), states are required to establish child find systems. Child find is a process where young children who are eligible for referral services and intervention programs are identified systematically (McLean, Wolery, & Bailey, 2004). The child find process includes screening for disabilities, monitoring the progress of children who are at risk for disabilities, and helping their families to access services in the community (Squires, 1996).

Social-emotional Early Identification

In comparison with children with other disabilities, children with social-emotional problems are more prone to be under-identified and under-served (Knitzer, 2000). Promoting the social-emotional well-being among young children has been hindered due to the difficulty in operationally defining what social-emotional means as compared to

operationally defining cognitive, motor and communication disorders (Squires, Bricker, & Twombly, 2004; Sameroff & Fiese, 2000). Children with social-emotional problems need early identification for referral and intervention services to ensure that their disabilities will not have a negative impact on their developmental outcomes (Squires et al., 2004; Squires & Nickel, 2003; Squires, Bricker, Heo & Twombly, 2001).

The early identification of young children with social-emotional problems is important for these reasons: the importance of brain development during the early years; the highly resistance nature of social-emotional problems; and the cost associated with the negative outcome of social-emotional problems (Squires et al., 2004; Squires & Nickel, 2003; Squires et al, 2001). First, studies on brain development support the positive influence of early experience on gene function, neural organization and mind organization (Shonkoff & Phillips, 2000; Shore, 1997). Supporting children with social-emotional through early intervention may lead to positive behavior change, an improvement in their social relationship with peers and those around them and better regulation of their emotions; leading to a positive life-long change.

Second, identifying children with social-emotional problems may lead to intervention that curbs their problems before these problems become more entrenched within these children and more difficult to change (Sprague & Walker, 2000; Walker, Colvin, & Ramsey, 1995). Negative behavior among school children can be reduced through early intervention. Problem behaviors in childhood often lead to delinquency and criminal behavior in later life (Walker & Sprague, 2000; Dishion, French & Patterson, 1995).

Third, negative and criminal behavior imposes a high social cost on society, families and the children themselves. Social cost such as the need for prisons and rehabilitation programs may be reduced if early identification and intervention are provided to children facing social-emotional problems.

Early Intervention in Malaysia

Currently, in Malaysia there is no specific legislation to instigate the delivery of early intervention services to young children with disabilities or at risk for disabilities. Services for children who are identified with disabilities fall under the auspices of three separate ministries: 1) the Ministry of Education is responsible for providing special education services for school-aged children, 2) the Ministry of Women, Family and Community Development is responsible for providing welfare services, and 3) the Ministry of Health is responsible for providing health services, which includes diagnosing new cases and rehabilitation.

Unfortunately, the Malaysian government has not clarified the roles and responsibilities of these three ministries regarding young children with disabilities. This failure results in services that are often unsystematic and incomprehensive (Adnan & Hafiz, 2001). In order to gain access to health services, rehabilitation services, vocational training or special education for their children, parents of children with disabilities must often go through multi-agency diagnosis and casework procedures (Adnan & Hafiz, 2001; Yong, 2001). Children whose parents are not highly educated or live in the rural areas seldom have no services at all (Adnan & Hafiz, 2001).

Lack of Programs and Diagnostic Tools

One of the biggest problems in delivering effective early identification services to young children with disabilities in Malaysia is the lack of adequate programs and diagnostic tools to identify those in need of these services (Madison, Madison, & Dittman, 1986). There are no nationally developed and normed tests for children that are culturally and linguistically appropriate for use in Malaysia. Assessments are often performed through informal observations. Instruments used for assessments are imported, often without proper adaptation and research to investigate their psychometric properties. Effective and organized approaches to identify children with special needs are still lacking, which results in poor early identification (Madison et al., 1986).

Presently, young children are being screened in government well-baby clinics using an adapted version of the Denver Developmental Screening Test II (Frankenburg, Dodds, Archer, Shapiro, & Bresnick,1992); however there has been no reported research on the adaptation of this tool for use in Malaysia. There is also no clear system of referral for the young children identified through this screening process. The Ministry of Health, responsible for diagnosing new cases and providing rehabilitation services, does not have units to perform assessments and provide services in every district. Children with disabilities may also attend rehabilitation programs provided by community-based rehabilitation centers and non-profit organizations (Ayob, Lee, See, & Ahmad, 2004). Community-based rehabilitation centers are under the auspices of the Ministry of Women, Family and Community Development. Again, not every district has a

community-based rehabilitation center or a center run by non-profit organizations that provide identification services.

Young Children with Social-Emotional Problems

In Malaysia, young children with more physically obvious disabilities such as Down syndrome or cerebral palsy are easily identified and referred by primary health care providers. However, for young children with "hidden" disabilities (McLean, 2004) or social-emotional problems, such as autism or attention deficit hyperactive disorder (ADHD), diagnosis often remains elusive despite suspicions by their parents. Limited availability of mental health resources and lack of trained primary health care provider hinder the progress of the early identification of young children with social-emotional problems (Squires & Nickel, 2003). Primary health care providers have been reported to underidentify children with these problems (Kelleher, Childs, & Wasserman, 1997).

For children with social-emotional problems in Malaysia, referrals are often made too late, usually at the age of seven. Seven is the age for formal education, at which time they need to be diagnosed in order to apply for placement in special schools or special classes in government schools. Research has found that many children with social-emotional disabilities are not identified until they have reached school age or later (Glascoe, 2000; Halfon et al., 2004: King & Glascoe, 2003). This late identification negatively impacts their developmental and later academic performance (Liptak, 1996).

Need for a Culturally-Competent Instrument

Efforts to provide early identification of social and emotional problems of young children at the primary health care level in Malaysia are nonexistent. In general, due to

the lack of tools or measurements, referrals are made simply based on the primary health care providers' intuitions. In order for Malaysia to initiate systemic and efficient early intervention services that provide a full range of services for both young children with social-emotional problems and their families, the country must establish a child find system. Through this system, young children with social-emotional problems will be identified as earliest as possible, and provided with services. To initiate a child find system, it is mandatory to use a valid and reliable screening instrument to screen young children for development problems (McLean, 2004). The establishment of a valid and reliable screening instrument will lead to an effective child find system in Malaysia.

Rather than developing a new instrument from the ground up, it is both time and cost effective to study selected instruments used in other parts of the world, and to adapt one that has been proven to be valid and reliable. The Ages Stages Questionnaires: Social Emotional (ASQ:SE), is an instrument that has a vigorous body of research to account for its validity and reliability. Research has established the test-retest reliability of the ASQ:SE at 94%; concurrent validity at 93%; sensitivity at 78% and specificity at 95% (Squires, Bricker, & Twombly, 2002). Research in the U.S. has shown that the ASQ:SE is culturally sensitive, cost effective and that it can be administered and scored in a brief time period (Squires et al., 2002). In terms of its utility, research has found that more than 97% of parents who completed this instrument found it easy to understand and appropriate. The ASQ:SE (Squires et al., 2002) is available in English and Spanish. It appears that the ASQ:SE may be one of the best screening instruments to adapt for use in Malaysia.

Test adaptation involves more than just translating test items from one language into another (Bartram, 2001; Hambleton, 2005). Cultural contexts within which a test is to be used must be taken into consideration when a test is adapted. The International Test Commission (ITC) has developed the International Guidelines for Test Use which provides an international consensus on what constitutes "good practice" in test adaptation (Hambleton, Merenda, & Spielberger, 2001). The ITC along with other professional psychometric organizations such as the American Educational Research Association (AERA), the American Psychological Association (APA), and the National Council on Measurement in Education (NCME) state that when tests are adapted from one language and culture to another, studies must be carried out to examine its reliability and validity for use in the receiving culture (Hambleton, 2005; Sireci, 2005).

This effort is mainly important to avoid sources of error or invalidity that arises from transferring the use of one instrument from one linguistic and cultural group to another, arising from differences in language and culture; issues of technicality, and method; and result interpretations (Hambleton, 2005; Merenda, 2005). Especially for instruments that measure emotional states, translating psychological constructs for use in a different linguistic and cultural adaptation is a major source of error (Merenda, 2005; Cheung, 2004). Unlike aptitudes, abilities, and achievement, emotional states are more subjective, less clearly defined, and could have different meanings in different culture (Merenda, 2005). In order to adopt the use of the ASQ:SE that was developed in the U.S. to screen young children in Malaysia for social-emotional problems, investigations must be carried out on its reliability and validity on a Malaysian sample.

Purpose of Study

The purpose of this study is to examine the validity, utility, and cultural appropriateness of the Malay-adapted ASQ:SE in screening young children for social emotional problems. The ASQ:SE is a family-focused, cost-effective screening instrument developed to be completed by parents to identify young children with social emotional problem. This study investigated the validity, utility, and cultural appropriateness of the Malay-adapted ASQ:SE for young children aged between 3 to 21 months.

Research Questions

To evaluate the validity, utility, and cultural appropriateness of the Malay-adapted ASQ:SE in screening young children for social emotional problems, the study will address five research questions:

1. Is the Malay version of the ASQ:SE a culturally appropriate instrument to screen 6-month-old, 12-month-old, and 18-month-old young children in Malaysia for social-emotional problems?
2. What is the reliability and validity of the Malay version of the 6-month, 12-month, and 18-month ASQ:SE?
3. How do the 6-month, 12-month, and 18-month ASQ:SE scores of the children on the Malaysian data compare to scores of children on the U.S. version?
4. Is there Differential Item Functioning in the Malay version of the 6-month, 12-month, and 18-month ASQ:SE when the Item Response Theory-based statistical procedures are used?

5. What is the impact of training on the perceptions and attitudes of nurses in Malaysian government well-baby clinics towards screening in general and in administrating the AQS:SE?

CHAPTER II

REVIEW OF THE LITERATURE

Relevant literature is reviewed to provide a rationale and background for this study. The literature review begins with a definition of social emotional competencies and problems in young children. Next, mental health issues in Malaysia are presented, followed with a discussion on infant mental health issues in this country. These mental health issues in Malaysia lead to the rationale for using the ASQ:SE in the present study. A final section presents the purpose of this study.

Social Emotional Competencies and Problems in Young Children

Concerns over young children's social-emotional problems have been minimized due to the belief that these problems are transient and that it is beneficial for children to avoid the stigma attached to such a label (Carter, Briggs-Gowan, & Davis, 2004; Gleason & Zeanah, 2006). However recent studies have shown that young children's social-emotional problems can persist over time. In a study by Mathiesen and Sanson (2000), 37% of 18-months-olds who had extreme emotional and behavioral problems were reported to continue having these problems at 30 months of age. Lavigne and colleagues (1998) reported that more than 50% of 2-and 3-year-olds with psychiatric problems had the same problems for over one and two years.

A variety of terms are used to discuss the social-emotional disturbances experienced by young children. In describing this area, Knitzer (2000) used the term

early childhood mental health; Gleason and Zeanah (2006) preferred the term infant mental health; while Squires, Bricker and Twombly (2000) and Briggs-Gowan and Carter (1998) used the term *social-emotional competence.*

Briggs-Gowan and Carter (1998) defined social-emotional competencies as "behaviors that reflect the achievement of mental-age appropriate milestones in social-emotional development" (pg. 424). Behaviors that reflect social-emotional competencies in infant and toddlers include compliance, attention regulation, imitation, pretend play skills, mastery motivation, empathy, emotional awareness, and prosocial peer behaviors (Carter, Briggs-Gowan, Jones, & Little, 2003).

As for social-emotional problems, Briggs-Gowan and Carter (1998) defined them as "behaviors that may interfere with infant-toddler functioning or reflect a failure to achieve mental-age appropriate social emotional competencies" (pg. 425). Social-emotional problems in infant and toddlers include "internalizing" and "externalizing" problem behaviors, regulatory problems, and serious maladaptive behaviors such as headbanging (Carter, Briggs-Gowan, Jones, & Little, 2003). Externalizing behaviors include high activity, impulsivity, aggression, and defiance (Carter, Briggs-Gowan, Jones, & Little, 2003). Internalizing problems include depression, social withdrawal, anxiety, separation distress, and extreme inhibition/shyness (Carter, Briggs-Gowan, Jones, & Little, 2003). Dysregulation includes problems in sleeping and eating, problems regulating negative emotional states with respect to reactivity and regulation, and unusual sensory sensitivities (Carter, Briggs-Gowan, Jones, & Little, 2003).

Relationship and Cultural Contexts

The ecological system and transactional developmental frameworks (Bronfenbrenner, 1986; Sameroff, 1995; Sameroff & Chandler, 1975) have led to the inclusion of family, broader community, and cultural context in understanding infant mental health issues (Carter, Briggs-Gowan, & Davis, 2004; Gleason & Zeanah, 2006; Shonkoff & Phillips, 2000). Infant characteristics alone are not as powerful in predicting infant social-emotional development (Gleason & Zeanah, 2006). Instead, infant-parent relationships are considered the best context for understanding infant social-emotional development, as infants initially rely on adults to regulate their interaction, attention, and behavior (Gleason & Zeanah, 2006; Shonkoff & Phillips, 2000). Infant-parent relationships are also the medium through which infants experience biological and environmental risks. Nurturing, protective, stable, and consistent relationships have been found to have a positive impact on infant social-emotional and cognitive development (Gleason & Zeanah, 2006; Shonkoff & Phillips, 2000, Sameroff, Seifer, & McDonough, 2004).

Culture influences every aspect of human development, including how child development is understood. In addition, adults' goals and expectation for young children's development, and the childrearing practices parents and caregivers use to promote, protect, or restore children's well-being are influenced by culture (Rogoff, 2003). These beliefs and practices include shared cultural assumptions about the causes and treatment of mental illnesses (Christensen, Emde, & Fleming, 2004; Gleason & Zeanah, 2006), and mental health service utilization for young children (Jellinek, Patel, &

Froehle, 2003). Apart from the assessing developmental history, symptoms, and child's current functioning to formulate an intervention for infant mental health problems, assessment of family functioning and cultural and community patterns should also be considered (Christensen, Emde, & Fleming, 2004).

There is an increasing awareness on the importance of meeting the needs of young children with social-emotional problems in Malaysia. However, there is a lack of direction in Malaysian infant mental health policy planning. In order to come up with the best system to provide services for young children with social-emotional problems, understanding on how mental health is perceived by the society needs to be improved. This cultural concept of mental health will be discussed next.

Mental Health Issues in Malaysia

Cultural Concept of Mental Health

The Malaysia National Policy on Mental Health (2001) defines mental health as

> the capacity of the individual, the group, and the environment to interact with one another to promote subjective well-being and optimal functioning, and the use of cognitive, affective and relational abilities, towards the achievement of individual and collective goals consistent with justice" (p. 3).

Psychiatry was established in Malaysia during the period of British colonial power. Training in this field is still based on the western model of psychiatry (Crabtree, 2005; Deva, 2004; Haque, 2005). Several researchers on mental health in Malaysia argue that the western ethnocentric viewpoint of modern psychiatry fails to take into consideration the importance of ethnicity in interpreting mental health (Crabtree, 2005; Hatta, 2001; Zain, 2001). Crabtree (2005) argues that biomedicine itself is a cultural

construct that is used in the western model as a yardstick to measure the inappropriateness of other healing approaches. The modern medical model of psychiatry does not confer meaning or significance to how people of diverse ethnicity view causality, illness, deviant behavior and treatment of mental health problems (Crabtree, 2005; Zain, 2001). In reality, how mental health is viewed in Malaysia widely varies according to different socio-cultural perspectives (Haque, 2005; Crabtree, 2005; Deva, 2004; Haque & Masuan, 2002; Hatta, 2001; Zain, 2001).

Malaysia, a multiracial country with a population of 25.45 million, has three primary ethnic groups. The largest, making up 65.9% of the total population, is the Bumiputera, which literally means "sons of the soil," consisting of Malays, Ibans, Dayaks, Kadazan-Dusun and other native groups in the country. Other ethnic groups are the Chinese at 25.3% and Indians at 7.5%. The remaining 1.3% is composed of various additional ethnic groups (Economic Planning Unit, 2006). Each ethnic group has its own traditions, beliefs, and practices in terms of general and mental health care, resulting in different traditional concepts of healing (Haque, 2005; Crabtree, 2005; Deva, 2004; Haque & Masuan, 2002).

The Malays' concept of mental health is influenced by their current Islamic beliefs as well as pre-Islamic beliefs, which were influenced by Hinduism. Islam teaches that human beings are made of body and soul, and human behavior is a reflection of their dynamic interplay. Mental health is achieved through the purification of thoughts and deeds; for example, the need for physical pleasure may make a man behave negatively, but his spiritual awareness brings him back balance in his life (Haque, 2005; Haque &

Masuan, 2002). Islamic counseling services in Malaysia have begun to combine Western secular psychology with Malay Muslim cultural and religious values (Haque & Masuan, 2002). There are Islamic traditional healers who help Muslims in Malaysia to overcome their psychological disorders through prayers and Quranic recitation (Haque & Masuan, 2002).

Before the arrival of Islam in Malaysia, Malays were mostly Hindus who concurrently practiced animism. Today, certain pre-Islamic beliefs about psychological disorders prevail even after centuries of Islamic faith in Malaysia. Among these are the belief that mental illness is caused by the loss of "semangat" or soul substance, resulting in a person being weak physically and confused mentally, or that mental illness is a result of possession by bad spirits or caused by "santau" or black magic. These beliefs lead Malays to seek the help of "bomohs" or traditional healers who have knowledge of "Ilmu Batin" or Malay Magic, which is similar to Shamanism (Crabtree, 2005; Deva, 2004; Haque & Masuan, 2002). Malays who adhere to the Islamic teachings consider Malay Magic against the Islamic tenets and avoid such practices (Haque & Masuan, 2002, Zain, 2001). The native peoples (i.e., Ibans, Dayaks, Kadazan-Dusuns, Orang Asli, and others) have their own traditional healers and rituals to overcome psychological disorders. Some of these rituals may involve offering prayers to ancestors' spirits and offerings to the spirits of trees and rocks.

In contrast, the Chinese population in Malaysia has traditionally believed that a person's emotions influence his health. Excessive, unbalanced, and undisciplined emotions are the causes of illnesses, for example anger imbalances the *chi* that maintains

the body and mind (Haque & Masuan, 2002). Mental stress can also be caused by the negative impact on self worth of the failure to achieve financial success; as according to Chinese traditional values, a person is expected to bring honor to his family through educational and career success (Haque & Masuan, 2002). Traditional Chinese practices to treat psychological disorders include utilizing the services of herbalists, healers, and mediums (Deva, 2004; Crabtree, 2005).

Buddhism, practiced by some Chinese in Malaysia, attributes mental illness to negative behaviors in the past. Buddhists believe that purity and spiritual advancement that contributes to mental well-being are achieved through moral conduct and eliminating evil actions. Meditations, diet, and disciplined behaviors are believed to be effective in promoting personal advancement (Haque & Masuan, 2002).

While some Indians practice Christianity or Islam, Indians in Malaysia who practice Hinduism often follow Ayurvedic philosophy. Ayurveda, a Hindu philosophy of life, teaches that physical and mental health are a result of equilibrium between mind, body and soul. Mental health is supported by diet, and one's relationship with the gods, teachers, and the Brahmins (i.e., the upper caste) (Haque & Masuan, 2002). These Indians seek Ayurvedic treatment and services of temple healers to heal people with mental illness (Deva, 2004).

Therefore, it is important to remember that there are intra-cultural differences in the interpretation of mental illness as well as intercultural differences. It is common in Malaysia for people with mental illness and their families to seek traditional healers before seeking conventional medicine (Zain, 2001). These differences are aggravated by

the distance people must travel between rural areas and the hospitals or clinics, and by the stigma attached to mental illness (Crabtree, 2005).

In an ethnographic study of patients in a mental hospital in Malaysia, Crabtree (2005) reported that a number of patients in the hospital merely tolerated the purely biomedical approach of their treatment as a way to maintain peace during their often long hospital stays. Patients related their preference to rely on spirituality rather than taking medicine to regain equilibrium in their life. Crabtree (2005) reported the use of meditation, mediums and traditional healers by the patients. Patients were also found to explain their conditions through the perspectives of their cultures and beliefs. For example, a young female patient expressed pride in her psychotic experience when she interpreted it as a process towards becoming a Shaman (Crabtree, 2001, 2005).

Crabtree (2005) described staff attitudes toward patients' use of traditional healing methods as ranging from unawareness or professional refusal to accept the credibility of these approaches, to covert empathy with the patients' efforts and seeking traditional healing for their own illnesses. Staff overtly reported that encouraging or tolerating traditional healing approaches may discredit their profession and the field of psychiatry. Crabtree also described a paternalistic approach in Malaysian hospitals in medication regimes in which patients and their families received no information on side effects of medicine.

Several mental health researchers in Malaysia believe that the purely biomedical approach promoted by the Malaysian Ministry of Health and practiced by the mental health professionals is unsuitable for a Malaysian society that has its own cultural

concepts of mental health (Crabtree, 2005; Deva, 2004; Haque & Masuan, 2002). Crabtree (2005) pointed out the positive aspects of traditional beliefs. These include the belief that faith nourishes feelings of self respect and endurance in mental health patients, reduces stress, and gives integrity and meaning to a demeaning experience as a mental health patient. Even more important, traditional ethnic healing rituals provide an opportunity for group participation and assimilation for the individual with mental illness, assisting him to integrate within society, and shield him from the devastations of stigma (Crabtree, 2001, 2005). Through the local ethnic perspective, the abnormal behavior of a sufferer of mental illness is not viewed as a digression from the acceptable norms of society. Instead, blame and stigma are mitigated by being viewed as a victim of supernatural circumstances (Crabtree, 2005). In contrast, Deva (2004) pointed out that when used as a sole practice, the medical model of psychiatry segregates individuals with mental illness from their society.

As the field of psychiatry is growing in Malaysia, more and more psychiatrists are beginning to be aware of the importance of understanding the traditions, culture, and religious belief of the society in delivering acceptable model of care to the local society (Haque, 2005; Hatta, 2001). By late 1980's, with the introduction of graduate studies in psychiatry in Malaysian universities, more psychiatrists graduated locally rather than abroad (Hatta, 2001). There were increasing discussions regarding combining modern or Western models of care with local explanations, strategies and techniques to enhance the patient therapist relationship (Hatta, 2001; Zain, 2001).

Efforts to bridge paradigms between the two models of mental health treatment in Malaysia have begun (Haque & Masuan, 2004; Hatta, 2001; Zain, 2001). Studies on the efficacy of religious psychotherapy in Malaysia have shown that this type of therapy was more effective than the regular support therapy (Zain, 2001). The Malaysian Islamic Council has begun to provide psychology workshops to Imams (i.e., Muslim clerics) so that they will be able to combine secular Western and Islamic theories of psychology in their counseling sessions (Haque & Masuan, 2004).

Malaysian Mental Health Policy

The history of stigmatization of mental health in Malaysia can be traced to the 1950's and 1960's when official common practice was to recommend seclusion of persons with mental illness in asylums and treat them soley with drugs (Crabtree, 2005; Deva, 2004; Haque, 2005; Mubarak, 2004). Mental illness was considered a purely biological issue without consideration of psychosocial aspects (Deva, 2004). There were no efforts to promote preventive strategies, to establish out-patient clinics in general hospitals for identifying and treating mild forms of mental health problems, or to provide support in the community (Crabtree, 2005; Deva, 2004; Haque, 2005; Mubarak, 2004).

Change in service delivery has been slow (Crabtree, 2005; Deva, 2004; Hague, 2005; Mubarak, 2004). The new Mental Health Act in Malaysia which was launched in 2001, "encourages" the decentralization of psychiatry services from psychiatrist hospitals to local general hospitals and rehabilitation centers in the community to promote reintegration into the community (Crabtree, 2001; Deva, 2004). However, this policy

lacks clarity as it is not supported by specific strategies or policy guidelines, or allocation of necessary staffing and other resources (Crabtree 2005; Haque, 2005; Mubarak, 2004).

The failure in effective service delivery in the community can be blamed on the vagueness of the national mental health policy. It is criticized as having been drawn by policy makers without consulting local experts and groups advocating for the rights of people with mental illness in Malaysia (Crabtree 2005; Haque, 2005; Mubarak, 2004). Budget allocation for mental health in Malaysia is considered low (Crabtree, 2000; Haque, 2005), which has caused a severe shortage of personnel. The Health Minister, in a speech in 2002, stated that there were a total of 130 professional psychiatrists for a population exceeding 20 million people (Haque. 2005). There is also a severe shortage of support staff including psychiatric nurses, clinical psychologists, psychiatric social workers, psychiatric counselors, occupational and activity therapists (Haque, 2005). Apart from the low budget allocation, recruiting and training personnel is also problematic due to the lower status that psychiatry has compared to other specialties within the medical discipline, due to the stigma attached to mental health issues (Crabtree 2001; Haque, 2005).

The latest statistics from 1998 indicate that there are four psychiatrist hospitals in Malaysia with 55, 589 patients (Crabtree & Chong, 2001). Studies on psychiatric hospitals in Malaysia describe overcrowded, understaffed open wards with little privacy for patients. Medication is heavily relied upon as a means to manage a large population of patients by a small number of staff. The services are outdated as patients in these

hospitals are treated with medication alone and are separated from their caregivers in psychiatric wards (Crabtree, 2001).

More recent attempts at decentralization of psychiatric services have seen the establishment of 80 psychiatric unit in community clinics and hospitals in the country. This has reduced the average patients' stay at a psychiatric hospital from 16 months in the 1970's to 7-30 days currently (Crabtree & Chong, 2001).

There are minimal follow-up services available after discharge as outpatient care provided by community clinics offer limited services due to the shortage of psychiatrists and other mental health professionals. Consultations with psychiatrists are only allowed to patients with psychiatric illnesses. Other patients are generally treated by medical officers and are prescribed 'routine' anti-psychotic drugs. Due to limited number of counselors and other rehabilitation professionals, people with mental health problems rarely receive counseling or rehabilitation services (Haque, 2005).

Once patients are discharged, there are very few community-based rehabilitation centers or other services such as group homes to offer supplementary help (Haque, 2005). Community-based homes are ill equipped and lack trained personnel and ongoing support for families. The number of day-care centers for psychosocial rehabilitation has increased, of which half are run by non-governmental organizations (NGOs). However, due to poor funding, the quality and planning of such services as well as the necessary stability for the improvement and maintenance of existing program have been severely hampered (Haque, 2005).

People with mental illness receive little to no form of financial assistance from the government. In Malaysia, mental illness is not classified as a disability; instead it is classified as a medical problem that does not require social welfare assistance. People with mental illness do not have access to insurance coverage (Deva, 2004; Haque, 2005). In addition, most people with mental illness have no opportunity for employment due to refusal of employers to hire them (Mubarak, 2005). Therefore it is not surprising that a majority of people with mental illness in Malaysia live in poverty. Most cannot afford to pay for even food and shelter (Mubarak, 2005). In order to survive, they are often forced to depend on their families.

The long-term support of persons with mental illness often causes a financial burden to their families. Caregivers face significant emotional and practical difficulties, which leads to poor living conditions for people with mental illness, including being locked into rooms, becoming homeless, or being sent to illegal homes for the mentally ill. These illegal homes charge exorbitant fees for unhygienic living conditions with no professional supervision (Mubarak, 2004).

Research is desperately lacking in the field of mental health in Malaysia. Policies and plans implemented by the Ministry of Health for mental health services are based on inaccurate and misleading statistics (Mubarak, 2004). There is a need for epidemiological studies to document the accurate incidence and prevalence rates of various forms of mental health in hospital and community settings. Research is also needed to study the needs of the special population groups like dually-diagnosed (i.e. with mental illness and developmental disorders), children, the elderly, and women, whose incidence rates are

growing at a very high rate. There are few researchers in these areas and few published materials (Haque, 2005).

Infant Mental Health in Malaysia

Public discussion of child development has mainly been focused on academic achievement and physical health. Emotional and behavioral well being of children in Malaysia has only caught the attention of the society since the 1980s (Teoh & Peng, 2001). There has been very little research focussed on the mental well-being of school-aged children in Malaysia and even less on the mental well-being of infants and toddlers. Therefore, very little is known about the possible factors influencing infant mental health in Malaysia, or services available to assist infants and toddlers and their families (Teoh & Peng, 2001).

Socio-cultural Aspects of Infant Mental Health in Malaysia

In Malaysia, the family is viewed as the most important social unit, and offers an informal yet profound social support system. Families in Malaysia are mostly extended families, that include several generations, although not all may live under one roof. Family life includes both religious values and ethnic traditions. These two values are often blended in rituals, which are observed at various stages of family life, such as engagements, marriages, birth of babies, and funerals.

In Malaysian extended families, children are treasured and viewed as precious gifts from God. It is understood that the gift comes with responsibility to ensure that children grow up to become responsible adults and contribute to the family and society.

Therefore, Malaysian society places a great deal of emphasis on the upbringing of children (Teoh & Peng, 2001).

As explained by Shonkoff and Phillips (2000), culture influences all aspects of early development through child-rearing beliefs and practices designed to promote healthy development. Child-rearing beliefs in Malaysia start from the day the baby is conceived. The expecting mother is supported by the extended family so that she can do her best for her baby. In Islam, expecting parents are advised to read the Quran daily and do extra prayers as it is believed that the baby in the womb benefits from these spiritual activities. Mothers are supported following the delivery of the baby during a long period of confinement. This practice is supported by the Malaysian legislation, as all new mothers get 60 days, and new fathers 3 days of fully paid, job-protected leave from work. Midwives and elder female family members provide support to the mother-infant relationship, for example in offering advice on breastfeeding and sleeping problems.

As in other aspects of life in this country, there are myths and taboos surrounding child birth and child rearing. Newborn babies and their mothers are considered to be fragile and easy preys for bad spirits. The Indians have a ritual for warding off the "evil eye" from babies. The Malays who adhere to Islamic teachings protect the baby from "jinns" (genies) by saying some prayers from the Quran for them, while those who lean towards the pre-Islamic beliefs have certain rituals for protecting the baby such as putting a nail that has mantras chanted over it under the baby's mattress. Mothers' post natal depression is believed to be a result of evil spirits disturbing the mothers. The extended family often supports these mothers by offering group prayers.

Traditionally, during a baby's first years of life, health care is provided by the village midwife. The mother seeks advice from the village midwife, who is viewed as a wise old woman, on ailments ranging from fever to colic. With more clinics available through out the country, this practice is slowly changing, with the parents taking the baby to seek medical advice from a doctor. Medical treatments from government community clinics are free and treatment from private clinics cost between RM9 ($3) to RM21 ($7). However, ailments that are difficult to explain that involve emotional and behavioral problems such as incessant crying are referred to the village midwife or traditional healers. These ailments are not viewed as ailments of the physical body but of the spiritual. Traditional ethnic healing rituals for a child with mental health problems provide an opportunity for the extended family to be involved, providing support for the parent.

Impact of the Rapid Economic Growth on Families

The economic growth in Malaysia has been phenomenal. From an agricultural-based economy in the 1970's, Malaysia has moved to high technology manufacturing. Malaysia plans to achieve the status of an industrialized country by 2020. There have been several negative consequences from this rapid economic growth, such as a huge urban migration as people in villages move to the bigger towns and cities to fill up the positions opened by the new industries. More women are joining the nation's workforce. The family unit has changed from a rural extended family to an urban nuclear dual-career family (Mubarak, 2003).

With these changes, social support within and among members of local community has been transformed (Mubarak, 2003). There is less contact with the extended family due to parents' long working hours. Many young children of working mothers spend the day in child care centers, although those who live near their extended families still receive childcare from grandmothers or aunts. Urban Malaysian parents have been criticized for not spending enough time with their children (Peng, 1999).

The rapid economic growth also has impacted the psyche of the Malaysians, resulting in a more competitive society. Parents have been socialized in a high-pressure environment that values academic achievement and examination results (Hewitt & Malony, 2000). The Malaysian education system is exam-oriented (Badzis, 2004); academic success is equated to being a successful individual. There is a widespread assumption that the earlier children can be introduced to the realm of academics, the better (Badzis, 2004).

The competitive nature of the society often has an impact on the choice of education for children (Badzis, 2004). Parents prefer a structured early childhood education program for their young children and do not appreciate a play-based curriculum (Badzis, 2004). Parents want formal academic programs for their pre-schoolers, children aged 5 to 6 years old in Malaysia, focused on teaching them to read, write and do arithmetic (Abdul-Rashid, 1993; Hewitt & Mahoney, 2000; Ling, 1988; Rohaty, 1984). Liew and associates (1999) found that 11-year-old children in Malaysia were rated lowest for social skills when compared to their other skills. Mamat (2004) has found that parents and teachers do not focus on young children's social skills, especially

at the beginning of the school year. Young children are not trained on how to communicate and interact positively in their early childhood education settings (Mamat, 2004).

Policy for Young Children with Mental Health Problems

Issues pertaining to the health and welfare of children and adolescents between the ages of birth and 18 in Malaysia are covered under the Child Act (2001). However, this legislation is focused on protecting children and adolescents from violence and physical, emotional, and sexual abuse, with no mention of a child's mental well-being. At present, there is no specific legislation that mandates the delivery of services for children with mental health problems. The Mental Health Act (2001) focuses on providing psychiatric treatments only to adults with mental health problems.

The policy serving the needs for children with disabilities in Malaysia is the Malaysian Special Education Act (1997). However, special education is only legally provided for children aged 6 and above. This special education policy has been found to be discriminatory, as only children who are deemed as "educable" are eligible for education. Among children who are labeled as "uneducable" are those with profound physical handicap, severe mental retardation, multiple disabilities, behavior problems and those who are not toilet trained.

Services for Young Children with Mental Health Problems

Funding for health and rehabilitation services for people with disabilities began in 2000, and in 2002 the budget for these services was RM1 million ($263, 000) (Malaysian Ministry of Health, 2004). In 2002, the ministry reported 1,387 new cases of young

children identified with physical and mental disabilities. Early intervention programs in these community clinics were started in the early 1990's (Mallinga-Sellapan, 2004). Services provided in these clinics include site- based therapies and home visits. However, these programs are not fully funded by the government and face problems such as locating a building to house the program and acquiring therapy equipments (Mallinga-Sellapan, 2004). In 2004, there were only 104 community clinics with rehabilitation services (Mohd-Kassim, 2004).

Although most government hospitals have psychiatric units, not all units are staffed with psychiatrists specializing in child psychiatry (Teoh & Peng, 2001). There are developmental psychologists, clinical psychologists and child psychiatrists who have their own private practices but their services are quite costly for an average Malaysian family. Professionals involved in the assessment process offer individual consultation and seldom work in multidisciplinary teams (Teoh & Peng, 2001). There is also no clear system of referral for young children identified through either the screening or the assessment process.

For children with emotional and behavioral problems, use of non-medication form of therapies are the main focus; medication is considered an adjunct to behavioral therapies (Teoh & Peng, 2001). Still, however, the use of medication for children's emotional and behavior problems is common in Malaysia. Disorders treated with drug therapies include depression, anxiety disorder, attention deficit disorder, eating disorder, enuresis, behavior problems with developmental disabilities, seizures, and psychoses (Teoh & Peng, 2001). Specific consideration is given to the problem before the drug

therapy is chosen, and close monitoring is done by qualified personnel (Teoh & Peng, 2001). Problems with compliance with the drug therapy are reported to be due to parents' lack of education for the need of medication, interest in traditional therapies, lack of acceptance that their child has a problem, and lack of belief that the children can be helped through medication therapy (Teoh & Peng, 2001).

Due to the shortage of trained personnel, very few hospitals and clinics, both in the government and private sectors, have early intervention programs for children who have been diagnosed with emotional and behavioral problems. These children are often referred to other private practices, community-based rehabilitation centers or programs run by the NGOs (Teoh & Peng, 2001).

Community-based rehabilitation centers have been established by the Ministry of Women, Family and Community Development with the aim of providing training for people with disabilities. By 2005, there were 313 centers providing services for 8,453 children (Economic Panning Unit, 2006). In 2004, the government was reported to have allocated Ringgit Malaysia (RM) 10 million ($2.8 million) in financial assistance and upgrading of facilities and purchases of rehabilitation aids for these community-based rehabilitation centers (Abdul-Rahman, 2004).

Early intervention centers run by NGOs for children with disabilities need to be registered under the Ministry of Women, Family and Community Development and this ministry provides partial funding and training to these centers. Both the government community-based rehabilitation centers and the NGO centers provide services for children and young adults under the age of 21. There are no statistics available on the

number of children with emotional and behavioral problems receiving services at these government community-based rehabilitation centers and the NGO centers.

Ayob, Lee, See, and Ahmad (2004) studied centers run by NGOs. They identified 2,691 children with various disabilities receiving educational services from 48 centers run by non-governmental organizations in Malaysia, from birth to age 18. However, the research succeeded in highlighting some of the challenges faced by these NGO centers, such as the lack of trained teachers and professionals, the difficulty in implementing Individual Education Plans for each child, the lack of parent support, and the lack of facilities such as buildings and transportation. Among the suggestions made were establishing a one-stop center to make it easier for parents to access services, increased financial help from the government, training for the teachers, and financial assistance for the children and their families (Ayob et al., 2004).

Parent education program are offered by several organizations, where the focus is on child rearing. The focus of the programs ranges from philosophical and religious advice on child rearing to the teaching of specific skills to control children's behavior. The organizations that offer programs on child-rearing include the Family Planning Unit, the Islamic Center, the Ministry of Health under its Healthy Life-style campaign, and the Ministry of Women, Family and Community Development. These programs are not offered on a regular basis; the majority are offered based on community demand (Teoh & Peng, 2001).

Summary

Service provision for children with emotional and behavioral problems in Malaysia is unsystematic at best and non-existent at worst. The field lacks skilled personnel and resources. Research on effective services for this population is very much needed in order to improve the services available at present.

Barriers to Early Identification of Young Children with Mental Health Issues

The awareness of the importance of early intervention to help young children with disabilities to optimize their potential has increased in Malaysia. There have been various parties who have championed this cause including parents, professionals, NGOs and governmental agencies (Mat-Akib, 2004; Pang, 2004; Teoh & Peng, 2001). These parties are also aware of the importance of the early identification of young children with disabilities in order to provide them with timely intervention services (Mat-Akib, 2004; Teoh & Peng, 2001). Early identification of young children for general developmental delays in Malaysia has been initiated by the Ministry of Health, although there been no studies completed on the efficacy of this effort. Early identification of young children for social emotional problems, on the other hand, is still non-existent. In order to initiate a systematic referral system for young children with social emotional problems, an effective early identification process needs to be developed.

There are five primary barriers to the development of a mental health early identification program in Malaysia. These include a) lack of a clear policy to mandate services for young children with social emotional problems; b) lack of community mental health resources for young children with social emotional problems and their families; c)

lack of skilled personnel; d) failure to frame services to suit the local cultural concept of mental health; and e) unavailability of screening instruments that are culturally appropriate.

Policy

In Malaysia, there is no clear procedural guideline for service provision for young children with mental health problems and their families. The needs of this population are not covered by The Mental Health Act (2001), the Child Act (2001), or the Special Education Act (1997). The Ministry of Health conducts a program for the early identification of young children with general development disorders. However, this Ministry is not mandated by law to initiate a program for the early identification of young children with social emotional problems. Without this mandate, there are problems regarding the allocation of resources and personnel needed to implement an early identification program for young children with specific mental health needs. Vague policy also impedes the coordination among multiple agencies needed to develop a system that links screening, eligibility diagnosis, intervention and evaluation.

The current legislation on mental health in Malaysia is trying to move from a centralized psychiatric and biomedical approach of treatment to community-based mental health program, but success has been slow (Crabtree, 2005; Deva, 2004; Haque, 2005; Mubarak, 2004). The current biomedical approach does not emphasize identification of forms of mental health disorders, or provide support in the community, both of which slow down efforts to develop an early identification program.

Personnel

As noted earlier, the second major barrier in establishing an early identification program for children with social emotional problems in Malaysia is the shortage of personnel (Crabtree, 2000; Haque, 2005). The shortage in personnel is even worse for infant mental health services as not all government psychiatric clinics are staffed with child psychiatrists (Teoh & Peng, 2001). The waiting list to consult a child psychiatrist is very long and most children with emotional and behavioral problems have no choice but to have consultations with medical officers who are not trained to recognize serious mental health illness among children.

Lack of Community Mental Health Resources

The Ministry of Health in Malaysia has not initiated an early identification program for young children with social-emotional problems in government community clinics. Apart from the government clinics, screening for social emotional problems is also not available in private medical practices. Children who are recognized to have social emotional problems are referred to private programs, community-based rehabilitation programs or programs run by NGOs as there are few government community clinics that run intervention programs. These programs are not found in all districts, and if they are available, waiting lists are long. Agencies are not coordinated to provide a linked system of screening, diagnostic, and intervention services. Community links need to be established to make an early identification and referral system successful (Knitzer, 2000).

Culture

Studies on cultural influences on development advocate that cultural beliefs, values, and practices should be a central focus of assessments of young children (Garcia-Coll & Magnusson, 2000). Due to cultural practice and lack of awareness of infant mental health issues, parents often seek the services of traditional healers when faced with emotional and behavioral problems among their children. When problems are more difficult to understand (e.g., compared to physical ailments), they are regarded as problems that are linked to the spiritual realm.

Mental health problems that are complex are often more easily understood when they are viewed through the perspectives of the local cultures and beliefs (Zain, 2001). Like adult mental health, the social significance of a child's mental health problems is less stigmatizing to the child and family if it is regarded as the result of disturbance by malevolent spirits (Crabtree, 2004). In contrast, the modern biomedical explanation of mental health in Malaysia is stigmatizing for the public in the way it conjures negative images of asylums. Without a public awareness campaign on infant mental health to explain the usefulness of early identification and early intervention, families may stick to the traditional view that traditional healing is the only option they have to help their children with social emotional problems.

Screening and Assessment Instruments

The final barrier in setting up an early identification of young children with social emotional problems in Malaysia is the unavailability of screening and assessment instruments that are culturally appropriate for use locally. Currently, infants and toddlers

are screened at government health clinics with an adapted version of the Denver Developmental Screening Test II (Frankenburg, Dodds, Archer, Shapiro, & Bresnick, 1992), but there has been no report on research completed on its adaptation for use in Malaysia. Children with emotional and behavioral problems are assessed with behavioral or emotional assessment test batteries such as the Wechsler scales; Wechsler Intelligence Scale for Children (WIS-C) or Wechsler Preschool and Primary Scale of Intelligence (WPPSI), and structured or semi-structured interviews (Teoh & Peng, 2001). However, there have been no reports on whether these test batteries have undergone the adaptation process or been studied for their cultural appropriateness. There are long waiting lists for assessments at the hospitals and for lengthy individual Assessments of children's social-emotional well-being are often performed through informal observations.

A screening instrument needs to be psychometrically sound before it can be used successfully to screen and identify young children. In the case of Malaysia, where the field of infant mental health faces challenges with low budget allocation, shortage of personnel and community resources, a low-cost and user friendly screening instrument is needed.

Rational for Using the Ages Stages Questionnaire: Social Emotional

Selecting an Effective Screening Test

Standards for screening tests in the U.S. have been recommended by The American Psychological Association in *Standards for Educational and Psychological Test* (1999). The accuracy of a screening test is defined by its sensitivity and specificity. Sensitivity is the percentage of children with true problems identified by a screening test

(Squires, Bricker, & Twombly, 2002) . Standards for sensitivity include the identification of at least 70 to 80% of children with disabilities at a single administration to avoid under-referral (Glascoe, 2005). Specificity refers to the percentage of children without disabilities correctly identified by passing typical or negative findings on screening (Squires, Bricker, & Twombly, 2002). Specificity should be closer to 80%, so as to minimize over-referrals (Glascoe, 2005).

Screening tests should also be standardized on a large and current sample, representative of the population. Screening tests must have evidence of reliability and validity. Reliability includes test-retest, interrater, and internal consistency, and reliability studies should yield outcomes of 80% or above (Glascoe, 2005). Validity studies should include concurrent validity, discriminant validity and predictive validity.

Other features of a good screening test include clear directions for test administering, clear scoring procedures, training, directions for interpreting test results, and alternative methods for administering items, such as for parents with limited English proficiency (Glascoe, 2005). One of the instrument for screening young children's social-emotional competence is the ASQ:SE, which has been reported to have good psychometric properties, efficient in administration and cost and family centered. The ASQ:SE has been listed as a good and effective screening instruments by several researchers (Glascoe, 2005; Gleason & Zeanah, 2006).

The Ages Stages Questionnaires: Social Emotional

The Ages Stages Questionnaires: Social Emotional (ASQ:SE) (Squires, Bricker, & Twombly, 2002), is a parent-completed screening tool used to identify young children

from the ages of 3 to 66 months, who are at risk of social-emotional problems for further assessments and intervention. The questionnaire screens a child in social-emotional areas, including self-regulation, compliance, communication, adaptive functioning, autonomy, affect, and social interaction.

Studies on the psychometric properties of this screening instrument have yielded excellent results (Squires, Bricker & Twombly, 2002). The normative sample included 3,014 children from 3 to 66 months of age. Internal consistency of the ASQ:SE was reported as an alpha of .82, indicating that items in the ASQ:SE measures the same underlying construct. Test-retest reliability was 94%, measured by obtaining the agreement between two sets of ASQ:SE completed by a same set of parents over a 1- to 3-week intervals. When compared to the Child Behavior Checklist (Achenbach, 1991) and Vineland Social and Emotional Early Childhood Scale (Sparrow, Balla, & Cicchetti, 1998), the concurrent validity of the ASQ:SE was 81% to 95% (Squires et al., 2002).

The overall sensitivity of the ASQ:SE was reported to be 78 % (Squires et al., 2002). This means that 78% of children in the study identified as needing further evaluation were diagnosed with social-emotional problems in full scale assessments. The overall specificity of the tool was 95 % (Squires et al., 2002); 95% children in the study were correctly identified as developing typically without social-emotional delays.

The study on utility included 731 parents who completed the utility questionnaire. More than 97% of these parents rated the ASQ:SE as easy to understand and appropriate. Research in the U.S. has shown that the ASQ:SE is culturally sensitive, cost effective and it takes a short time to be administered and scored (Squires et al., 2002).

With its low administrative cost and user friendliness, the ASQ:SE appears to be suitable for use in Malaysia, where the field of infant mental health faces challenges with low budget allocation, shortage of personnel and community resources. However, investigations on the validity, utility, and cultural appropriateness of the ASQ:SE in screening young children for social emotional problems in Malaysia are needed before this screening tool can be officially adapted for use.

CHAPTER III

METHOD OF STUDY

Identification of a valid and reliable social-emotional screening instrument for young children in Malaysia is the main goal of this study. With a valid and reliable screening instrument, effective early intervention services can be delivered in a timely manner to young children with social-emotional problems. To develop a screening tool locally would be an expensive and time consuming endeavor. The ASQ:SE, an established screening instrument, has been translated into Malay and holds promise as an effective measure. This study focussed on a sample of young children who are brought to the clinics by their parents for scheduled well baby check-ups and nurses working in government well-baby clinics in Malaysia.

First, the cultural appropriateness of the Malay translation of the ASQ:SE in screening 3-21 month-old children for social-emotional problems was investigated. Second, the reliability and validity of the Malay translation of the ASQ:SE in screening 3-21 month-old children in Malaysia for social-emotional problems wase studied. Third, a comparison of Malaysian ASQ:SE scores for children from 6-21 months was made with the scores of their U.S. peers. Fourth, differential item functioning (DIF) in the Malay translation of the 6-month-old, 12-month-old, and 18-month-old age intervals of the ASQ:SE was investigated using the Item Response Theory-based statistical procedures. Finally, the impact of training on the perceptions and attitudes of nurses in Malaysian

government well-baby clinics towards screening in general and administering the AQS:SE in particular was studied. The participants, procedures for recruitment, protection of human subject, selected tests and measures, methods of data collection, and data analysis, are described.

Participants

There were three categories of participants: a) young children age between 3 and 21 months, b) their parents/caregivers, and c) nurses. Participants were recruited from Perak, a northern state in Malaysia. Efforts were made to recruit an economically and racially diverse sample of parents and young children to reflect the general Malaysian population. Malaysian Census 2006 reported 65.9% of the Malaysian population are of Bumiputera ethnic (Malay and other indigenous groups); 25.3% Chinese; and 7.5% Indian; and the remaining 1.3% of other various ethnic groups (Economic Planning Unit, 2006).

Children

A total of 608 children participated in this research. There were approximately 200 children for each of the three age intervals of the ASQ:SE, 6, 12, and 18 month. Children between the ages of 3 to 21 months at the time of the screening process were divided evenly across the three age intervals. Efforts were made to recruit young children of diverse ethnicity and social economic status, including children with diagnosed disabilities.

Parents/Caregivers

A total of 600 parents/caregivers who brought their young children to the government well-baby clinics for scheduled check-ups took part in this research with their child. Parents/caregivers are defined as a mother, father, grandparents, foster parents, or legal guardian. Among the criteria for their inclusion in this research are: 1) parents of young children between the ages of 3 and 21 months, and b) agreement to give an informed consent, including signing the appropriate forms.

Nurses

A total of 35 nurses who work in government well-baby clinics in Malaysia took part in this research. To be included, a nurse must fulfill these criteria: a) qualified and has a license to practice nursing in Malaysia, b) agree to sign an informed consent, and c) agree to undergo training to use the ASQ:SE. The nurses were asked to describe their rank, training, specialization, and number of years working as a nurse.

Protection of Human Subjects

Approval for the study was obtained from the authorities in Malaysia and the University of Oregon Institutional Review Board prior to the recruitment of subjects. In Malaysia, approval for the study was obtained from the Economic Planning Unit in the Prime Minister's Department, the Ministry of Health, and the Perak State Health Department.

Recruiting letters for nurses and parents/caregivers in English and Malay can be found in Appendix A. Each nurse and parent/caregiver signed a letter of consent to participate in this study, as found in Appendix B. The consent letters explained the

purpose of the study, selection criteria, and the approximate time required for participation. In addition, the letters of consent explained that participation was voluntary and that participants could withdraw at any time without penalty. The consent letters emphasized that all information would be kept confidential. Procedures were taken to protect the privacy and anonymity of nurses and families who participated in this study. The name, mailing address, email address and phone number of a representative at the University of Oregon was provided as well as the name, e-mail address and local phone number of the principal investigator.

All information obtained from participants was coded and identification numbers were used in place of names in order to maintain confidentiality. The principal investigator maintained a confidential log with the participant number, participant's name, phone number, address, and date and location of screening, which was kept separate from all data. Data were kept in a locked cabinet through out the duration of the study and was only be available to the principal investigator. Files will be destroyed after 5 years.

Measures

Six measures was used in this study: 1) the Malay translation of the 6-month, 12-month, and 18-month age intervals of the Ages and Stages Questionnaire: Social-Emotional, 2) the Children's Global Assessment Scale (CGAS), 3) the Family Information Survey, 4) the Parent Satisfaction Survey, 5) the Nurse Satisfaction Survey, and 6) the Nurse Pre-Post Training Survey. Each measure is described below.

Ages and Stages Questionnaire: Social-Emotional

The Ages Stages Questionnaires: Social Emotional (ASQ:SE) (Squires, Bricker, & Twombly, 2002), is a parent-completed screening tool used to identify young children from the ages of 3 to 60 months, who are at risk of social-emotional problems for further assessments and intervention. The questionnaire screens a child in social-emotional areas, including self-regulation, compliance, communication, adaptive functioning, autonomy, affect, and social interaction.

The ASQ:SE is designed to be completed by parents/caregivers and contains a list of questions about the child's behavior. From their observation of their children, parents/caregivers are asked whether these behaviors occur: 1) most of the time, 2) sometimes, or 3) rarely or never. Parents/caregivers are also asked to indicate if a certain behavior is of concern to them. There are also open-ended questions in the ASQ:SE regarding the child's behavior.

The ASQ:SE has a straight forward scoring system. Each answer to the questions carries a numeric value: 0 point when positive behavior occurs most of the time, 5 points when positive behavior occurs sometimes, and 10 points when problem behavior occurs most of the time, or when positive behavior occurs rarely or never. Five points are awarded when parents answer "yes," that a certain behavior is of "concern" to them. The open-ended questions at the end of the ASQ:SE do not carry any numeric value.

After each questionnaire is scored, the total score is compared to a cut-off score that has been empirically determined for each interval. A score that is below the cut-off score is considered typically developing, and a score that is on or above the cut-off score

is considered in need for further evaluation. For example, the possible range of scores for the 18-month ASQ:SE is from 0 to 390 and its cutoff score 55. Any child who receives a score below 55 is considered typically developing and any child who receives a score of 55 or more is recommended to receive further evaluation.

Studies on the psychometric properties of this screening instrument have yielded excellent results (Squires, Bricker & Twombly, 2002). The normative sample included 3,014 children from 3 to 66 months of age. Internal consistency of the ASQ:SE was reported as an alpha of .82, indicating that items in the ASQ:SE measures the same underlying construct. Test-retest reliability was 94%, measured by obtaining the agreement between two sets of ASQ:SE completed by a same set of parents over a 1- to 3-week intervals. When compared to the Child Behavior Checklist (Achenbach, 1991) and Vineland Social and Emotional Early Childhood Scale (Sparrow, Balla, & Cicchetti, 1998), the concurrent validity of the ASQ:SE was 81% to 95% (Squires et al., 2002).

The overall sensitivity of the ASQ:SE was reported to be 78 % (Squires et al., 2002). This means that 78% of children in the study identified as needing further evaluation were diagnosed with social-emotional problems in full scale assessments. The overall specificity of the tool was 95 % (Squires et al., 2002); 95% children in the study were correctly identified as developing typically without social-emotional delays.

The study on utility included 731 parents who completed the utility questionnaire. More than 97% of these parents rated the ASQ:SE as easy to understand and appropriate. Research in the U.S. has shown that the ASQ:SE is sensitive, cost effective and it takes a

short time to be administered and scored (Squires et al., 2002). Copies of the 6, 12, and 18-month ASQ:SE in English and Malay can be found in Appendix C.

Children Global Assessment Scale (CGAS)

The Children's Global Assessment Scale (CGAS) (Shaffer, Gould, Brasic, Ambrosini, Fisher, Bird, & Aluwahlia, 1983) is a measure for assessing the level of psychiatric disturbance and social disability in children between the ages of 4 to 16. The CGAS was adapted from the Global Assessment Scale (Endicott, Spitzer, Fleiss, & Cohen, 1976), a measure for assessing the level of psychiatric disorders in adults.

The CGAS was created to be a global scale that can be used simply and easily by a variety of raters. There is no accompanying training manual and few directions for the rating practice. Therefore it is an appealing tool to busy clinicians who want to quantify their patients' level of functioning (Green, Shirk, Douglas Hanze, & Wanstrath, 1994).

The CGAS has a scoring range of 1 to 100; and for every ten points, there is a description for behavioral function. The lowest scale is from 1-10, which means a child needs constant supervision; and the highest scale is from 91-100, which means a child is functioning at a superior level. Scores above 70 indicate functioning in the normal range. Raters use their knowledge of the subject's level of social and psychiatric functioning and assign a number between 1 to 100 to score the subject's lowest level of functioning (Bird, Canino, Rubio-Stipec, & Ribera, 1987.

Schorre and Vandvik (2003) reported that 16 studies have investigated the interrater reliability of the CGAS and 11 of the studies have reported its interrater

reliability to be 0.80 or above, which indicate an acceptable level of reliability. Shaffer and associates, the creators of the instrument, found interrater reliability to be .85 (1983).

Test-retest reliability for the CGAS has been investigated in three studies. Shaffer et al. (1983) reported a test-retest reliability of 0.85; Bird et al. (1987) reported a value of 0.83; and Steinhausen (1987) reported a value of 0.22 to 0.85.

To establish concurrent validity, Shaffer et al. (1983) found a modest correlation between the CGAS and Conner's Ten Item Abbreviated Parent Checklist. Bird et al. (1987) found a correlation of -0.65 between the CGAS and the social component of the Child Behavior Check List (CBCL). In the CGAS, a low score is indicative of negative behaviors, while in the CBCL, negative behaviors are indicated by a high score. Green et al. (1994) found negative correlation between the CGAS and the Child Behavior Check List (CBCL). Steinhausen (1987) found a positive correlation between the CGAS and the Columbia Impairment Scale that helps to support the concurrent validity of the CGAS. Sourander and Piha (1997) found a positive correlation between the CGAS and the Rutter's Parental Questionnaire (Rutter, Tizard, & Whitmore, 1970) when both tests were completed on a group of preschoolers. They also found a strong correlation between the CGAS and the CBCL for a group of children above the age of 11. There seems to be mixed results in studies to establish the concurrent validity of the CGAS, which may be due to the use of different raters, that is parents, clinicians, and staff.

The CGAS has been used outside the U.S. including in Puerto Rico (Bird et al., 1987), Germany (Steinhausen, 1987), Denmark (Dryborg, Warborg, Larson, Nielsen, Byman, Buhl Nielsen, & Gautre-Delay, 1999), and Norway (Schorre, & Vandvik, 2003).

However, none of these studies focused on the cultural validity of the CGAS. A copy of the CGAS can be found in Appendix C.

Family Information Survey

Information about child's gender and birth date, parents' race, education level, age and monthly income are included in the Family Information Survey. In addition, the families' reasons for the clinic visit and whether the parents have any concern about their children's development are asked. Information on this form will be useful in efforts to match the sample to reflect the demographic characteristics of the larger Malaysian population. A copy of the Family Information Survey can be found in Appendix C.

Parent Satisfaction Survey

Questions about the utility of the ASQ:SE are asked on the Parent Satisfaction Survey. For example, questions about how long parents take to complete the ASQ:SE and whether they find the tool easy to understand and answer are asked. In addition, whether parents need assistance in completing the ASQ:SE and whether they gained some insight regarding their children's development from completing the tool are asked. The appropriateness of the ASQ:SE questions for their children and if they have suggestions to improve the instrument will be included. A copy of the Parent Satisfaction Survey can be found in Appendix C.

Nurse Satisfaction Survey

This survey measures the nurses' perceptions of the utility, validity, and cultural appropriateness of the ASQ:SE. The nurses are asked to report on whether parents needed assistance to complete the ASQ:SE, and the type and the level of assistance needed. Nurses are also asked to indicate items that they think are not culturally appropriate and

comment why these items are not suitable for the Malaysian culture. Finally, they are asked for suggestions to improve the instrument and whether they would consider using it in the future. A copy of the Nurse Satisfaction Survey can be found in Appendix C.

Nurse Pre-Post Training Survey

This form was completed by the nurses before and after the training to evaluate their knowledge on using and scoring the ASQ:SE. This pretest-posttest survey ask questions regarding level of comfort in participating in the training, in screening young children and in talking to families about their children's social-emotional issues. The survey ask them to describe their level of knowledge regarding screening, their perception of the utility of the ASQ:SE and issues that they think might be barriers in using the instrument. A copy of the Nurse Pre-Post Training Survey can be found in Appendix C. The measures and respondents involved in this study are shown in Table 1.

Table 1

Measures and Respondents

Measure	Description	Respondent
Ages and Stages Questionnaire: Social-Emotional	Screening instrument to identify children with social-emotional problems	Parents/Caregivers
Children Global Assessment Scale (CGAS)	Global scale to assess the psychosocial level of children	Nurses
Family Information Survey	Questionnaire to collect the family demographic information	Parents/Caregivers
Parent Satisfaction Survey	Questionnaire to measure the parents' perception on the utility of the ASQ:SE	Parents/Caregivers
Nurse Satisfaction Survey	Questionnaire to measure the nurses' perceptions of the utility, validity, and cultural appropriateness of the ASQ:SE	Nurses
Nurse Pre-Post Training Survey	Questionnaire to gauge the impact training on the nurses' perception about screening and the ASQ:SE	Nurses

Procedures

Procedures included two phases. The first phase was related to the adaptation and development of the Malay ASQ:SE. This phase included two steps: translation and back-translation of the Malay ASQ:SE and a review by an expert panel.

The second phase studied the psychometric properties of the Malay ASQ:SE. This phase involved two groups: professional nurses and parents.

Phase 1: Development of the Malay ASQ:SE

Step 1: Translation and back translation. The ASQ:SE was translated into Malay by the principal investigator, a native speaker of Malay. The Malay translated version was back translated into English by a Malay literature scholar who is a journalist with over 30 years of experience. The back-translation of the ASQ:SE was compared with the original version on the ASQ:SE and changes were made to any discrepancies found.

Step 2: Review by an expert panel. To verify the cultural appropriateness and content validity of the Malay version of the ASQ:SE, three Malaysia child development experts, two officers from the Malaysian Ministry of Health and two mothers of children with disabilities were asked to review the instrument. They were asked to verify the cultural appropriateness and content validity of the Malay translated 6, 12, and 18-month ASQ:SE using a checklist. In the checklist, they were asked whether they agree with the Malay translated version of the ASQ:SE with regards to issues of cultural appropriateness and content validity. They were asked to provide reasons and comments if they stated that they did not agree, A copy of the checklist can be found in Appendix D.

The panel of experts included:

1. Professor Zasmani Mohd Shafie is a child psychiatrist and was the former head of the Child Psychiatry Department, National University of Malaysia Hospital, a teaching hospital. Apart from a clinical practice, Professor Zasmani also trained Masters-level psychiatrists. Currently, she is in a private practice.
2. Professor Aminah Ayub is a child development expert and currently she is the Deputy Vice Chancellor of the Sultan Idris Education University.
3. Asscociate Professor Anna Christina Abdullah is the Assistant Dean of the Faculty of Education, Malaysian University of Science. Her expertise is child development.
4. Dr. Aminah Bee Mohd Kassim is a medical doctor and she is currently the Assistant Director of the Special Needs Children Unit in the Malaysian Ministry of Health. She is also a mother of a child with cerebral palsy.
5. Dr. Faridah Abu Bakar is a medical doctor. She is currently working in the Perak State Health Department and she is in charge of all the government clinics, which include well-baby clinics in this state.
6. Dr. Sharifah Zainiah Syed Yahya is a medical officer who is currently a senior faculty at the Center of Peace and Community Well-being (PEKA), Putra University Malaysia. She is a mother of a child with Down Syndrome and was the previous President of the Down Syndrome Association Malaysia.

Phase 2: Psychometric Study of the Malay ASQ:SE Using Professional Nurses (Group A)

Step 1: Recruitment of participants. The recruitment of nurses required the assistance of the Malaysian Ministry of Health. After acquiring permission from the Ministry to carry out this research, the principal investigator contacted the Director of the Perak State Department of Health to identify government clinics within the state to be included in the research. Approximately 30 clinics participated.

Thirty-five nurses from government well-baby clinics in Malaysia were invited to participate in this study. They were asked to attend a two- hour ASQ:SE training session conducted by the principal investigator. They were provided with recruiting letters describing this study and inviting parents to take part in the research activities.

Upon their agreement to participate, they were asked to sign a consent form. The consent form informs them that their participation is completely voluntary, and that they may discontinue participation at any time and it does not affect their positions at the clinics. A sample of the Nurse Consent Form can be found in Appendix B.

Step 2: Training of the nurses. Before the nurses began to administer the ASQ:SE at their clinics, they underwent a two hour training on using and scoring the ASQ:SE, as outlined in Table 2. At the beginning of the training session, the nurses were asked to complete the Nurse Pre-Training Survey. The training covered the importance of early intervention, the importance of assessing social-emotional development, and discussion of the barriers to assessing social-emotional development. Next, a general description of social-emotional development was presented.

The training then focused on the ASQ:SE, including research findings related to ASQ:SE. Features of the ASQ:SE including format and scoring were described. Then the nurses were divided into small groups, where they were asked to discuss several ASQ:SE case studies.

The nurses were also trained on how to introduce and administer the ASQ:SE to parents. Next they were trained on scoring the tool, including practicing scoring to check inter-observer agreement. The nurses scored the ASQ:SE based on a video recording of a parent interview. This practice was followed by discussions on how to interpret the scores, referral considerations and possible follow up.

Nurses were also trained on the use of CGAS including how to score it. They practiced scoring and inter-rater reliability was checked. After this training, the nurses completed the Nurse Post-Training Survey.

Table 2

The Nurse Training Module

Module No	Focus
1	The importance of early intervention
2	The importance of assessing social-emotional development
3	Barriers to assessing social-emotional development
4	Social-emotional development
5	Introduction of ASQ:SE and its research
6	Features of ASQ:SE
7	ASQ:SE case studies
8	Introducing and administering ASQ:SE to parents
9	Scoring the ASQ:SE
10	Inter-observer agreement practice
11	Interpreting scores
12	Referral considerations
13	Possible follow up
14	Scoring the CGAS

Step 3. Nurses administered the ASQ:SE. After the training, the nurses participated in the study by inviting parents to complete the ASQ:SE and the additional two study measures. The nurses were paid Ringgit Malaysia (RM) 3 ($0.90) for each

parent whom they assisted in completing the set of measures. This rate was set by the Ministry of Health. Further descriptions of this step can be found in the parent recruitment phase.

Step 4. Nurses completed the CGAS. After the parents had completed the three assigned measures, the nurses completed the CGAS for each of the young children. Nurses might ask parents general questions regarding the development of their young children before scoring the CGAS. This instrument remained in English and was not translated into Malay. This instrument is straight-forward to use and the nurses only need a short training on how to score it. Scoring each CGAS takes approximately 5 minutes. To examine the inter-rater reliability of the CGAS, 50 children in this study were scored twice on this instrument. First, they were scored by nurses; then they were scored by matrons (nurse supervisors).

Step 5. Nurses completed the Nurse Satisfaction Survey. After the nurses had recruited and assisted parents to complete the measures in this study, they completed the Nurse Satisfaction Survey. This was the final step in the data collection process. The nurses gathered all the completed measures and handed them to the headquarters of the Perak State Department of Health to be sent to the principal investigator.

Phase 2: Psychometric Study of the Malay ASQ:SE Using Parents (Group B)

Step 1. Recruitment of participants. The nurses approached parents who come to the medical clinics with their young children to explain this study and invite the parents to participate in the research activities. Parents who agreed to participate were asked to sign a consent form. The consent form inform parents that their participation is

completely voluntary, and that they may discontinue participation at any time, and that it does not affect services they receive at the clinics. A sample of the parent consent form can be found in Appendix B.

The nurses provided the parents with assistance they needed in reading, understanding, and completing the ASQ:SE. The nurses also helped to take care of the children while their parents completed the ASQ:SE. Parents participated on a voluntary basis and were not paid.

Step 2. Parents completed the ASQ:SE, the Family Information Survey, and the Parent Satisfaction Survey. Parents who agreed to participate in this study were asked by the nurses to complete: a) the ASQ:SE, b) the Family Information Survey, and c) the Parent Satisfaction Survey. Parents who had problems in completing these three measures might ask the nurses for assistance. Forms of assistance provided by the nurses might be reading the measures, explaining the measures, filling in the measures, translating the measure for parents who Malay is not their first language, and taking care of the young children while their parents are completing the measures.

The procedures in the psychometric study phase are summarized in Table 3.

Table 3

Procedures of the Psychometric Study Phase

Step	Procedure	Person Responsible	Week Completed											
			1	2	3	4	5	6	7	8	9	10	11	12
1	Recruitment of nurses	Principal Investigator	√											
2	Training of the nurses, completion of the Nurse Pre-Post Training Survey	Principal Investigator and Nurses		√										
3	Recruitment of parents	Nurses			√	√	√	√	√	√	√	√	√	
4	Completion of the ASQ:SE, the Family Information Survey, and the Parent Satisfaction Survey	Parents			√	√	√	√	√	√	√	√	√	
5	Completion of the CGAS	Nurses			√	√	√	√	√	√	√	√	√	
6	Completion of the Nurse Satisfaction Survey	Nurses												√

Setting

Training for the nurses took place at the headquarters of the Perak State Department of Health. After the training, they completed the Nurse Pre-Post Training Survey, Nurse Satisfaction Survey, and the CGAS, and assisted parents to complete the ASQ:SE, Family Information Survey, and Parent Satisfaction Survey in government well-baby clinics where they worked. The nurses invited parents/caregivers who brought their young children to the government well-baby clinics for scheduled check-ups and immunization to participate in this research.

All government clinics were in Perak, a northern state in Malaysia. Government clinics in Malaysia provide free public health care to the local community, and patients are charged Ringgit Malaysia (RM) 1 ($0.30) for a one-time registration. The health care service provided is rather basic and any children with complicated illnesses are referred to the local district hospital for follow-ups. These clinics are well-utilized in rural and low-income sections of the Malaysian population, and have a special unit for infants and young children, where services such as well-baby check-ups and scheduled immunization are provided.

Data Analysis

The following section describes the research questions, outcome measures, and the analysis strategy that will be used to interpret findings. Table 4 describes the research questions, measures, and analysis strategies.

Table 4

Research Questions, Measures, and Analyses.

Research Questions	Measures	Analyses
1. Is the Malay version of the ASQ:SE a culturally appropriate instrument to screen 6-month-old, 12-month-old, and 18-month-old young children in Malaysia for social-emotional problems?	• Back translations • Panel of experts • Parent Satisfaction Survey • Nurse Satisfaction Survey	• Descriptive summary of responses • Content validity
2. What are the reliability and validity of the Malay version of the 6-month, 12-month, and 18-month ASQ:SE?	• ASQ:SE • C-GAS	• Coefficient alpha • Inter-observer agreement • Receiver Operative Characteristics (ROC) • Specificity and sensitivity
3. How do the 6-month, 12-month, and 18-month ASQ:SE scores of Malaysian children compare to the scores of U.S. children?	• ASQ:SE	• Cutoff scores • Ranges • Medians • Interquartile range
4. Is there Differentially Item Functioning in the Malay version of the 6-month, 12-month, and 18-month ASQ:SE when the Item Response Theory-based statistical procedure is used?	• ASQ:SE	• Differential Item Functioning
5. What is the impact of training on the knowledge and attitudes of nurses in Malaysian government well-baby clinics in administrating the AQS:SE?	• Nurse Pre-Post Training Survey	• Descriptive statistics • Comparison of pretest-posttest scores • T-test

Research Question 1: Is the Malay Version of the ASQ:SE a Culturally Appropriate Instrument to Screen 6-Month-Old, 12-Month-Old, and 18-Month-Old Young Children in Malaysia for Social-Emotional Problems?

The Malay version of the ASQ:SE was back translated by a Malay literature scholar who is also a journalist with 36 years of experience. Her view of the quality of translation of the screening instrument was reported.

A panel of experts in Malaysia including three Malaysia child development experts, two officers from the Malaysian Ministry of Health and two mothers of children with disabilities were asked to review the instrument. They were asked to verify the cultural appropriateness and content validity of items on the Malay translated 6, 12, and 18-month ASQ:SE, using a checklist. This checklist measure content validity, a judgment on the degree to which the contents of an instrument measure predetermined criteria or objectives (Salvia & Ysseldyke, 2006; Glass & Hopkins, 1995; McMillan, 2004). In the checklist, they are asked whether they agree with the Malay translated version of the ASQ:SE with regards to issues of cultural appropriateness and content validity. If they do not agree, they are asked to provide reasons and comments. A copy of the checklist can be found in Appendix D. Answers by parents and nurses on the Parent Satisfaction Survey and the Nurse Satisfaction Survey regarding their opinion on the cultural appropriateness of the ASQ:SE were reported.

Research Question 2: What is the Reliability and Validity of the Malay Version of the 6-Month, 12-Month, and 18-Month ASQ:SE?

Reliability refers to the extent to which scores are free from error. A measure that has high reliability indicates that there is relatively little error and a measure that has low

reliability indicates that there is relatively a great amount of error (Glass & Hopkins, 1995; McMillan, 2004; Salvia & Ysseldyke, 2006).

Reliability for the Malay 6-month, 12-month, and 18-month ASQ:SE was evaluated by investigating the internal consistency of the screening instrument. Internal consistency refers to the consistency across items within a given test measure (Glass & Hopkins, 1995; McMillan, 2004; Salvia & Ysseldyke, 2006). In this study, Cronbach's alpha was used to examine the internal consistency of the 6-month, 12-month, and 18-month ASQ:SE. Cronbach's alpha calculates the average of all correlations that can be obtained from all possible split-half estimates (Glass & Hopkins, 1995; McMillan, 2004; Salvia & Ysseldyke, 2006). A Cronbach's alpha of .70 or higher is considered to reflect acceptable internal consistency (Salvia & Ysseldyke, 2006).

Validity refers to the extent results generated from the scores of a given measure is appropriate, meaningful and useful in making specific inferences or decisions (Glass & Hopkins, 1995; McMillan, 2004; Salvia & Ysseldyke, 2006). Validity for the Malay version of the ASQ:SE was evaluated by examining its concurrent validity or how accurate the tool is discriminating children who do not have any social-emotional issues and those who are at risk for developing social-emotional problems. Concurrent validity is established by administering both the instrument that is being investigated and another comparable instrument at the same time. Concurrent validity is evident when the instrument correlates with the comparable instrument (Glass & Hopkins, 1995; McMillan, 2004; Salvia & Ysseldyke, 2006). The criterion measure that was used in this study was the Children's Global Assessment Scale (CGAS) (Shaffer et al., 1983).

Before the ASQ:SE and CGAS can be compared, optimal cutoff points for the Malay version of the ASQ:SE was determined. To obtain optimal cutoff points for the tool, the method that was used was by calculating the medians and semi-interquartiles ranges of the scores. The median or Q2 is the 50^{th} percentile of a distribution, Q1 is the 25^{th} percentile and Q3 is the 75^{th} percentile. The distance between the third and the first quartile is the interquartile range. Half the distance between third and the first interquartile is the semi-interquartile (Glass & Hopkins, 1996).

Although medians and interquartiles have limited use for making statistical inferences (Glass & Hopkins, 1996), they may be useful in cases where the distribution is not normal. Unlike means and standard deviations in a normal distribution that can be affected by outliers, medians and interquartiles are not. Therefore, medians and interquartiles may be effective in deciding cutoff points, especially when there are outliers in the sample. An illustration of the semi-interquartile can be found in Figure 1 below.

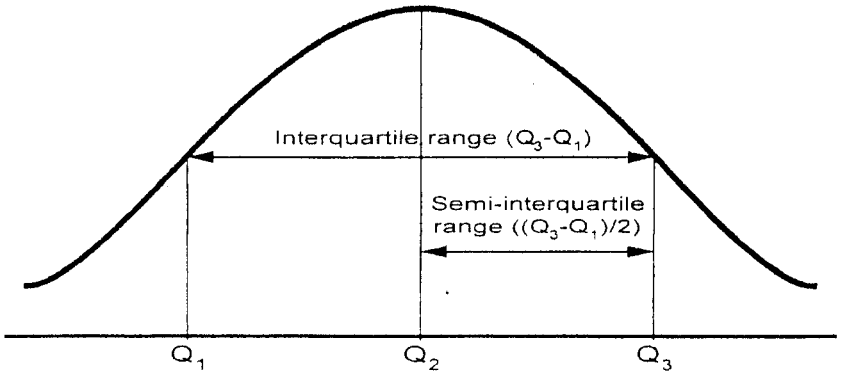

Figure 1. An illustration of the semi-interquartile range.

These medians and interquartiles were used to decide on three possible cutoff points: at 1.5 semi-interquartile range, 2.25 semi-interquartile range and semi-interquartile range. Formula for calculating the three possible cutoff points using medians and semi-interquartiles ranges of the scores of the Malay version of the ASQ:SE are described in Table 5 below:

Table 5

Formula for calculating possible cutoff points using medians and semi-interquartiles

Possible cutoff points	Calculation formula
1.5 semi-interquartile range	Median + (Q3 – Q1)/ 2 x 1.5
2.25 semi-interquartile range	Median + (Q3 – Q1)/ 2 x 2.25
semi-interquartile range	Median + (Q3 – Q1)/ 2 x 3

Next, the Receiver Operative Characteristics analysis (ROC) was used to choose the optimal cutoff score among the three options: at 1.5 semi-interquartile range,

2.25 semi-interquartile range and semi-interquartile range. The ROC analysis has been used as a technique to make decisions on the criterion threshold or cutting points for screening and diagnostic tests (Murphy, Berwick, Weinstein, Borus, Budman, & Klerman, 1987)

The ROC curve is formed by plotting the true-positive rates on the vertical axis and the false-positive rates on the horizontal axis. The curve formed shows all possible pairs of sensitivity and specificity values. A test that is able to discriminate well between children who are "OK" and those who are "at risk" has an ROC curve that moves far toward the left upper corner of the graph (Murphy et al., 1987).

In this study, the three options mentioned above were plotted to produce three ROC curves. The three ROC curves were compared and the one that moves far toward the left upper corner of the graph represented the optimal cutoff point. An illustration of an ROC curve is shown in Figure 2 below.

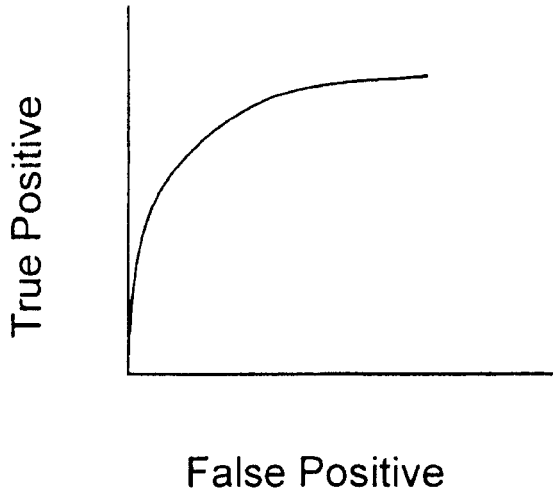

Figure 2. An illustration of an ROC curve.

After cutoff points had been decided, children in the sample were classified as either okay or at risk for developing social-emotional problems based on their ASQ:SE scores. They were also classified using the criterion measure, the CGAS. These two classifications were then compared to yield four possible outcomes: 1) the ASQ:SE and the CGAS both classified the child as okay (i.e., true negatives); 2) the ASQ:SE and the CGAS both classified the child as at risk (i.e., true positives); 3) the ASQ:SE classified the child as okay, while the CGAS classified the child as at risk (i.e., false negatives); 4) the ASQ:SE classified the child as at risk, while the CGAS classified the child as okay (i.e., false positives). Table 6 below illustrates the four possible outcomes based on classifications based on the ASQ:SE and the CGAS.

Table 6

Possible Classifications on the ASQ:SE in Comparison to the CGAS

		CGAS	
		Risk (positive)	OK (negative)
ASQ:SE	Risk (positive)	a Correct Decision (true positive)	b Error (over-referral)
	OK (negative)	c Error (under-referral)	d Correct Decision (true negative)

With the outcomes based on the two classifications, sensitivity, specificity, over-referral, and under-referral were calculated for each age interval in this study. An overall calculation for sensitivity, specificity, over-referral, and under-referral were also calculated. Sensitivity is defined as the ability of the screening tool to correctly identify

those children with social-emotional problems. Specificity is defined as the ability of the screening tool to correctly identify those children without social-emotional problems (Squires et al., 2002). Over-referral is the proportion of children identified with social-emotional problems when in fact they do not have any social-emotional problems. Under-referral is the proportion of children not identified with social-emotional problems when in fact they do have any social-emotional problems. Table 7 includes the formulas that were be used to calculate sensitivity, specificity, over-referral, and under-referral.

Table 7

Formula to calculate sensitivity, specificity, over-referral, and under-referral

Variables	Formula
Sensitivity	a / a + c
Specificity	d / b + d
Over-referral	b / a + b + c + d
Under-referral	c / a + b + c + d

Research Question 3: How Do the 6-Month, 12-Month, and 18-Month ASQ:SE Scores of Children on the Malaysian ASQ:SE Compare to the Scores of Children on the U.S. Version?

To address the third research question, the data from 608 infants and toddlers in Malaysia, approximately 200 data each for each age interval, were compared to the U.S. data to investigate if there are any differences in item statistics for Malaysian and American children. There is a possibility that cultural differences between the two

countries could contribute to different scores on a measure of child social-emotional development. The cutoff scores, ranges, medians, interquartile range of the 6-month, 12-month, and 18-month Malaysian ASQ:SE data were compared to those established for the American data.

Research Question 4: Is There Differential Item Functioning in the Malay Version of the 6-Month, 12-Month, and 18-Month ASQ:SE When the Item Response Theory-based Statistical Procedures Are Used?

Test bias is assessed to establish construct validity (Krane, van Belle, and Larson, 2004). Test bias is present when different groups of examinees have differing probabilities of success on an item (Clauser & Mazor, 1998; Krane, van Belle, & Larson, 2004). Items that are bias exhibit differentially item functioning (DIF).

Differential Item Functioning (DIF) analysis was conducted to determine if the Malay version of the 6-month, 12-month, and 18-month ASQ:SE demonstrates item bias with respect to screening infants and toddlers in Malaysia for social-emotional problems. Investigating if item bias is present can prevent the erroneous use of an assessment tool from another culture that is not appropriate to the receiving culture (Merenda, 2006).

In general, Differential Item Functioning (DIF) analysis estimates item parameters separately for the reference and the focal groups (Clauser and Mazor, 1998). In this study, the reference group was the American ASQ:SE data and the focal group was the Malaysian sample data. Differences between item parameters for the two groups were compared after they were placed on the same scale. An item that has identical parameters for both groups means that the item does not display DIF, inferring that a correct response reflects examinee ability (Clauser and Mazor, 1998).

Research Question 5: What is the Impact of Training on the Knowledge and Attitudes of Nurses in Malaysian Government Well-Baby Clinics Towards Screening in General and in Administrating the AQS:SE?

Data from the Nurse Pre-Post Training Survey were examined to investigate the impact of training on the nurse perceptions and attitudes in administrating the ASQ:SE. Change in the proportions from pretest to posttest were reported.

The dependent-samples t-test was used, as this research question focused on the single-group pretest-posttest design. This method tested the null hypotheses that the means of the two results achieved by the same group are the same. The means of the two test results, the group variances, and the sample size were used to generate the t value. A level of significance for rejecting the null hypothesis that the means were the same was decided by this t values (Glass & Hopkins, 1996).

CHAPTER IV

RESULTS

The results of the study are presented in the following sections. First, the study participants are described. Second, the content validity of the Malay translation of the ASQ:SE as a developmental screening tool for young children in Malaysia is reported. Third, results of the investigation of the reliability and validity of this study are presented. Fourth, the ASQ:SE scores of Malaysian children are compared to the scores of American children. Fifth, Differential Item Functioning in the Malay-adapted ASQ:SE is reported. Finally, the knowledge and attitude of nurses working in the well baby clinics in Malaysia towards screening and the ASQ:SE are presented.

Participants

Children

The 6-, 12-, and 18-month intervals of the ASQ:SE were the focus of this study. Children between the ages of 3 and 9 months were used to study the 6-month interval of the ASQ:SE; children between the ages of 10 and 15 months were used to study the 12-month interval of the ASQ:SE; and children between the ages of 16 and 21 months were used to study the 18-month interval of the ASQ:SE.

A total of 608 children between the ages of 3 to 21 months participated in this research. There were 198 children in the 6 month age interval; 89 (44.90%) were male

and 109 (55.10%) were female. There were 208 children in the 12 month age interval; 104 (50%) were male and 103 (49.50%) were female. In the 18 month age interval, there were 202 children; 107 (53%) were male and 95 (47%) were female.

For the 198 children in the 6 month age interval, 144 (72.70%) were Malay; 24 (12.10%) were Chinese; 16 (8.10%) were Indian; and 14 (7.10%) were of various different ethnicities. Of the 208 children in the 12 month age interval, 130 (62.50%) were Malay; 39 (18.80%) were Chinese; 33 (15.90%) were Indian; and 6 (2.90%) were of various different ethnicities. In the 18 month age interval, where there were 202 children, 135 (66.80%) were Malay; 34 (16.80%) were Chinese; 30 (14.90%) were Indian; and 3 (1.50%) were of various different ethnicities.

Information regarding the disability status of the children in this study was collected. In the 6-month age interval, from the total of 198 children, 5 (2.50%) had established disabilities. From the total of 208 children in the 12-month age interval, 2 (1%) had established disabilities. Finally, in the 18-month age interval, 8 (4%) out of 202 children had established disabilities. These disabilities included Down syndrome, cleft palate, developmental delay, and attention deficit hyperactive disorder (ADHD). Demographic characteristics of the children involved in this study are summarized in Table 8.

Table 8

Demographic Characteristics of Children in the Malaysian ASQ:SE Sample

	ASQ:SE Interval					
	6-month Questionnaire		12-month Questionnaire		18-month Questionnaire	
	n	%	*n*	%	*n*	%
Gender						
Male	89	44.9	104	50.0	107	53.0
Female	109	55.1	103	49.5	95	47.0
Missing	0	0.0	1	0.5	0	0.0
Ethnicity						
Malay	144	72.7	130	62.5	135	66.8
Chinese	24	12.1	39	18.8	34	16.8
Indian	16	8.1	33	15.9	30	14.9
Others	14	7.1	6	2.9	3	1.5
Disability Status						
No known Disabilities	193	97.5	206	9.0	194	96.0
Disabilities	5	2.5	2	1.0	8	4.0

Parents/Caregivers

A total of 608 parents completed the 6-, 12-, and 18-month intervals of the ASQ:SE. The majority of respondents were mothers, comprising 90.90% (180) of respondents in the 6-month interval; 86.50% (180) in the 12-month interval; and 84.20% (170) in the 18-month interval. The rest of the respondents were fathers, grandparents, relatives and others, such as nannies, nurses and legal caregivers.

Parents and caregivers were asked to provide information regarding their level of education. Parents and caregivers level of education varied from not completing primary education to holding graduate degrees. The majority of parents/caregivers across intervals completed high school (over 70%).

One hundred and sixteen (58.60%) families who completed the 6-month interval ASQ:SE earned a monthly income of RM1000 ($286) or less, 102 (49%) families who completed the 12-month interval, and 89 (44%) families who completed the 18-month interval also earned a monthly income of RM1000 ($286) or less. The poverty level for Malaysia is RM691 ($197) per month (Economic Planning Unit, 2006). Demographic characteristics of the parents/caregivers involved in this study are summarized in Table 9.

Table 9

Demographic Characteristics of Parents/Caregivers in the Malaysian ASQ:SE Sample

	ASQ:SE Interval					
	6-month Questionnaire		12-month Questionnaire		18-month Questionnaire	
	n	%	*n*	%	*n*	%
Respondent						
Mother	180	90.90	180	86.50	170	84.20
Father	6	3.00	20	9.60	24	11.90
Grandparent	7	3.50	1	0.50	3	1.50
Relative	3	1.50	2	1	1	0.50
Others	1	0.50	5	2.40	3	1.50
Missing	0	0	0	0	1	0.50
Education Level						
Graduate degree	0	0	1	.50	3	1.50
Degree	10	5.10	12	5.80	13	6.40
Diploma	19	9.60	24	11.50	32	15.80
High School	138	69.70	152	73.10	143	70.80
Primary School	22	11.10	13	6.30	6	3.00
Did not complete primary school	6	3	5	2.40	3	1.50
Missing	0	0	1	0.50	2	1.00

Table continues

Table 9, continued

	ASQ:SE Interval					
	6-month Questionnaire		12-month Questionnaire		18-month Questionnaire	
	n	%	*n*	%	*n*	%
Family Income						
above RM40000 ($1143)	7	3.5	8	3.8	7	3.5
RM30000-RM40000 ($857-1143)	3.0	1.5	14	6.7	12	5.9
RM2000-RM3000 ($571-857)	22.0	11.1	19	9.1	25	12.4
RM1000-RM2000 ($286-571)	47.0	23.7	64	30.8	68	33.7
RM500-RM1000 ($143-286)	71.0	35.9	73	35.1	71	35.1
<RM500 (<$143)	45.0	22.7	29	13.9	18	8.9
Missing	3.0	1.5	1	0.5	1	0.5

Nurses

Thirty-five nurses took part in the ASQ:SE training. Fourteen (40%) nurses held a certificate in nursing (equivalent to an assistant nurse); 21 (60%) had a diploma in nursing (equivalent to a registered nurse). The nurses' length of service in well-baby clinics varied from 1 to 30 years. Information on the nurses is summarized in Table 10.

Table 10

Demographic Characteristics of Nurses

	n	%
Level of education:		
Certificate	14	40.0
Diploma	21	60.0
Length of service in nursing:		
6 – 10 years	4	11.4
11 – 15 years	3	8.6
16 – 20 years	10	28.6
21 – 25 years	8	22.9
26 – 30 years	10	28.6
Length of service in well-baby clinics:		
< 5 years	3	8.6
6 – 10 years	4	11.4
11 – 15 years	8	22.9
16 – 20 years	9	25.7
21 – 25 years	4	11.4
26 – 30 years	7	20.0

Research Question 1

The first research question asked, "Is the Malay version of the ASQ:SE a culturally appropriate instrument to screen 6-month-old, 12-month-old, and 18-month-old young children in Malaysia for social-emotional problems?" The cultural appropriateness of the translated Malay ASQ:SE was assessed by a panel of six experts, and the parents and nurses who participated in the study. In this section, the review on the cultural appropriateness of the translated Malay ASQ:SE by this panel of experts is discussed first. Second, parents' responses in the Parent Satisfaction Survey are reported. Finally, nurses' responses in the Nurse Satisfaction Survey are presented.

Cultural Appropriateness: The Panel of Experts

A panel of six experts was asked for their input regarding the cultural appropriateness of the adapted 6-, 12-, and 18-month ASQ:SE. They were asked to verify the cultural appropriateness and content validity of the Malay translated 6, 12, and 18-month ASQ:SE using a checklist. In the checklist, they were asked whether they agreed with the Malay translated version of the ASQ:SE with regards to issues of cultural appropriateness and content validity. If they did not agree, they were asked to provide reasons and comments.

All six experts agreed that the age intervals of the ASQ:SE were culturally appropriate. There were some minor comments and suggestions, such as sentence structure. There was an interesting suggestion from Dr. Mohd-Kassim, who is the assistant director of the Department of Children with Special Needs in the Malaysian Ministry of Health, who suggested that the instrument be bilingual, in both English and

Malay. The rationale for her suggestion is that most non-Malays in the urban areas of Malaysia are more comfortable with English than with Malay.

Both Dr. Mohd-Kassim and Dr. Abu-Bakar drew attention to the question "Is your child's body stiff?" They commented that this question might be confusing to parents. This question is a translation of the question "Is your child's body relaxed?" in the American version of ASQ:SE. However, as there is no equivalent word in Malay for "relaxed", the researcher decided to reverse the question and make it negative by using the Malay word for "stiff" instead.

Cultural Appropriateness: Parents' Responses

Parents in this study were asked to complete the Parent's Satisfaction Survey after they completed the ASQ:SE on their children. One of the questions in this survey related to the appropriateness of the ASQ:SE. Response choices were *yes, sometimes*, and *no*. For parents who completed the 6-month ASQ:SE, 176 (88.90%) answered "yes," indicating that the ASQ:SE was appropriate for their children. For parents who completed the 12-month ASQ:SE, 196 (94.20%) answered "yes," and 183 (88.80%) of parents who completed the 18-month ASQ:SE answered "yes."

One hundred and sixty (80.80%) parents who completed the 6-month ASQ:SE reported that the instrument was easy to understand. For parents who completed the 12-month ASQ:SE, 168 (80.80%) parents found the instrument easy to understand and 157 (76.20%) parents who completed the 18-month ASQ:SE found the instrument easy to understand.

One hundred and seventy four (87.80%) parents who answered the 6-month ASQ:SE reported that it took 20 minutes or less to complete the questionnaire. For parents who answered the 12-month ASQ:SE , 180 (86.50%) reported 20 minutes and less to complete the questionnaire and 182 (88.30%) parents at 18-month said the ASQ:SE took 20 minutes and less to complete the questionnaire.

Two hundred and twenty five (37.80%) parents reported that they did not need any assistance in completing the ASQ:SE, while 101 (17%) parents reported that they needed assistance throughout the process of completing the ASQ:SE. Meanwhile two hundred and sixty nine (45.20%) parents reported that they needed assistance in answering a few questions.

Five hundred and fifty five (75.40%) parents found the ASQ:SE informative and helped them think about their children's development, while 171 (23.30%) parents found the instrument interesting. Only 8 (1.10%) parents thought that completing the ASQ:SE took too long. One (0.10%) parent thought that the ASQ:SE was a waste of time and another parent (0.10%) indicated it was not informative. A summary of parents' responses in the Parent's Satisfaction Survey can be found in Table 11.

Table 11

Summary of Parent Satisfaction Survey Results

	ASQ:SE Interval					
	6-month Questionnaire		12-month Questionnaire		18-month Questionnaire	
Parent's Responses	*n*	%	*n*	%	*n*	%
Completed in:						
less than 10 minutes	88	44.4	46	22.1	67	32.5
10 - 20 minutes	86	43.4	134	64.4	115	55.8
20 - 30 minutes	16	8.0	24	11.5	14	6.8
more than 30 minutes	3	1.5	4	1.9	2	1.0
Help needed:						
yes, I asked a few questions	123	62.1	83	39.9	63	30.6
yes, I needed help throughout	33	16.7	38	18.3	30	14.6
no	36	18.2	85	40.9	104	50.5
Ease of understanding:						
Yes	160	80.8	168	80.8	157	76.2
Sometimes	31	15.7	38	18.3	41	19.9
No	0	0.0	1	0.5	2	1.0

Table continues

Table 11, continued

	ASQ:SE Interval					
	6-month Questionnaire		12-month Questionnaire		18-month Questionnaire	
Parent's Responses	*n*	%	*n*	%	*n*	%
Appropriateness of questions:						
Yes	176	88.9	196	94.2	183	88.8
Sometimes	15	7.6	12	5.8	15	7.3
No	2	1	0	0	1	0.5
The questionnaire was:						
Interesting	65	32.8	58	27.9	48	23.3
Informative	182	91.9	195	93.7	178	86.4
Took too long	2	1	5	2.4	1	0.5
A waste of time	0	0	1	0.5	0	0.0
Didn't tell me much	0	0	0	0	1	0.5

Cultural Appropriateness: Nurses' Responses

A total of 25 nurses completed the Nurse's Satisfaction Survey after they completed administrating the ASQ:SE with the parents. When asked whether they found the instrument culturally appropriate, 20 (80%) of the nurses answered "yes". Twenty-two (88%) of the nurses responded that the ASQ:SE was clear and the language used was easy. As for the age appropriateness of the ASQ:SE, 20 (80%) of the nurses found this instrument appropriate for the ages of the children who took part in this study.

Twenty-four (96%) of the nurses found the ASQ:SE easy to implement and 17 (68%) of them found the implementation of this tool not time consuming, even though 19 (76%) of the nurses reported that assistance was provided to parents to answer a few questions and 1 (4%) reported that assistance was provided to parents to answer all the questions.

Twenty-two (88%) nurses thought that the ASQ:SE was effective for screening children for mental health problems. Sixteen (64%) nurses reported that they were somewhat confident with the results and 9 (36%) nurses were very confident with the results. However, 21 (84%) nurses reported that they would consider using the ASQ:SE in the future. Three (12%) nurses thought that some modifications were needed before considering the ASQ:SE for future use. A summary of nurses' responses in the Nurse's Satisfaction Survey can be found in Table 12.

Table 12

Summary of Nurses' Satisfaction Survey

Nurses' Responses	ASQ:SE *n*	*%*
Ease of implementation:		
Yes	24	96
Somewhat	1	4
No	0	0
Is NOT time consuming:		
Yes	17	68
Somewhat	7	28
No	1	4
Assistance provided:		
No	5	20
For a few questions	19	76
For all questions	1	4
Confidence with the results:		
Very confident	9	36
Somewhat confident	16	64
Not at all	0	0

Table continues

Table 12, continued

Nurses' Responses	ASQ:SE *n*	*%*
Age appropriateness:		
Yes	20	80
Somewhat	5	20
No	0	0
Clarity and ease of language		
Yes	22	88
Somewhat	3	12
No	0	0
Culture appropriateness:		
Yes	23	92
Somewhat	2	8
No	0	0
Screening effectiveness:		
Yes	22	88
Somewhat	2	8
No	0	0
Consider for future use:		
Yes	21	84
Modifications needed	3	12
No	0	0

Research Question 2

The second research question focused on the reliability and validity of the Malay version of the 6-month, 12-month, and 18-month ASQ:SE. To investigate the reliability of the Malay-adapted ASQ:SE, internal consistency and inter-rater reliability were computed for the 6-month, 12-month, and 18-month ASQ:SE. The validity of the Malay-adapted ASQ:SE was examined through concurrent validity or how accurately the tool discriminated between children who did not have any social-emotional issues and those who were at risk for developing social-emotional problems.

Reliability of the Malay-Adapted ASQ:SE

Internal consistency. To investigate the internal consistency of the instrument, 608 subjects participated: 198 in the 6-month age interval, 208 in the 12-month age interval, and 202 in the 18-month age interval. Cronbach's coefficient alpha was .605 for the 6-month ASQ:SE, .625 for the 12-month ASQ:SE, and .7242 for the 18-month ASQ:SE. These results are presented in Table 13.

Table 13

Cronbach's Coefficient Alpha for the 6-, 12-, and 18-Month ASQ:SE

ASQ:SE Interval	*n*	Alpha
6-Month	198	.61
12-Month	208	.63
18-Month	202	.72

Inter-rater reliability. The criterion measure that was used to evaluate the concurrent validity of the ASQ:SE was the Children's Global Assessment Scale (CGAS) (Shaffer, Gould, Brasic, Ambrosini, Fisher, Bird, & Aluwalia, 1983). In this study the inter-rater reliability for the CGAS was evaluated. Inter-rater reliability is an assessment of the extent to which different raters agree on what they observe (Salvia & Ysseldyke, 2006; Glass & Hopkins, 1995; McMillan, 2004).

Matrons (i.e. nurse supervisors) were asked to rate a group of 50 children who were also rated by the nurses. The agreement between raters was investigated using Pearson product-moment correlation coefficient. There was a strong, positive correlation between the two ratings of the CGAS ($r = .87$, $n = 50$, $p < .01$ level).

Validity of the Malay-adapted ASQ:SE

The first step was to determine the medians and the interquartile ranges of the three ASQ:SE intervals. The medians and interquartile ranges of the 6-, 12-, and 18-month ASQ:SE are summarized in Table 14.

Table 14

Median and Interquartile Range of the 6-, 12-, and 18-Month ASQ:SE

ASQ:SE Interval	*n*	Median	Interquartile Range
6-Month	198	25	20
12-Month	208	45	30
18-Month	202	40	30

Next, the medians and interquartile ranges were used to determine the cut off points. The cut off points studied were at the 1.5., 2.25, and 3 within the interquartile ranges. Table 15 shows the results of the possible cut off points.

Table 15

ASQ:SE Cutoff Points Derived Using Semi-Interquartile Ranges

	Semi-Interquartile Range		
ASQ:SE Interval	*1.5*	2.25	3
6-Month	40.00	47.50	55.00
12-Month	67.50	78.75	90.00
18-Month	62.50	73.75	85.00

The following step was to calculate sensitivity, specificity, over-referral, and under-referral using the three possible cut off scores. The concurrent measure, the CGAS,

was used in comparison with the ASQ:SE across cut off scores. On the CGAS, a child with a score of 70 and below is considered to be at risk for developmental problems (Shaffer et al., 1983).

For this study, a child's score was classified as "Risk" on the CGAS if his/her score was 70 or below. If the child's CGAS score was 71 and above, his/her score was classified as "OK". For the ASQ:SE, if a child's score was on or above the potential cut off point, the child's score was classified as "Risk". If a child's ASQ:SE score was below the potential cut off point, the child's score was classified as "OK".

Tables 16, 17, and 18 show the contingency tables comparing classifications on the ASQ:SE and CGAS for the 6-, 12-, and 18-month ASQ:SE respectively using the 3 potential cutoff points derived from the 3 semi-interquartile ranges. Table 19 shows the classification statistics for the three age intervals of the ASQ:SE.

Table 16

Contingency Tables Comparing Classifications on the ASQ:SE and CGAS for the 6-Month ASQ:SE at 3 Points of the Semi-Interquartile

1.50 Semi-Interquartile Range

		CGAS		
		Risk	OK	Total
ASQ:SE	Risk	2	38	40
	OK	0	158	158
	Total	2	196	198

2.25 Semi-Interquartile Range

		CGAS		
		Risk	OK	Total
ASQ:SE	Risk	2	19	21
	OK	0	177	177
	Total	2	196	198

3 Semi-Interquartile Range

		CGAS		
		Risk	OK	Total
ASQ:SE	Risk	2	13	15
	OK	0	183	183
	Total	2	196	198

Table 17

Contingency Tables Comparing Classifications on the ASQ:SE and CGAS for the 12-Month ASQ:SE at 3 Points of the Semi-Interquartile

1.50 Semi-Interquartile Range

		CGAS		
		Risk	OK	Total
ASQ:SE	Risk	1	26	27
	OK	1	180	181
	Total	2	206	208

2.25 Semi-Interquartile Range

		CGAS		
		Risk	OK	Total
ASQ:SE	Risk	1	14	15
	OK	1	192	193
	Total	2	206	208

3 Semi-Interquartile Range

		CGAS		
		Risk	OK	Total
ASQ:SE	Risk	1	8	9
	OK	1	198	199
	Total	2	206	208

Table 18

Contingency Tables Comparing Classifications on the ASQ:SE and CGAS for the 18-Month ASQ:SE at 3 Points of the Semi-Interquartile

1.50 Semi-Interquartile Range

		CGAS		
		Risk	OK	Total
ASQ:SE	Risk	4	28	32
	OK	3	167	170
	Total	7	195	202

2.25 Semi-Interquartile Range

		CGAS		
		Risk	OK	Total
ASQ:SE	Risk	2	17	19
	OK	5	178	183
	Total	7	195	202

3 Semi-Interquartile Range

		CGAS		
		Risk	OK	Total
ASQ:SE	Risk	2	12	14
	OK	5	183	188
	Total	7	195	202

Next, the optimal cutoff score for each interval was determined among the three options: at 1.50 semi-interquartile range, 2.25 semi-interquartile range and 3 semi-interquartile range, by using the Receiver Operative Characteristics analysis (ROC). The true-positive and false-positive scores from Table 19 were plotted to form the ROC curve. The true-positive scores were plotted on the vertical axis and the false-positive scores on the horizontal axis.

Table 19

Classification Statistics by Semi-Interquartile Range (S-IQR) for the 6-, 12-, and 18-Month ASQ:SE

Interval	S-IQR	Sensitivity	Specificity	True Positive	False Positive	Over-referral	Under-referral
6	1.50	1.00	0.80	1.00	.95	.19	0
	2.25	1.00	0..90	1.00	.90	.10	0
	3.00	1.00	0.93	1.00	.86	.07	0
12	1.50	.50	.87	.50	.96	.13	0
	2.25	.50	.93	.50	.93	.07	0
	3.00	.50	.96	.50	.88	.04	0
18	1.50	.57	.86	.57	.88	.14	.01
	2.25	.29	.91	.29	.89	.08	.02
	3.00	.29	.94	.29	.86	.06	.02

ROC curves were plotted for each ASQ:SE interval. These curves can be found in Figure 3, 4, and 5 for the 6-month, 12-month, and 18-month age interval respectively. The optimal cutoff score for each interval was chosen based on the ROC curve that moves furthest toward the left upper corner of the graph. The 3 semi-interquartile range was selected as the optimal cutoff point for both the 6- and 12-month questionnaire, while the 1.50 semi-interquartile range was selected as the optimal cutoff point for the 18-month questionnaire.

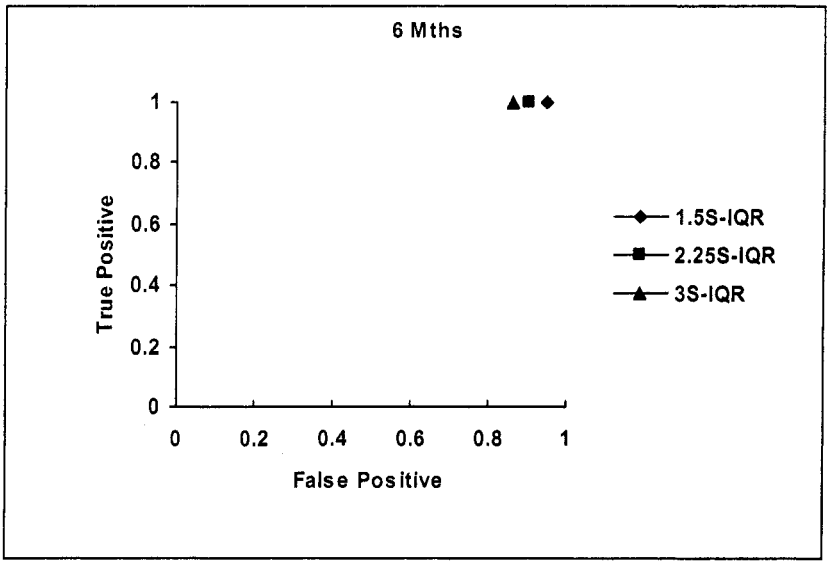

Figure 3. ROC curve generated for the 6-months ASQ:SE using 1.50, 2.25 and 3 semi-interquartile ranges.

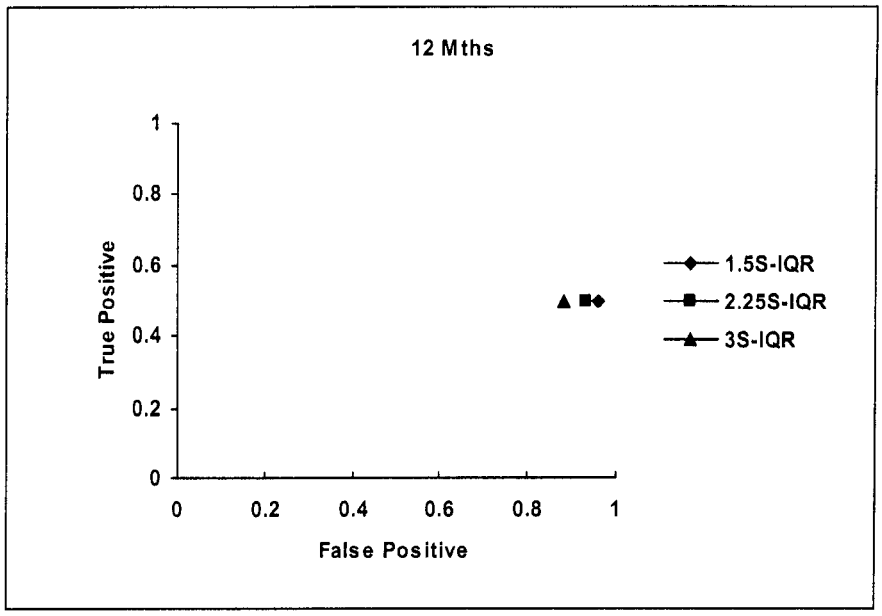

Figure 4. ROC curve generated for the 12-months ASQ:SE using 1.50, 2.25 and 3 semi-interquartile ranges.

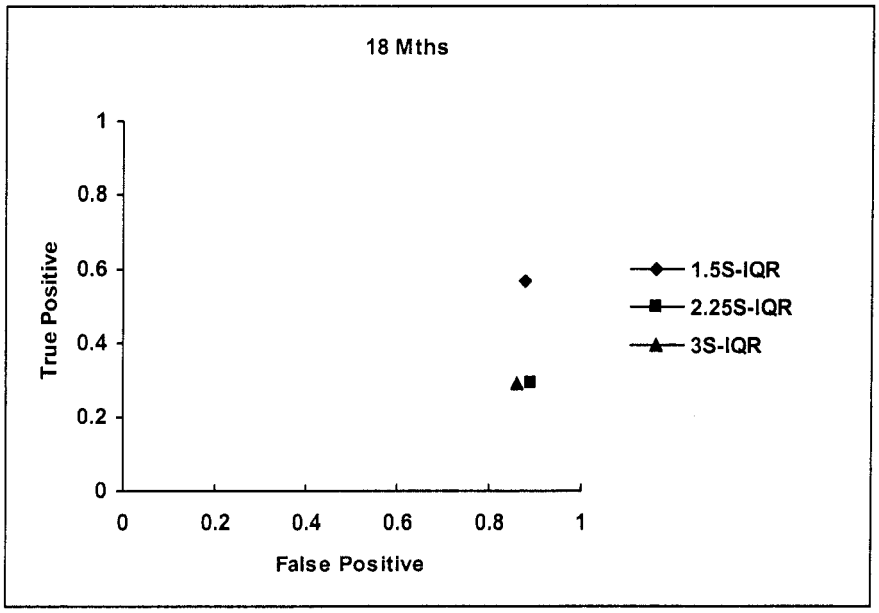

Figure 5. ROC curve generated for the 18-months ASQ:SE using 1.50, 2.25 and 3 semi-interquartile ranges.

After cutoff points had been decided, the next step was to determine the concurrent validity. Concurrent validity was measured by comparing the classifications of the children's scores on the ASQ:SE with the classifications on a concurrent measure, i.e. the CGAS. Children in the sample were classified as either "OK" or "Risk" for developing social-emotional problems based on their ASQ:SE scores. A child's score on the ASQ:SE was identified as "Risk" if the child's score was at or above the 3 semi-interquartile range (i. e., 55, and 90 respectively) on the 6- and 12-month questionnaires, and 1.5 semi-interquartile range (i.e., 62.5) on the 18-month questionnaire. Children were also classified using the criterion measure, the CGAS. A child's score on the CGAS was identified as "Risk" if the child's score was at or below 70 as specified by the test authors.

These two classifications were then compared to yield four possible outcomes: 1) the ASQ:SE and the CGAS both classified the child as okay (i.e., true negatives); 2) the ASQ:SE and the CGAS both classified the child as at risk (i.e., true positives); 3) the ASQ:SE classified the child as okay, while the CGAS classified the child as at risk (i.e., false negatives); 4) the ASQ:SE classified the child as at risk, while the CGAS classified the child as okay (i.e., false positives).

Table 20, 21, and 22 show the agreement between the concurrent measure and the ASQ:SE at the 6-, 12-, and 18-month intervals respectively. The percent agreement for the 6-month questionnaire is 93%, the percent agreement for the 12-month questionnaire is 96%, and the percent agreement for the 18-month questionnaire is 85%.

Table 20

Classification Agreement Between the ASQ:SE and CGAS at the 6-Month Interval

		CGAS		
		Risk	OK	Total
ASQ:SE	Risk	2	13	15
	OK	0	183	183
	Total	2	196	198

Sensitivity	Specificity	True Positive	False Positive	Over-Referral	Under-Referral	Percent Agreement
100%	93%	100%	86%	7%	0%	93%

Table 21

Classification Agreement Between the ASQ:SE and CGAS at the 12-Month Interval

		CGAS		
		Risk	OK	Total
ASQ:SE	Risk	1	8	9
	OK	1	198	199
	Total	2	206	208

Sensitivity	Specificity	True Positive	False Positive	Over-Referral	Under-Referral	Percent Agreement
50%	96%	50%	88%	4%	0%	96%

Table 22

Classification Agreement Between the ASQ:SE and CGAS at the 18-Month Interval

		CGAS		
		Risk	OK	Total
ASQ:SE	Risk	4	28	32
	OK	3	167	170
	Total	7	195	202

Sensitivity	Specificity	True Positive	False Positive	Over-Referral	Under-Referral	Percent Agreement
57%	86%	57%	88%	14%	1%	85%

Research Question 3

The third research question asked, "How do the 6-month, 12-month, and 18-month ASQ:SE scores of children on the Malaysian ASQ:SE compare to the scores of children on U.S. version?" To address this question, data from 608 infants and toddlers in Malaysia were compared to the U.S. data to investigate if there are any differences in items statistics for Malaysian and American children. There is a possibility that cultural differences between the two countries could contribute to different scores on a measure of child social-emotional development. The range, mean, median, interquartile range, and cutoff score of the 6-month, 12-month, and 18-month ASQ:SE from Malaysian and U.S. data can be found in Table 23.

Table 23

The Range, Mean, Median, Interquartile Range, and Cutoff Scores of the 6-, 12-, and 18-Month ASQ:SE from Malaysian and U.S. Data

ASQ:SE Interval		*n*	Range	Mean	Median	Interquartile Range	Cut off score
6	Malaysia	198	0-110	25.90	25	20.00	55
	U.S.	331	0-112.60	22.50	16.70	22.50	45
	Difference		-2.60	3.40	8.30	-2.50	10
12	Malaysia	208	0-130	45.80	45	30.00	90
	U.S.	339	0-145	27.70	25	22.00	48
	Difference		-15	18.10	20	8	42
18	Malaysia	202	0-205	41.10	40	30.00	62.50
	U.S.	307	0-255	34.60	26	26.60	55
	Difference		-50	6.50	14	3.40	7.50

Research Question 4

The fourth research question asked, "Is there item bias in the Malay version of the 6-month, 12-month, and 18-month ASQ:SE when Item Response Theory-based statistical procedures are used?" Differential Item Functioning (DIF) analysis was conducted to determine if the Malay version of the 6-month, 12-month, and 18-month

ASQ:SE demonstrated item bias with respect to screening infants and toddlers in Malaysia for social-emotional problems. Data were analyzed using a Rasch partial credit model using Winsteps 3.59 (Linacre, 2005). The Rasch (1PL) partial credit model (Masters, 1982) was used because the data contained multiple-ordered item response. The Rasch model or the one-parameter logistic (1PL) is the simplest and most restrictive of all IRT models as it freely estimates item difficulty and assumes that item discrimination is equal across items.

Two sets of analysis were executed to answer this research question. First, item functioning was examined to investigate estimated item difficulty and item fit of the Malay-adapted ASQ. Next, Differential Item Functioning (DIF) analysis was conducted to determine if the Malay version of the 6-month, 12-month, and 18-month ASQ:SE demonstrated item bias. Item response was examined in relation of the Malaysian sample data as the focal group to the U.S. sample data as the reference group.

Item Difficulty

Item difficulty relates to the ability level associated with a .50 probability of passing a given item. Ability is an index of the range of performance on the underlying construct that the test is intended to measure. Item difficulty is estimated based on the patterns of participant response. Items are placed on a logit (log-odds) scale, ranging approximately between -4.0 and +4.0, with a mean equal to 0 without any scale transformation.

For the 6-month questionnaire, the most difficult item, ASQ:SE 5, was assigned a difficulty of 0.27, while the easiest item, ASQ:SE 4, was assigned a difficulty of -0.31.

The most difficult item in the 12-month questionnaire, ASQ:SE 20, was assigned a difficulty of 0.24, while the easiest items, ASQ:SE 6 and ASQ:SE 10, were assigned a difficulty of -0.23. For the 18-month questionnaire, the most difficult item, ASQ:SE 3, was assigned a difficulty of 0.31, while the easiest item, ASQ:SE 8, was assigned a difficulty of -0.19.

Item Fit

Item fit examines whether a given item actually measure the construct it is supposed to measure. Acceptable item fit range is between .50 to 1.50 (Linacre, 2005). The fit statistics for items in the 6-month questionnaire had a mean of .98, with a standard deviation of .18. The mean for items in the 12-month questionnaire was .99, with a standard deviation of .18. The items in the 18-month questionnaire had a mean of .96, with a standard deviation of .18. All items in the 6-, 12-, and 18-month questionnaires were assigned fit values between 0.50 and 1.50.

Estimated item difficulty, and item fit for the 6-, 12-, and 18-month ASQ:SE are summarized in Table 24, 25, and 26 respectively. Examples of a good, moderate, and poor category response curves for the Malay-adapted ASQ:SE under the partial credit model can be found in Figures 6, 7, and 8.

Table 24

Six-Month ASQ:SE Rasch Item Statistics

Item	Difficulty	Mean Square Fit Statistics	Item-Scale Score Correlation
ASQ:SE 5	0.27	0.87	0.21
ASQ:SE 2	0.23	0.83	0.16
ASQ:SE 7	0.16	0.70	0.26
ASQ:SE 3	0.10	0.93	0.24
ASQ:SE 18	0.09	0.79	0.25
ASQ:SE 10	0.08	0.94	0.24
ASQ:SE 6	0.06	0.98	0.23
ASQ:SE 13	0.04	0.91	0.26
ASQ:SE 9	0.02	0.82	0.33
ASQ:SE 11	0.00	1.22	0.20
ASQ:SE 19	-0.01	1.23	0.25
ASQ:SE 14	-0.05	1.30	0.25
ASQ:SE 12	-0.05	1.14	0.28
ASQ:SE 15	-0.10	1.02	0.34
ASQ:SE 16	-0.10	1.13	0.31
ASQ:SE 8	-0.12	1.02	0.36
ASQ:SE 1	-0.12	1.13	0.33
ASQ:SE 17	-0.16	0.88	0.39
ASQ:SE 4	-0.31	1.13	0.44
Mean	.00	.98	
S.D.	13	.18	

Table 25

Twelve-Month ASQ:SE Rasch Item Statistics

Item	Difficulty	Mean Square Fit Statistics	Item-Scale Score Correlation
ASQ:SE 20	0.24	0.77	0.25
ASQ:SE 11	0.23	0.72	0.29
ASQ:SE 1	0.20	0.65	0.25
ASQ:SE 3	0.18	0.97	0.26
ASQ:SE 8	0.12	1.38	0.18
ASQ:SE 22	0.12	0.89	0.22
ASQ:SE 13	0.11	0.90	0.33
ASQ:SE 2	0.04	1.17	0.26
ASQ:SE 7	0.02	0.92	0.35
ASQ:SE 16	0.00	1.00	0.29
ASQ:SE 14	0.00	1.20	0.26
ASQ:SE 18	-0.03	1.18	0.23
ASQ:SE 9	-0.05	0.94	0.35
ASQ:SE 4	-0.05	0.98	0.37
ASQ:SE 17	-0.07	0.83	0.35
ASQ:SE 5	-0.08	0.85	0.37
ASQ:SE 21	-0.08	1.13	0.28
ASQ:SE 15	-0.11	1.26	0.24
ASQ:SE 12	-0.15	1.04	0.35
ASQ:SE 19	-0.18	0.98	0.42

Table continues

Table 25, continued

Item	Difficulty	Mean Square Fit Statistics	Item-Scale Score Correlation
ASQ:SE 6	-0.23	1.09	0.38
ASQ:SE 10	-0.23	0.92	0.44
Mean	.00	.99	
S.D.	.14	.18	

Table 26

Eighteen-Month ASQ:SE Rasch Item Statistics

Item	Difficulty	Mean Square Fit Statistics	Item-Scale Score Correlation
ASQ:SE 3	0.31	0.45	0.19
ASQ:SE 10	0.21	0.74	0.28
ASQ:SE 1	0.21	1.06	0.29
ASQ:SE 5	0.10	0.97	0.26
ASQ:SE 23	0.10	0.89	0.26
ASQ:SE 6	0.10	0.83	0.32
ASQ:SE 24	0.10	0.92	0.30
ASQ:SE 20	0.09	0.72	0.30
ASQ:SE 26	0.07	0.97	0.29
ASQ:SE 14	0.03	0.94	0.35
ASQ:SE 16	0.03	0.80	0.28

Table continues

Table 26, continued

Item	Difficulty	Mean Square Fit Statistics	Item-Scale Score Correlation
ASQ:SE 19	0.00	0.83	0.37
ASQ:SE 7	-0.02	1.07	0.33
ASQ:SE 22	-0.05	0.86	0.38
ASQ:SE 25	-0.05	1.01	0.35
ASQ:SE 4	-0.06	1.25	0.28
ASQ:SE 12	-0.06	0.91	0.35
ASQ:SE 2	-0.08	1.07	0.32
ASQ:SE 21	-0.08	1.20	0.30
ASQ:SE 13	-0.11	0.96	0.38
ASQ:SE 9	-0.11	1.01	0.40
ASQ:SE 17	-0.11	1.27	0.28
ASQ:SE 15	0.12	1.11	0.36
ASQ:SE 18	-0.14	0.83	0.44
ASQ:SE 11	-0.17	1.25	0.33
ASQ:SE 11	-0.17	1.25	0.33
ASQ:SE 8	-0.19	1.03	0.41
Mean	.00	.96	
S.D.	.12	.18	

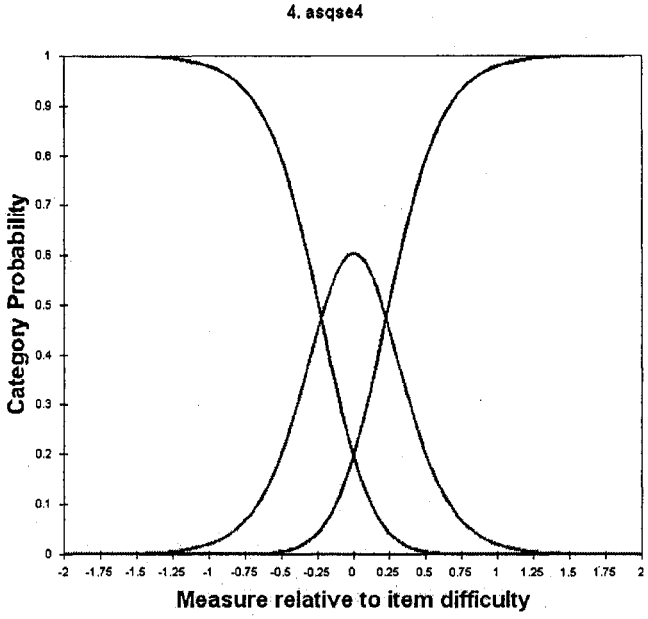

Figure 6. Example of good category response curves for the Malay-adapted ASQ:SE under the partial credit model

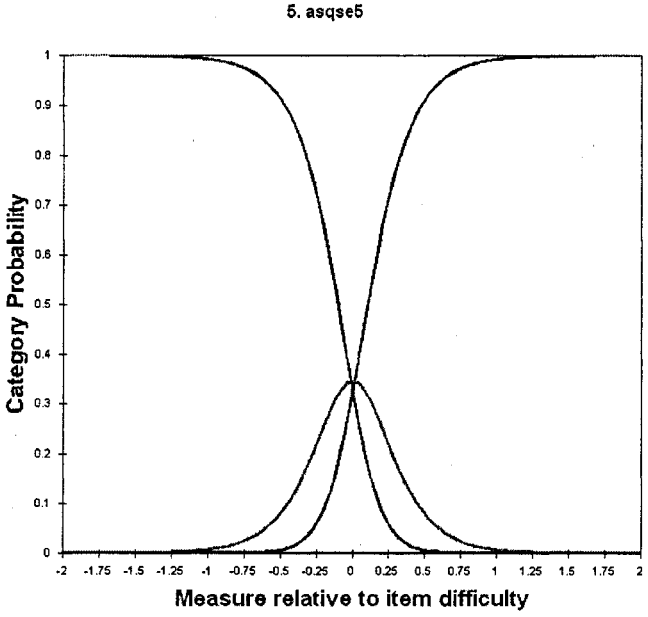

Figure 7. Example of moderate category response curves for the Malay-adapted ASQ:SE under the partial credit model.

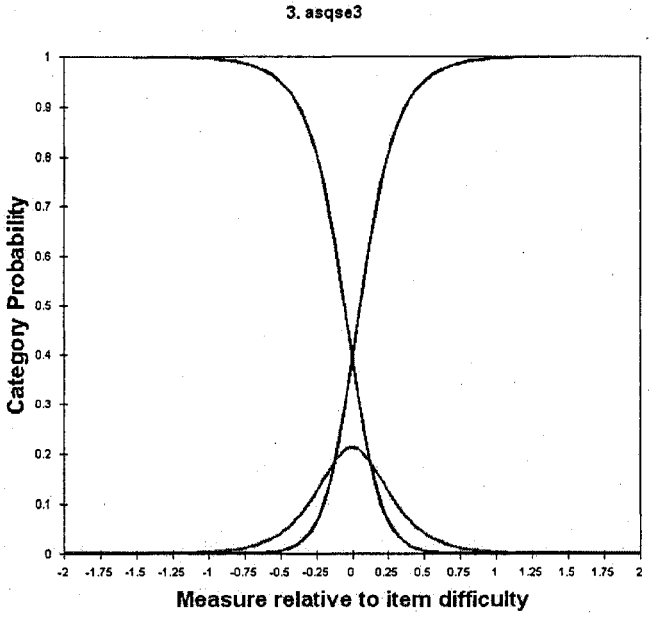

Figure 8. Example of poor category response curves for the Malay-adapted ASQ:SE under the partial credit model

DIF Analyses

The Mantel-Haenszel probability was examined for DIF. A p value of .01 was used in these DIF analyses (Teresi, Kleinman, & Ocepek-Welikson, 2000). Results of DIF analyses revealed that the 2 versions of the ASQ:SE were not fully equivalent on an item-by-item basis. Ten out of 19 items in the 6-month questionnaire displayed DIF, while 9 out of 22 items displayed DIF in the 12-month questionnaire and 10 out of 26 items in the 18-month questionnaire displayed DIF. DIF item statistics for the 6-, 12-, and 18-month questionnaires are displayed in Tables 27, 28, and 29 respectively.

Table 27

Six-Month ASQ:SE DIF Item Statistics

Item	Malaysia		U.S.		DIF Contrast	Mantel-Haenszel Probability
	Scale Score	S.E.	Scale Score	S.E.		
ASQ:SE 1	-.20	.02	0.04	0.04	-0.24	.0000
ASQ:SE 2	.19	.06	0.29	0.08	-0.11	.3016
ASQ:SE 3	.02	.03	0.28	0.06	-0.26	.0001
ASQ:SE 4	-.31	.02	-0.31	0.02	0.00	.6519
ASQ:SE 5	.36	.06	0.19	0.04	0.17	.0095
ASQ:SE 6	-.01	.03	0.22	0.06	-0.23	.0003
ASQ:SE 7	.14	.04	0.18	0.05	-0.04	.7149
ASQ:SE 8	-.12	.02	-0.11	0.03	-0.01	.6932
ASQ:SE 9	.12	.04	-0.07	0.03	0.18	.0000
ASQ:SE 10	.29	.06	-0.06	0.03	0.35	.0000
ASQ:SE 11	.01	.03	-0.01	0.04	0.02	.7942
ASQ:SE 12	-.04	.03	-0.07	0.03	0.03	.6737
ASQ:SE 13	.08	.04	0.00	0.04	0.08	.1114
ASQ:SE 14	.00	.03	-0.10	0.03	0.09	.0801
ASQ:SE 15	-.23	.02	0.23	0.06	-0.46	.0000
ASQ:SE 16	.00	.03	-0.20	0.03	0.21	.0000
ASQ:SE 17	-.21	.02	-0.06	0.03	-0.15	.0001
ASQ:SE 18	.06	.04	0.11	0.05	-0.05	.4240
ASQ:SE 19	.29	.06	-0.18	0.03	0.47	.0000

Table 28

Twelve-Month ASQ:SE DIF Item Statistics

Item	Malaysia		U.S.		DIF Contrast	Mantel-Haenszel Probability
	Scale Score	S.E.	Scale Score	S.E.		
ASQ:SE 1	.17	.04	0.30	0.08	-0.13	.5020
ASQ:SE 2	.08	.03	-0.05	0.03	0.13	.0252
ASQ:SE 3	.15	.03	0.25	0.06	-0.10	.1648
ASQ:SE 4	-.08	.02	-0.01	0.03	-0.07	.0554
ASQ:SE 5	-.13	.02	0.05	0.04	-0.18	.0014
ASQ:SE 6	-.26	.02	-0.17	0.03	-0.10	.0004
ASQ:SE 7	.00	.03	0.07	0.04	-0.07	.2915
ASQ:SE 8	.24	.05	-0.03	0.04	0.27	.0000
ASQ:SE 9	.01	.03	-0.14	0.03	0.15	.0000
ASQ:SE 10	-.25	.02	-0.21	0.03	-0.05	.1324
ASQ:SE 11	.22	.04	0.25	0.06	-0.03	.5207
ASQ:SE 12	-.15	.02	-0.15	0.03	0.00	.6719
ASQ:SE 13	.12	.03	0.09	0.04	0.03	.1398
ASQ:SE 14	.02	.03	-0.04	0.04	0.06	.4150
ASQ:SE 15	.00	.03	-0.25	0.03	0.26	.0000
ASQ:SE 16	.05	.03	-0.08	0.03	0.13	.0026
ASQ:SE 17	-.13	.02	0.20	0.07	-0.34	.0000
ASQ:SE 18	.07	.03	-0.18	0.03	0.25	.0000
ASQ:SE 19	-.27	.02	0.05	0.04	-0.32	.0000
ASQ:SE 20	.25	.04	0.21	0.06	0.04	.1158
ASQ:SE 21	-.10	.02	-0.04	0.03	-0.06	.0471
ASQ:SE 22	.16	.04	0.04	0.05	0.13	.0385

Table 29

Eighteen-Month ASQ:SE DIF Item Statistics

Item	Malaysia		U.S.		DIF Contrast	Mantel-Haenszel Probability
	Scale Score	S.E.	Scale Score	S.E.		
ASQ:SE 1	.25		0.15	0.05	0.10	.0694
ASQ:SE 2	-.13		0.05	0.04	-0.18	.0001
ASQ:SE 3	.36		0.26	0.08	0.10	.9448
ASQ:SE 4	-.05		-0.08	0.03	0.03	.9329
ASQ:SE 5	.19		0.01	0.04	0.18	.0038
ASQ:SE 6	.08		0.13	0.05	-0.06	.1576
ASQ:SE 7	-.02		-0.02	0.04	0.00	.9892
ASQ:SE 8	-.24		-0.09	0.03	-0.15	.0001
ASQ:SE 9	-.09		-0.14	0.03	0.04	.3608
ASQ:SE 10	.15		0.35	0.07	-0.20	.0177
ASQ:SE 11	-.12		-0.25	0.03	0.14	.0003
ASQ:SE 12	-.05		-0.08	0.03	0.03	.2141
ASQ:SE 13	-.05		-0.19	0.03	0.14	.0011
ASQ:SE 14	-.02		0.13	0.04	-0.16	.0051
ASQ:SE 15	-.17		0.00	0.04	-0.17	.0003
ASQ:SE 16	-.03		0.16	0.06	-0.19	.0361
ASQ:SE 17	-.06		-0.19	0.03	0.13	.0250
ASQ:SE 18	-.20		0.02	0.04	-0.22	.0000
ASQ:SE 19	.07		-0.10	0.03	0.17	.0000
ASQ:SE 20	.08		0.11	0.05	-0.03	.3906

Table continues

Table 29, continued

Item	Malaysia		U.S.		DIFF Contrast	Mantel-Haenszel Probability
	Scale Score	S.E.	Scale Score	S.E.		
ASQ:SE 20	.08		0.11	0.05	-0.03	.3906
ASQ:SE 21	-.06		-0.11	0.03	0.05	.2618
ASQ:SE 22	-.08		-0.01	0.04	-0.07	.2350
ASQ:SE 23	.10		0.09	0.05	0.02	.9381
ASQ:SE 24	.14		0.03	0.04	0.10	.1134
ASQ:SE 25	-.01		-0.12	0.03	0.11	.0100
ASQ:SE 26	.10		0.02	0.04	0.08	.1663

Research Question 5

The fifth research question asked, "Does training have a positive impact on the knowledge and attitudes of nurses in Malaysian government well-baby clinics towards screening in general and in administrating the AQS:SE?" To address this research question, responses from the Nurse Pre-Post Training Survey were examined to investigate the impact of training on the nurse perceptions and attitudes in administrating the ASQ:SE.

Thirty-five nurses took part in the ASQ:SE training. The summary of their demographic characteristics were previously presented in Table 12. Of the total of 35 nurses who participated in the training, 31 completed the Nurse Pre-Post Training Survey. The list of questions in this survey can be found in Table 32. Questions 1 to 3 were not

included in Table 30 as they are questions on respondents' characteristics. Responses on a Likert-type scale ranged from 1 (very low) to 4 (very high).

A paired-samples t-test was used to examine change in the nurses' responses pre- and post-training. There was a statistically significant increase in all the nurses' responses from pre to post training except on the final question regarding their perception of barriers in using the ASQ:SE in their clinics. Results of the t-test is presented in Table 31.

Table 30

List of Questions in the Nurse Pre-Post Training Survey

4. Describe your level of knowledge of any mental health services provided to families of infants & toddlers through the Ministry of Health.
5. Describe your level of knowledge of the goals of screening infants and young children.
6. Describe your skill level related to identifying developmental delays in infants and toddlers.
7. Describe your comfort level related to talking with caregivers about their infant or toddler's development delay.
8. Describe your skill level communicating and working with caregivers to be able to support their infant or toddler's development.
9. Describe the level of support (e.g, training, supervision, resources) that you receive from the Ministry of Health related to working with caregivers who have very young children with developmental delays.
10. Describe your ability to determine when a situation is within your expertise and when a situation is one that is better handled by a different developmental specialist.

Table continues

Table 30, continued

11. Describe your skill level related to identifying delays in the social-emotional development of infants and toddlers.
12. Describe your comfort level related to talking with caregivers about mental health symptoms that may be affecting their young child's social-emotional development.
13. Describe the level of support (e.g, training, supervision, resources) that you currently receive from the Ministry of Health related to working with caregivers in the area of social-emotional/mental health.
14. Describe your ability to determine when a situation is within your expertise (e.g., child development, family support) and when a situation is one that is better handled by a mental health specialist.
15. Do you think the ASQ:SE is useful for your clinic?
16. What is the level of barrier that will prevent you from using the ASQ:SE in your clinic?

Table 31

Paired Sample Correlations, Means Scores, Standard Deviations and t-Statistics of Nurses Pre- Post-Survey

Paired samples	*Mean*	*N*	*SD*	*t*	*df*	*Sig.*
Question 4		31		-3.72	30	.001
Pre	2.58		.72			
Post	3.03		.61			
Question 5		31		-2.19	30	.037
Pre	3.03		.71			
Post	3.32		.54			
Question 6		31		-2.11	30	.043
Pre	2.94		.51			
Post	3.10		.54			
Question 7		31		-4.73	30	.000
Pre	2.84		.58			
Post	3.32		.60			
Question 8		31		-4.89	30	.000
Pre	2.87		.56			
Post	3.42		.50			
Question 9		31		-2.28	30	.030
Pre	2.77		.56			
Post	3.03		.71			

Table continues

Table 31, continued

Paired samples	*Mean*	*N*	*SD*	*t*	*df*	*Sig.*
Question 10		31		-2.11	30	.043
Pre	2.68		.70			
Post	2.94		.63			
Question 11		30		-6.02	29	.000
Pre	2.57		.50			
Post	3.23		.43			
Question 12		30		-5.64	29	.000
Pre	2.57		.50			
Post	3.20		.61			
Question 13		30		-3.53	29	.001
Pre	2.47		.57			
Post	2.97		.67			
Question 14		30		-4.96	29	.000
Pre	2.40		.68			
Post	2.97		.56			
Question 15		30		-6.11	29	.000
Pre	2.67		.80			
Post	3.50		.57			
Question 16		30		.15	29	.884
Pre	2.37		.93			
Post	2.33		.88			

CHAPTER V

DISCUSSION

Early identification is vital to providing effective early intervention services to young children with social emotional problems, in order to prevent problems from worsening or leading to more serious delays or disabilities. For a country such as Malaysia, where the field of early intervention is in its infancy, there is a great need for a culturally appropriate, efficient, cost-effective, and psychometrically sound screening instrument such as the Ages and Stages Questionnaires: Social-Emotional (ASQ:SE). This instrument was translated for use in Malaysia and initial psychometric properties of this adapted tool were investigated. Results from this study give support to the cultural appropriateness and utility of this instrument. Psychometric properties reflect an instrument that is valid and reliable for use in Malaysia. These findings are summarized in this chapter. It is comprised of four sections: a) an interpretation of the study results, b) limitations of the study, c) contribution of the findings, and d) implications for future directions.

Interpretation of Results

Participants

The subjects for this study were recruited from government well-baby clinics in the state of Perak in Malaysia. Children between the ages of 3 and 21 months, their parents, and the nurses who staffed the clinics.

There was a slight 2% over-sampling of Malay parents (67.30%) and 2% of Malaysians of other ethnic identities, as well as a 5% over-sampling of Indian parents in this study when compared to percentages of these ethnicities in the Malaysian 2006 census data. There was also 10% under-sampling of Chinese parents. A probable reason for the oversampling of Malay parents is that a larger percentage of Malays use government clinics.

Attempts were made to recruit children with established disabilities in this study. Initial target for recruitment of these children was 10% or 60 children. However, only 15 (2.50%) children with disabilities were successfully recruited. This undersampling may have contributed to the difficulty in comparing Malaysian with U.S. ASQ:SE data (Research question #3).

The poverty level in Malaysia is set at a monthly income of RM691 ($197). Of the parents who participated in this study, 50% of parents had a monthly income near or below the Malaysian poverty level. Services at the government well-baby clinics in Malaysia are very inexpensive. For example, parents only pay an initial registration fee of RM1 ($0.30). Therefore, parents from the lower social economic levels prefer to use well-baby clinics such as the ones used in the study to obtain health services for their children. This may affect the generalizability of findings, and future studies should be conducted in private clinics as well to obtain a sample of parents from higher socio-economic backgrounds.

A majority of the parents in this study, 71%, graduated from high school. This number reflects the high degree of education among the general population of Malaysia,

which has a literacy rate of 92%. The general level of education supports the use of a screening tool that is read and completed by parents.

Nurses in this study were well-trained and experienced, with 80% having more than 10 years experience working in well-baby clinics. Further investigation is needed to examine whether the level of training and the length of experience of this group of nurses is representative of nurses around the country.

Research Question 1: Content Validity of the Malay-adapted ASQ:SE

The content validity of the translated Malay ASQ:SE was given support by the panel of experts who examined it before implementation, as well as the parents and nurses who participated in the study. All six experts agreed that the Malay-adapted ASQ:SE appeared to be culturally appropriate to screen young children for social emotional problems in Malaysia, and most of their comments were related to translation and linguistic issues. For example, they drew attention to the question, "Is your child's body relaxed?" which had been reverse-translated into "Is your child's body stiff?" in Malay because there is no equivalent word for "relaxed" in Malay. After the data collection process was over, nurses reported that parents found this question puzzling but not problematic.

The suggestion of Dr. Mohd-Kassim, Assistant Director of the Department of Children with Special Needs in the Malaysian Ministry of Health, that the instrument be bilingual, in both English and Malay, will need to be considered in the future. Malay was chosen as the language for the survey in order to conform to government instruction to all government agencies to use Malay in their daily activities. Dr. Mohd-Kassim's

suggestion was supported by several non-Malay nurses and non-Malay parents. Some parents also suggested that the ASQ:SE be translated into Tamil and Mandarin for the benefit of Indian and Chinese parents.

No parents indicated difficulty in reading the questionnaire, although the majority of subjects were Malay in this study. Attention will need to be paid to utility studies that have a higher percentage of other ethnicities represented and to populations in urban centers who commonly use more English. Translations into languages used by major ethnic groups, as well as cultural sensitivity issues related to different diverse populations should be considered in the future.

Responses from the Parent's Satisfaction Survey indicated that the Malay-adapted ASQ:SE appeared to parents as culturally appropriate, easy to understand, and did not take long to complete. Parents seemed to have differing levels of need for assistance to complete the questionnaire. When a screening system is in place, it may be important to provide assistance via the physical presence of health professionals or via telephone support from health professionals. Most parents found the ASQ:SE to be informative, interesting and helped them think about their children's development. Only about 1% felt that this instrument took too long or was a waste of time. Parents overall were positive about this instrument, suggesting that implementing the ASQ:SE in Malaysia, at least in clinic settings, may be well-accepted by parents.

The nurses' responses agreed with parents' in that the ASQ:SE appeared to be culturally appropriate and age appropriate, for children in Malaysia. They reported that the screening instrument was easy to implement and not time consuming despite

reporting that parents asked for assistance among parents to complete it. A very high proportion of nurses felt that the ASQ:SE was effective for screening children for mental health problems and would consider using it in the future. The indication by 64% of nurses that they were "somewhat confident" in the results may be due to the fact that they have little experience in the ability of parents to screen their own children. It is suggested that a question be added to the Pre-Post Training survey to investigate if the confidence level in parent-completion of screening changes with training. This finding also suggests that results of studies comparing professional and parent scoring on the ASQ:SE will need to be published on the Malaysian population in order to build professional confidence in the tool.

In addition, 12% of nurses found the clarity and ease of language somewhat problematic and 12% felt that modifications were needed. It will be important in the future to identify whether these criticisms are based on ethnic and cultural differences.

Research Question 2: Reliability of the Malay-adapted ASQ:SE Internal Consistency

Internal consistency of the 6-, 12-, and 18-month Malay adapted ASQ:SE was analyzed using Conbach's alpha. The Cronbach's alpha for the 18-month Malay adapted ASQ:SE was over 70; however, the alpha for the 6- and the 12-month levels was below this threshold (i.e., .61 and .63 respectively). Yet these Cronbach's alphas were not very different than the Cronbach's alpha of the same age intervals of the U.S. version, which were .67 for the 6- and 12-month U.S version.

Validity for this study was investigated by: (a) determining the cutoff points, and (b) calculating the percent agreement with a criterion measure, the CGAS. Cutoff points

were calculated using medians and interquartile ranges instead of means and standard deviations, because these measures are less affected by data that is positively skewed.

Concurrent validity was investigated by comparing the classifications of children's scoring on the ASQ:SE with classifications on the CGAS. In order to measure the reliability of this concurrent measure, inter-rater reliability among a group of four nurse matrons and 50 children was first studied. The inter-rater reliability on the CGAS was examined with a Pearson product-moment correlation coefficient. There was a strong, positive correlation between the two sets or raters (i.e., matrons and nurses) of the CGAS ($r= .865$, $n= 50$, $p<.01$ level). This provided confidence in the reliability of nurses to assess children on the CGAS because their scores closely matched those of more experienced matrons.

ROC analyses were used to determine the cutoff points of the three Malay-adapted ASQ:SE intervals. ROC curves are generated by using true positive and true negative scores. The cutoff points for the 6-, 12-, and 18-month Malay-adapted ASQ:SE were 55, 90, and 62.5 respectively.

Percent agreement with the CGAS was 93% for the 6-month ASQ:SE; 96% for the 12-month ASQ:SE; and 85% for the 18-month ASQ:SE. For the 6-month age interval, the ASQ:SE identified fifteen children as "Risk", while the CGAS identified two children as "Risk". The two children identified as "Risk" by the CGAS were also identified as "Risk" by the ASQ:SE. However, 13 children identified as "Risk" by the ASQ:SE were identified as "OK" by the CGAS. Of these 13 children, all but one of them

received a score of between 80 to 90 on the CGAS, which indicates that their social-emotional well-being was viewed by nurses as positive and robust.

There were 5 children with established disabilities in this age interval. The ASQ:SE identified four of these as "Risk." Three were children with Down syndrome and one was a child with a cleft upper lip. The CGAS only identified two of these children as "Risk". A fourth child with Down syndrome was identified as "OK" by both the ASQ:SE and the CGAS. The explanation for this could be due to the fact that this child was diagnosed with mild Down syndrome and may have had fewer social-emotional competence issues.

For the 12-month age interval, the ASQ:SE identified nine children as "Risk," while the CGAS identified two children as "Risk". There was only one child who was identified as "Risk" by both the ASQ:SE and the CGAS, a child with a diagnosis of developmental delay. Of the nine children identified as "Risk" by the ASQ:SE, eight of them received scores between 83 to 95 on the CGAS. The child who was identified as "Risk" on the CGAS but "OK" on the ASQ:SE received a score of 70 on the CGAS, which is a borderline score.

For the 18-month age interval, the ASQ:SE identified 32 children as "Risk". Of these 32 children, the CGAS identified four as "Risk." Eighty-four percent of the children identified as "Risk" by the ASQSE received scores between. 75 to 95 on the CGAS, which indicates that their social-emotional well-being was not problematic. The CGAS identified 7 children as "Risk" and the ASQ:SE identified 4 out of the 7 children as "Risk." Of these 7 children, 3 children who were not identified as "Risk" by the

ASQ:SE received scores of 10, 55, and 60. A score of 10 on the ASQ:SE indicates that the child is developing well social-emotionally; however, scores of 55 and 60 which are nearer to the cutoff points, indicate that these two children might had some social-emotional issues. One of the children, who had cerebral palsy, received a score of 60 on the ASQ:SE, which is very close to the cutoff point of 62.5. The child received a low score of 8 on the CGAS, which could reflect the child's difficulties in overall functioning and not just deficits in the social emotional domain.

In comparison to the CGAS, the ASQ:SE identified a larger number of children as "Risk." For further studies on concurrent validity, the use of additional concurrent measures is recommended, perhaps including a more in-depth clinical observation. The study results support the validity of the ASQ:SE; however, further research is needed with larger samples of children with established disabilities.

Research Question 3: How Do the 6-Month, 12-Month, and 18-Month ASQ:SE Scores of Children on the Malaysian ASQ:SE Compare to the Scores of Children on the U.S. Version?

The range, mean, median, interquartile range and cutoff score of the 6-, 12-, and 18-Month ASQ:SE of the Malaysian and U.S. data sample are compared. For all intervals, the cutoff points for the Malaysian version were higher than the U.S. version. For the 6- and 18-month intervals, the cutoff points were within 10 points; however for the 12-month interval, the Malaysian version was more than 40 points higher. Higher mean and median scores on the Malaysian version are consistent with higher cutoff scores for the Malay sample. The larger range in U.S scores may be explained by a larger

number of at risk and disabled children in the U.S. subject pool. The wide disparity between all of the scores on the Malaysian 12-month ASQ:SE indicates that there are more difficulties with psychometric studies on this interval.

Research Question 4: Is There Differential Item Functioning in the Malay Version of the 6-Month, 12-Month, and 18-Month ASQ:SE When Item Response Theory-Based Statistical Procedures Were Used?

Results of DIF analyses revealed item bias in several questions in the Malay-adapted ASQ:SE. The first probable explanation for item bias in this adapted instrument was problems with the translation. For example, questions that were highlighted by the panel of experts to be puzzling appeared to have DIF. Among these questions were: "Is you child's body relaxed?" and "Does your child stiffen and arch his back when picked up?". Both these questions appeared in all three levels of questionnaires that were studied. DIF was found in both questions in the 12- and 18-month questionnaires. In the 6-month questionnaire, only the first question was found to have DIF.

The first question was considered puzzling by the panel of experts as there is no equivalent word in Malay for "relaxed". Therefore, the question was reverse-translated and instead of "relaxed", the words used were "not stiff". For the second question, the word "arch" was puzzling, the equivalent word that was used in the translation was "melentik", which described the action. However, this word is rarely used to describe an act that is related to one's back.

A second possible explanation for item bias in this instrument was cultural difference in parents' perceptions on children social-emotional development. There were

two questions on children's sleeping habits in the 12- and 18-month questionnaires, and three in the 6-month questionnaire. DIF was found in all the questions on children's sleeping habits. Parents in Malaysia are not too strict about their children's sleeping habits. Children in Malaysia are allowed to sleep later than children in the U.S. and parents do not decide the number of hour of sleep that their children should have. Parents allow their children to have their own sleeping patterns as long as these patterns are not too extreme.

Another possible explanation for item bias in the Malay-adapted ASQ:SE was parents in Malaysia regard nurses as figures of authority, who are to be respected and obeyed. In a clinic or hospital, parents are used to have decisions on the status of their health to be decided by nurses and doctors. Therefore, when parents were asked for input regarding their children social-emotional well being, parents might believe that they do not have the authority to do so, which might cause them discomfort during the process.

Parents in this study might also need social validation from the nurses as they completed the questionnaires. When they were invited to participate in this study by the nurses, they might feel that they had no choice but to comply. Parents might also feel that they needed to provide responses that were regarded as "correct" by the nurses.

Research Question 5: Does Training Have a Positive Impact on the Knowledge and Attitudes of Nurses in Malaysian Government Well-Baby Clinics Towards Screening in General and in Administrating the ASQ:SE?

The impact of training on the Malaysian nurses' knowledge and attitude was studied on the Nurse Pre-Post Training Survey. There was a statistically significant

increase in all the nurses' responses from pre to post training except on the final question regarding their perception of barriers in using the ASQ:SE in their clinics. These results suggest that training on screening and the ASQ:SE had a positive impact on the nurses' knowledge and attitude. The scores on the item related to nurses' perceptions of barriers was scored moderately low in both pre- and post surveys.

The questions on the Training Survey can be divided into four categories. In the first category, level of knowledge and skills related to identifying delays in development (questions 5, 6, and 11), the largest magnitude of change occurred in question 11, which asked about skill level related to identifying delays in social-emotional development. This question and question 15, which asked about the usefulness of the ASQ:SE in the clinic, had the highest increase in scores from pre to post test. This indicates that the training was successful in its intention to improve the skill level and knowledge of nurses in the social-emotional domain.

In the second category, comfort level of talking with caregivers about symptoms in their children (questions 7, 8 and 12), all three questions were scored moderately higher in the post-test, indicating that nurses had received sufficient information to feel more comfortable in bringing up issues with caregivers.

In the third category, ability to determine when a situation is beyond your expertise (questions 10 and 14), nurses scored question 14 moderately higher, indicating they had better understanding of when to refer a family to a mental health specialist. In the fourth category, level of support from the agency or Ministry of Health related to working with caregivers (questions 9 and 13), although nurses rated the level of support

from their agency or Ministry of Health higher in post than in pre training, the magnitude of change was less. Nurses also indicated in Question 4 that their level of knowledge of resources for mental health was somewhat higher.

These encouraging preliminary results suggest that training may be successful in producing a health service workforce in Malaysia that is highly knowledgeable on screening children for social emotional problems. These results also suggest that training may be effective in producing a workforce with a positive attitude towards screening. Therefore training is a potential strategy to support the implementation of a successful screening system in Malaysia.

Limitations of the Study

The current research study was subject to several limitations. These included: 1) the use of convenience sampling, 2) the study setting, 3) lack of in-depth investigation on cultural validity, 4) lack of attention to diversity, 5) the small number of children with varying disabilities in the study, and 6) the reliability of the concurrent measure, the CGAS. Each of these limitations will be discussed briefly below.

First, a random sample was not used for this study. A convenience sample was recruited in the State of Perak, Malaysia, where the State Health Department was willing to collaborate with this state wide study. Apart from the town of Ipoh, the state capital, the rest of Perak is rural and has higher percentages of population who are involved in agricultural economic activities. Thus the sample may not be representative of all Malaysian families with young children, and generalizations from the results should be made with caution.

Second, the setting for this study was Malaysian government well-baby clinics. These clinics are popular among Malaysians of lower economic status and the nurses were the sole administers of the questionnaire. Results may have been more generalizable to the rest of the population had the study included a variety of private clinics, private child care centers, and non-profit childcare centers as well as government clinics in different regions of the country. These settings would have provided a wider variety of people to administer the questionnaires, including nurses trained at private nursing colleges, child care workers and early childhood educators, who may have different issues and challenges in administering the ASQ:SE. Using more diverse settings would provide a broader foundation to formulating the best strategy to set up a screening system nationwide.

Third, although this study supports the cultural appropriateness of the Malay-adapted ASQ:SE based on opinions of participants, the DIF analysis highlights that there are items that are functioning differentially. This brings up questions about the cultural validity of the tool. There is a possibility that the cultural background of the panel of experts, the back translator, and the researcher, who are all middle class and western-educated, may have biased their interpretation of how questions on the ASQ:SE are understood, and they may have had a limited understanding of perspectives of people from other backgrounds. An in-depth qualitative study with a diverse focus group on the cultural appropriateness of questions and methods of administration may be a way to improve the translation of this tool, particularly with questions that appear to be problematic for parents.

Fourth, as Malaysia is a racially diverse country, an investigation on the impact of diversity in the screening process is necessary. Apart from the linguistics challenge non-Malay parents might have in completing the Malay-adapted ASQ:SE, they may be facing other issues that may be barriers for them to successfully take part in the screening process. For example, nurses in the government well-baby clinics are primarily Malays. These nurses may not be able to assist the parents if the parents do not understand Malay well. The nurses may also impose their own Malay-centric perspective when assisting the parents in completing the questionnaire.

Fifth, the proportion of children with disabilities in this study was very small, and those who were included in this study were primarily children with Down syndrome. In order to better investigate the validity of the ASQ:SE, a larger percentage of children with varying disabilities should be included.

Finally, the method for investigating the inter-rater reliability of the CGAS is questionable. The second raters of the CGAS in the reliability investigation were matrons (i.e., nurse supervisors) who were the nurses' superiors. There is a possibility that some nurses made a conscious attempt to agree with the ratings they thought their superiors might be making in order to maintain good standing with their superiors. In addition, well-baby clinics varied in the number of patients who visited the clinics during the study. There is a possibility that in a very busy clinic, nurses who scored the CGAS might have experienced fatigue, which could influence the way they scored children. These two issues could have had an effect on the concurrent validity in this study.

Contributions of the Findings

This current study on the Malay-adapted 6-, 12-, and 18-month ASQ:SE questionnaires lays a foundation for its establishment as a culturally appropriate, cost-effective and efficient screening instrument in Malaysia. Presently, children with social-emotional problems in Malaysia are not being identified early enough for them to access early intervention services. Therefore, a psychometrically sound screening instrument such as the ASQ:SE would have positive ramifications for the field of early intervention in Malaysia.

This present study on the psychometric properties of an adapted screening instrument makes an important contribution to the literature of cross cultural assessment. It is one of the first studies on the use of an adapted version of the ASQ:SE outside the U.S. Recent studies have highlighted the importance of ensuring the cultural appropriateness of assessment tools that are adapted for use with a population different from the one for which they were developed. Translating and using an instrument without investigating its cultural validity detracts from the validity of its results. In Malaysia, most assessments used with children are not adapted, but are used directly in their English versions. This study breaks this barrier in its use of a translated and adapted screening, as well as being an innovative in using parents to screen their children's development. The acceptance of parents as valid and reliable screeners of their children development will need further study in Malaysia, however.

Defining social emotional competence in young children is complex because its definition hinges on cultural and family values (Squires et al., 2000). This study

contributes towards better understanding of the impact of culture on how social emotional competence of young children is perceived. Through the Malay-adapted ASQ:SE, parents provided an input on how they view their children's social-emotional competence. Findings from this study contribute significantly to the field of infant mental health in Malaysia, particularly since research is sorely lacking.

Implications for Future Directions

Findings from this study support the use of the Malay-adapted ASQ:SE as a culturally appropriate screening instrument for use in the country. In order to set up a comprehensive social-emotional screening system in Malaysia, future research is needed on the psychometric properties of the remaining primary age intervals in the ASQ:SE screening system: the 24-, 30-, 36-, 48-, and 60-month questionnaires. With the availability of a screening system, young children can be screened at regular intervals and have follow-up screenings if needed. For example, it would be interesting to do a follow-up screening on those children who were identified as "Risk" by the ASQ:SE but not by the CGAS in this study.

Future psychometric studies with more diverse populations from various geographic locations in Malaysia, with varying disabilities and environmental risks are also needed to improve the generalizability of the findings. With Malaysia's diverse ethnic population, more in-depth studies focusing on the cultural contexts of diverse families are warranted.

The current study did not investigate the inter-rater reliability of the Malay-adapted ASQ:SE. As stated earlier, it would be important to conduct a study on the inter-

rater reliability between professional and parent administration in order to establish professional confidence in the ability of parents to screen their children. Future research could also be conducted with multiple raters to establish this instrument's inter-rater reliability. For example, for young children attending child care centers, an ASQ:SE could be completed by both their parents and child care providers.

This study has shown that the Malay-adapted version has the potential to be incorporated as part of an effective early intervention screening system in Malaysia. Much work is still to be done on its use in various settings throughout the country. Future research will need to be carried out on the issues and barriers that may be faced with various settings and administrators, but a solid foundation has been laid here in this initial investigation. With continued study of cultural, language, and disability issues, the social-emotional well being of young children and families in Malaysia may be improved.

APPENDIX A

SAMPLE RECRUITING FLYERS (ENGLISH AND MALAY VERSIONS)

Parents/Caregivers! Would you like to know more about your children's social-emotional well-being?

We are doing a research on the development of young children between the ages of 3 months to 39 months. We invite you to complete 3 surveys that will take you 20minutes.

If you would like to know more about this opportunity , please talk to the nurse in this clinic.

Para ibubapa! Adakah anda ingin mengetahui lebih lanjut mengenai perkembangan social-emosi anak anda?

Kami sedang mengkaji perkembangan kanak-kanak kecil di antara usia 3 hingga 39 bulan. Kami menjemput ibu bapa untuk melengkapkan 3 survey yang mengambil masa selama 20 minit.

Jika anda ingin mengetahui dengan lebih lanjut mengenai peluang ini, sila tanyakan kepada jururawat di klinik ini.

APPENDIX B

PARENT/CAREGIVER AND NURSE CONSENT FORMS (ENGLISH AND MALAY VERSIONS)

The ASQ:SE Study
Consent Form

Dear Nurses,

You are invited to take part in a research study conducted by Hasnah Toran from the University of Oregon, Early Intervention Program. The goal of the study is to investigate the usefulness of the Ages Stages Questionnaire: Social Emotional (ASQ:SE) to screen young children's social-emotional development in Malaysia. You were selected as a possible participant because you provide medical service for young children.

If you decide you would like to participate, the duration of the study will be 9 weeks. The research will take place in your clinic.

The procedure includes: Nurses inviting parents visiting your clinic to complete the Ages Stages Questionnaire: Social Emotional for their children, the Family Information Survey and the Parent Satisfaction Survey. This process should take less than 20 minutes. You will also be asked to score each child on the Children Global Assessment Scale (C-GAS). The scoring for 4 children will take approximately 16 minutes. After you have collected the data from all the parents who have agreed to participate in this study, you would be asked to complete the Nurses Satisfaction Survey. It will take approximately 5 minutes to complete this survey.

The Ages Stages Questionnaire: Social Emotional is a screening tool to identify young children for social emotional issues for referral and intervention. Early intervention has been proven by scientific research to be beneficial for young children with delays in development. Identifying young children with these issues early would assist in the provision of early intervention for these children in order to alleviate further complications.

Risk- The potential risk of participating in the study may include, but are not limited to, the screening process. Parents may ask to discuss this process, the ASQ:SE and the C-GAS with you. There will be no referral or follow-up provided. *Benefit-* The benefit may include a better understanding of young children's development and the screening process. However, this benefit cannot be guaranteed.

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission. Participants' identities will be kept confidential by using numerical codes rather than their real names on documents.

Your participation is voluntary. Your decision whether or not to participate will not affect your position at this clinic. If you decide to participate, you are free to withdraw your consent and discontinue participation at any time without penalty. If you have any questions, please feel free to call the researcher at 012-4789312 or e-mail her at hasna1@yahoo.com, or e-mail the faculty advisor, Dr. Jane Squires at jsquires@darkwing.uoregon.edu or write to her at Early Intervention Program, 5253, University of Oregon, Eugene, OR 97403-5253, USA.

Your signature indicates that you have read and understand the information provided above, that you willingly agree to participate, that you may withdraw your consent at any time and discontinue participation without penalty, and that you have received a copy of this form. If you have questions about your rights as a research participant, call Human Subjects Compliance, Riverfront Research Park, Suite 105, University of Oregon, Eugene OR 97403-5237 or e-mail: human_subjects@orsa.uoregon.edu.

____ I have read this letter and agree to participate in the study.

Date _____ Nurses Signature _____

Nurses Name (please print) _____

Kajian Graduan
Borang Kebenaran

Para jururawat,

Anda dijemput untuk mengambil bahagian di dalam sebuah kajian yang dijalankan oleh Hasnah Toran dari Program Intervensi Awal, Universiti Oregon, USA. Tujuan kajian ini adalah untuk menyiasat keberkesanan Ages Stages Questionnaire: Social Emotional (ASQ:SE) di dalam proses menyaring perkembangan sosial emosional kanak-kanak di Malaysia. Anda dipilih sebagai peserta kajian ini kerana anda menyediakan khidmat kesihatan kepada kanak-kanak.

Jika anda membuat keputusan untuk menyertai kajian ini, tempoh kajian adalah selama 4 minggu. Kajian ini akan dijalankan di klinik anda.

Prosedur kajian ini termasuk: Jururawat menjemput Ibubapa yang datang ke klinik anda untuk melengkapkan Ages Stages Questionnaire Social Emotional untuk anak mereka, Survey Maklumat Keluarga dan Survey Kepuasan Ibubapa. Proses ini akan mengambil masa selama lebih kurang 20 minit. Jururawat juga akan menilai kanak-kanak dengan menggunakan Children Global Assessment Scale (C-GAS). Untuk menilai 4 orang kanak-kanak dengan borang ini memerlukan lebih kurang 16 minit. Selepas jabatan anda telah mengumpul maklumat ini dari semua keluarga yang bersetuju untuk mengambil bahagian, anda akan melengkapkan Survey Kepuasan Jururawat pula. Survey ini mengambil 5 minit untuk dilengkapkan.

The Ages Stages Questionnaire Social Emotional adalah suatu alat saringan untuk mengenal pasti kanak-kanak yang menghadapi masalah perkembangan untuk dirujuk dan menjalani intervensi. Kajian saintifik telah membuktikan bahawa intervensi awal dapat membantu kanak-kanak yang menghadapi masalah perkembangan. Dengan mengenal pasti kanak-kanak yang menghadapi masalah ini, mereka dapat dibantu dengan intervensi awal seawal mungkin untuk mengelakkan komplikasi berikutnya.

Risiko-Jika anda menghadapi tekanan akibat proses kajian ini, anda boleh meminta untuk berbincang dengan pengkaji. Ibu bapa mungkin akan meminta untuk berbincang mengenai proses ini, ASQ:SE dan C-GAS dengan anda. Rujukan dan rawatan lanjut tidak akan disediakan. *Faedah*- Antara faedah yang anda boleh dapati dari proses ini ialah peningkatan kefahaman mengenai perkembangan kanak-kanak. Walau bagaimanapun, faedah ini tidak dapat dijamin.

Apa-apa maklumat yang didapati dari kajian ini yang boleh dikaitkan dengan anda adalah maklumat sulit dan hanya akan disebarkan dengan izin anda. Identiti peserta akan dirahsiakan melalui penggunaan nombor dan bukannya nama asal di dalam sebarang dokumen.

Penyertaan anda adalah secara sukarela. Keputusan anda samada untuk menyertai kajian ini atau tidak, tidak akan menjejaskan perkhidmatan anda. Jika anda membuat keputusan untuk menyertai kajian ini, anda boleh menarik diri pada bila-bila masa sahaja tanpa sebarang denda. Jika anda ada sebarang soalan, sila e-mail penkaji di hasna1@yahoo.com, atau pmenghubungi penasihat akademik penkaji, Dr. Jane Squires di e-mail jsquires@darkwing.uoregon.edu atau di alamat: Early Intervention Program, 5253, University of Oregon, Eugene, OR 97403-5253, USA.

Tanda tangan anda menunjukkan bahawa anda telah membaca dan memahami maklumat yang disediakan di atas dan anda secara sukarela mahu menyertai kajian ini dan anda boleh menarik diri pada bila-bila masa sahaja, dan anda telah menerima borang ini. Jika anda ada apa-apa soalan mengenai hak anda sebagai peserta kajian ini, sila hubungi Human Subjects Compliance, Riverfront Research Park, Suite 105, University of Oregon, Eugene OR 97403-5237 atau e-mail: human_subjects@orsa.uoregon.edu.

____ Saya telah membaca surat ini dan bersetuju untuk mengambil bahagian di dalam kajian ini.

Tarikh _____ Tanda tangan Jururawat _____

Nama Jururawat (sila tulis dengan jelas) _____

Graduate Research Study
Consent Form

Dear Parent(s)/Legal Guardian,

You are invited to take part in a research study conducted by Hasnah Toran from the University of Oregon, Early Intervention Program. The goal of the study is to investigate the usefulness of the Ages Stages Questionnaire: Social Emotional to screen young children's social-emotional development in Malaysia. You were selected as a possible participant because you have a child who is within the 3 to 21 months age range.

If you decide you would like to take part, the whole process should take you less than 20 minutes. You would be asked to complete these surveys: the Ages Stages Questionnaire: Social Emotional for your child, the Family Information Survey and the Family Satisfaction Survey. The nurse will fill a form on how your child is developing.

The Ages Stages Questionnaire: Social Emotional is a screening tool to identify young children for social emotional issues for referral and intervention. Early intervention has been proven by scientific research to benefit young children with development problems. Identifying young children with these issues early would assist in the provision of early intervention for these children in order to prevent further problems.

Benefit- You may not feel comfortable filling up a form about your child but it may help you to understand your child's development.

Any information gathered in this study that can be identified with you or your child will remain confidential and will be disclosed only with your permission. Numbers will be assigned to your materials to protect your privacy.

Your participation is voluntary. Your decision whether or not to participate will not affect the service that you receive at this clinic. If you decide to participate, you are free to withdraw at any time without affecting the services for you. If you have any questions, please feel free to e-mail the researcher at hasna1@yahoo.com, or e-mail the faculty advisor, Dr. Jane Squires at jsquires@uoregon.edu or write to her at Early Intervention Program, 5253, University of Oregon, Eugene, OR97403-5253, USA.

Your signatures indicates that you have read and understand the information provided above, that you willingly agree to participate, that you may withdraw your consent at any time and discontinue participation without penalty, and that you have received a copy of this form. If you have questions about you and/or your child's rights as a research participant, contact Human Subjects Compliance, Riverfront Research Park, Suite 105, University of Oregon, Eugene, OR 97403-5237.

____ I have read this letter and agree to participate in the study.

Date _____ Parent/Legal Guardian Signature _____

Parent/Legal Guardian Name (please print) _____

Kajian Graduan
Borang Kebenaran

Ibu bapa/Penjaga,

Anda dijemput untuk mengambil bahagian di dalam sebuah kajian yang dijalankan oleh Hasnah Toran dari Program Intervensi Awal, Universiti Oregon, USA. Tujuan kajian ini adalah untuk menyiasat keberkesana Ages Stages Questionnaire: Social Emotional di dalam proses menyaring perkembangan sosio emosional kanak-kanak di Malaysia. Anda dipilih sebagai peserta kajian ini kerana anda mempunyai seroang anak berusia di antara 3 hingga 21 bulan.

Jika anda membuat keputusan untuk mengambil bahagian, proses ini akan mengambil masa lebih kurang 20 minit. Anda akan diminta untuk melengkapkan survey-survey ini: Ages Stages Questionnaire: Social Emotional untuk anak anda, Survey Maklumat Keluarga dan Survey Kepuasan Ibubapa. Jururawat akan menilai anda dengan menggunakan sehelai borang.

Ages Stages Questionnaire: Social Emotional adalah suatu alat saringan untuk mengenal pasti kanak-kanak yang menghadapi sosio-emosional untuk diberi perkhidmatan intervensi. Melalui kajian saintifik, intervensi awal telah dibuktikan dapat membantu kanak-kanak yang menghadapi masalah perkembangan. Dengan mengenal pasti kanak-kanak yang menghadapi masalah ini dengan awal, mereka dapat dibantu dengan intervensi awal untuk mengelakkan komplikasi berikutnya.

Faedah- Anda mungkin merasa kurang selesa apabila mengisi borang mengenai anak anda tetapi ini akan meningkatkan tahap pengetahuan anda mengenai perkembangan anak anda.

Apa-apa maklumat yang didapati dari kajian ini yang boleh dikaitkan dengan anda atau anak anda adalah maklumat sulit dan hanya akan disebarkan dengan izin anda. Identiti peserta akan dirahsiakan melalui penggunaan nombor dan bukannya nama asal di dalam sebarang dokumen.

Penyertaan anda adalah secara sukarela. Keputusan samada untuk menyertai kajian ini atau tidak, tidak akan menjejaskan perkhidmatan yang anda terima di klinik ini. Jika anda membuat keputusan untuk menyertai kajian ini, anda boleh menarik diri pada bila-bila masa sahaja. Jika anda ada sebarang soalan, sila hubungi pengkaji melalui e-mail ini: hasna1@yahoo.com, ataupun menghubungi penasihat akademik pengkaji, Dr. Jane Squires di e-mail: jsquires@uoregon.edu ataupun di alamat: Early Intervention Program, 5253, University of Oregon, Eugene, OR97403-5253, USA.

Tanda tangan anda menunjukkan bahawa anda telah membaca dan memahami maklumat yang disediakan di atas dan anda secara sukarela menyertai kajian ini dan anda boleh menarik diri pada bila-bila masa sahaja, dan anda telah menerima borang ini. Jika anda ada apa-apa soalan mengenai hak anda atau anak anda sebagai peserta kajian ini, sila hubungi Human Subjects Compliance, Riverfront Research Park, Suite 105, University of Oregon, Eugene, OR 97403-5237.

____ Saya telah membaca surat ini dan bersetuju untuk mengambil bahagian di dalam kajian ini.

Tarikh_____ Tanda tangan Ibubapa/Penjaga Sah_____

Nama Ibubapa/Penjaga Sah (sila tulis dengan jelas) _____

APPENDIX C

MEASURES

Sample Questions from the ASQ:SE

6-Month ASQ:SE

Please read each question carefully and 1. Check the box ❑ that best describes your child's behavior *and* 2. Check the circle ○ if this behavior is a concern		MOST OF THE TIME	SOMETIMES	RARELY OR NEVER	CHECK IF THIS IS A CONCERN
1. When upset, can your baby calm down within a half hour?		❑ z	❑ v	❑ x	○
2. Does your baby smile at you and other family members?		❑ z	❑ v	❑ x	○
3. Does your baby like to be picked up and held?		❑ z	❑ v	❑ x	○

12-Month ASQ:SE

13. Do you and your baby enjoy mealtimes together?	❑ z	❑ v	❑ x	○
14. Does your baby have any eating problems, such as gagging, vomiting, or _____ ? (You may write in another problem.)	❑ x	❑ v	❑ z	○
15. Does your baby have trouble falling asleep at naptime or at night?	❑ x	❑ v	❑ z	○

18-Month ASQ:SE

19. Does your baby let you know when she is hungry, hurt, or tired?	❑ z	❑ v	❑ x	○
20. When you talk to your baby, does he turn his head, look, or smile?	❑ z	❑ v	❑ x	○
21. Does your baby try to hurt other children, adults, or animals (for example, by kicking or biting)?	❑ x	❑ v	❑ z	○

Sample Questions from the Malay-adapted ASQ:SE

6-Month ASQ:SE

Sila baca setiap soalan dengan teliti dan:
1. Tandakan petak yang paling tepat menggambarkan tingkah laku anak anda ***dan***
2. Tandakan bulatan jika tingkah laku ini membimbangkan anda

	Sering kali	Kadang-kadang	Jarang atau tidak pernah	Adakah anda bimbang?
1. Apabila menangis kesedihan, bolehkah bayi anda bertenang dalam masa setengah jam?	☐ z	☐ v	☐ x	○
2. Adakah bayi anda ketawa atau pun senyum kepada anda dan ahli keluarga yang lain? 	☐	☐	☐	○
3. Adakah bayi anda suka didukung dan dipegang?	☐	☐	☐	○
4. Adakah bayi anda melentik dan menegangkan belakangnya apabila didukung?	☐	☐	☐	○

12-Month ASQ:SE

15. Adakah bayi anda menghadapi masalah untuk tidur samada di siang hari atau pun di waktu malam?	☐	☐	☐	○
16. Adakah bayi anda membuat bunyi-bunyi bayi? Contohnya, adakah dia membuat bunyi "ba-ba-ba-ba" atau pun "na-na-na-na"? (Jika bayi anda selalu membuat bunyi-bunyi ini, tandakan "selalu")	☐	☐	☐	○
17. Adakah bayi anda tidur sekurang-kurangnya 10 jam dalam jangka masa 24 jam? 	☐	☐	☐	○
18. Adakah bayi anda mengalami sembelit atau pun cirit-birit?	☐	☐	☐	○
19. Adakah bayi anda memberitahu anda samada dia lapar, sakit atau pun letih?	☐	☐	☐	○

18-Month ASQ:SE

17. Adakah anak anda mengalami sembelit atau pun cirit-birit?	☐	☐	☐	○
18. Adakah anak anda memberitahu apa yang dia rasa kepada anda samada melalui perbuatan atau pun perkataan? Contohnya, adakah dia memberitahu anda samada dia lapar, sakit atau pun letih?	☐	☐	☐	○
19. Adakah anak anda mengikut arahan-arahan yang mudah? Contohnya adakah dia duduk apabila disuruh duduk?	☐	☐	☐	○
20. Adakah anak anda suka bermain atau pun berada berhampiran dengan ahli keluarga ataupun rakan-rakan?	☐	☐	☐	○
21. Adakah anak anda memastikan anda ada berhampiran apabila menerokai tempat-tempat baru, seperti taman atau pun rumah rakan?	☐	☐	☐	○

The ASQ:SE Pilot Study
Family Information Form

Instructions: Please complete this survey after filling out a questionnaire on your child.

Child's information

1. Child's sex: M / F
2. Child's date of birth: _____
3. What is the reason for your visit to the clinic?

_____

4. Does anything about your child's behavior or development worry you?

_____

Parents' Information

1. Race:

- ❑ Malay
- ❑ Indian
- ❑ Chinese
- ❑ Other

2. Education level:

- ❑ Graduate degree
- ❑ Degree
- ❑ Diploma
- ❑ High School
- ❑ Primary School
- ❑ Did not complete Std. 6

3. Age:

- ❑ >25
- ❑ 25 – 30
- ❑ 31 – 35
- ❑ 36 – 40
- ❑ 41 – 45
- ❑ 46 – 50
- ❑ 51 – 55
- ❑ above 55

4. Family monthly income:

- ❑ >RM500
- ❑ RM500-RM1000
- ❑ RM1000-RM2000
- ❑ RM2000-RM3000
- ❑ RM30000-RM40000
- ❑ above RM40000

The ASQ:SE Pilot Study
Parent Satisfaction Survey

Instructions: Please complete this survey after filling out a questionnaire on your child.

1. How long did it take you to complete the ASQ:SE questionnaire?
   - ❑ less than 10 minutes
   - ❑ 10 - 20 minutes
   - ❑ 20 - 30 minutes
   - ❑ more than 30 minutes

2. Did you need help in completing the questionnaire?
   - ❑ yes, I asked a few questions to clarify some points
   - ❑ yes, I needed help all through out the process
   - ❑ no, the questionnaire is very clear

3. It was easy to understand the questions:
   - ❑ Yes
   - ❑ sometimes
   - ❑ no

4. The questions were appropriate for my child's age:
   - ❑ yes
   - ❑ sometimes
   - ❑ no

5. The questionnaire.....(Please check all that apply):
   - ❑ was interesting
   - ❑ helped me think about my child's development
   - ❑ took too long
   - ❑ was a waste of time
   - ❑ didn't tell me much

6. How would you change this questionnaire to make it better?

_____

_____

_____

The ASQ:SE Pilot Study
NurseSatisfaction Survey

Instructions: Please complete this survey after your department has completed the data collection.

1. Are you a:
   - ❑ doctor?
   - ❑ nurse?

2. Was the tool easy to implement?
   - ❑ yes
   - ❑ somewhat
   - ❑ no

3. The implementation of the tool is NOT time consuming:
   - ❑ yes
   - ❑ somewhat
   - ❑ no

4. Did your personnel need to assist parents in completing the questionnaire?
   - ❑ no, most parents could complete the questionnaire by themselves
   - ❑ yes, a personnel was needed to answer a few questions
   - ❑ yes, a personnel needed to provide assistance all through out the process

5. How confident are you with the results of the screening tool?(representative of the children's social and emotional repertoire)
   - ❑ very confident
   - ❑ somewhat confident
   - ❑ not confident at all

6. The questions were appropriate for the children's age:
   - ❑ yes
   - ❑ somewhat
   - ❑ no

7. The language was clear and easy to understand:
   - ❑ yes
   - ❑ somewhat
   - ❑ no

8. The questions were culturally appropriate:

- ❑ yes
- ❑ somewhat
- ❑ no

9. If applicable, please write the number of questions that you think are not culturally appropriate and give a brief explanation:

Age Interval: _____ months. Question no:_____

Comment:_____

Age Interval: _____ months. Question no:_____

Comment:_____

Age Interval: _____ months. Question no:_____

Comment:_____

10. Do you think that this questionnaire is effective for screening?

- ❑ yes
- ❑ somewhat
- ❑ no

11. Would you consider using this questionnaire in the future?

- ❑ yes
- ❑ yes, but with some modifications
- ❑ no

12. How would you change this questionnaire to make it better?

_____

_____

Children's Global Assessment Scale

Schaffer, Gould, Brasic et al. (1983)

A 100-point rating scale measuring psychological, social and school functioning for children aged 6-17. It was adapted from the Adult Global Assessment Scale and is a valid and reliable tool for rating a child's general level of functioning on a health-illness continuum.

Instruction:

1. Enter a score from 1-100
2. Rate the child most impaired level of functioning during the period rated by selecting the lowest level which describes his/her functioning on a hypothetical continuum of health-illness
3. Use intermediary levels eg. 35, 94, 68.
4. Rate actual functioning regardless of treatment or prognosis, using the descriptions below as a guide.

1. Name of child:_____
2. Age (in months):_____
3. Name of parent:_____
4. Score: ☐

100-91	Superior functioning
90-81	Good functioning in all areas
80-71	No more than slight impairment in functioning
70-61	Some difficulty in a single area, but generally functioning pretty well
60-51	Variable functioning with sporadic difficulties or symptoms
50-41	Moderate degree of interference in functioning in most social areas or severe impairment of functioning in one area
40-31	Major impairment in functioning in several areas and unable to function in one of these areas
30-21	Unable to function in almost all areas
20-11	Needs considerable supervision
10-1	Needs constant supervision

APPENDIX D

SAMPLE OF THE CONTENT VALIDITY CHECKLIST

Ages & Stages Questionnaires: Social-Emotional
Cultural and Developmental Appropriateness Checklist

Instructions:

- Please review if the following Malay-adapted items are culturally and developmentally appropriate for typically developing 18, 12, & 6-month-old children.

- Questions to keep in mind when reviewing the questionnaire:
  1. Is the test item easily understood?
  2. Is the test item culturally appropriate?
  3. Is the test item developmentally appropriate?

- Place a check mark under agree or disagree.

- If you disagree, please provide rationale.

18 month Questionnaire (For children ages 15 to 21 months)

No	English version	Malay version	Agree?		Rationale	Notes
			Yes	No		
1	Does your child look at you when you talk to him?	Adakah anak anda memandang ke arah anda apabila anda bercakap dengannya?				
2	When you leave, does your child remain upset and cry for more than an hour?	Apabila anda meninggalkannya, adakah anak anda kesedihan dan menangis selama lebih dari sejam?				
3	Does your child laugh or smile when you play with her?	Adakah anak anda ketawa atau pun senyum apabila anda bermain dengannya?				

BIBLIOGRAPHY

Abdul-Rahman, S. (2004, September). *Program pemulihan dalam komuniti dan peranannya dalam konteks pemulihan kepada kanak-kanak kurang upaya.* Paper presented at National Seminar on Special Education, Bangi, Malaysia.

Abdul-Rashid, A. (1993). *A study of parents' expectation on teachers' requirements in teaching at Islamic pre-schools (TASKI) in Federal Territory*, Master of Education (M. Ed.). Dissertation, Department of Education, International Islamic University of Malaysia.

Achenbach, T. (1991). *Manual for the Child Behavior Checklist/4-18 and 1991 profile.* Burlington, VT: University of Vermont, Department of Psychiatry.

Adnan, A. H., & Hafiz, I. A. (2001). A disabling education: the case of disabled learners in Malaysia. *Disability & Society, 16*(5), 655-669.

American Educational Research Association, American Psychological Association, National Council on Measurement in Education, (1999). *Standards for educational and psychological testing.* Washington, DC: American Educational Research Association.

Ayob, A., Lee, L. W., See, S. C. M., & Ahmad, H. (2004, September). *Kualiti perkhidmatan pendidikan kanak-kanak keperluan khas di bawah NGO.* Paper presented at National Seminar on Early Childhood and Special Education, Pulau Pinang, Malaysia.

Badzis, M. (2004, September). *Malaysian parents' perceptions of children's play.* Paper presented at National Seminar on Early Childhood and Special Education, Pulau Pinang, Malaysia.

Bailey, D. B., Aytch, L. S., Odom, S. L., Symons, F., & Wolery, M. (1999). Early intervention as we know it. *Mental Retardation and Developmental Disabilities Research, 5*(1), 11.

Bird, H. R., Canino, G., Rubio-Stipec, M., & Ribera, J. G. (1987). Further measures of the psychometric properties of the Children's Global Assessment Scale. *Archives of General Psychiatry*, 44, 821-824.

Bowe, F. (2004). *Birth to five: early childhood special education.* New York: Delmar.

Briggs-Gowan, M., & Carter, A. (1998). Preliminary acceptability and psychometrics of the infant-toddler social and emotional assessment (ITSEA): A new adult-report questionnaire. *Infant Mental Health Journal, 19,* 422-445.

Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research Perspectives. *Developmental Psychology, 22,* 723-742.

Carter, A. S., Briggs-Gowan, M. J., & Davis, N. O. (2004). Assessment of young children social-emotional development and psychopathology: recent advances and recommendations for practice. *Journal of Child Psychology & Psychiatry, 45*(1), 109-134.

Carter, A. S., Briggs-Gowan, M. J., Jones, S. M., & Little, T. D. (2003). The infant-toddler social and emotional assessment (ITSEA): Factor structure, reliability and validity. *Journal of Abnormal Child Psychology, 31*(5), 495-514.

Cheung, F. M. (2004). Use of western and indigenously-developed personality tests in Asia. *Applied Psychology: An International Review, 53*(2), 173-191.

Child Act (2001). Akta 611, Kerajaan Persekutuan Malaysia.

Christensen, M., Emde, R., & Fleming, C. (2004). Cultural perspectives for assessing infants and young children. In R. Delcarmen-Wiggins & A. Carter (Eds.). *Handbook of infant, toddler, and preschool mental health assessment,* New York: Oxford University Press.

Clauser, B. E., & Mazor, K. M. (1998). Using statistical procedures to identify differentially functioning test items. *Instructional Topics in Educational Measurement, Spring,* 31-43.

Crabtree, S. (2001). A multicultural montage: Perspectives from care-giving families in Sarawak. In A. Haque (Ed.), *Mental health in Malaysia: Issues and concerns* (pp. 147-162). Kuala Lumpur, Malaysia: University of Malaya Press.

Crabtree, S. (2005). Medication, healing, and resistance in East Malaysia. *Mental Health, Religion, and Culture, 8*(1), 17-25.

Crabtree, S., & Chong, G. (2000). Mental health and citizenship in Malaysia. *International Social Work, 43*(2), 217-226.

Crabtree, S., & Chong, G. (2001). Standing at the crossroads: Mental health in Malaysia since independence. In A. Haque (Ed.), *Mental health in Malaysia: Issues and concerns* (pp. 21-34). Kuala Lumpur, Malaysia: University of Malaya Press.

Dawson, G., Ashman, S. B. & Carver, L. J. (2000). The role of early experience in shaping behavioral and brain development and its implications for social policy. *Development and Psychopathology, 12,* 695-712.

Dawson, G., & Osterling, J. (1997). Early intervention in autism. In M. J. Guralnick (Ed.), *The effectiveness of early intervention* (pp. 307-326). Baltimore: Brookes.

Deva, M. P. (2004). Malaysia mental health: country profile. *International Review of Psychiatry, 16*(1-2), 167-176.

Dishion, T., French, D., & Patterson, G. (1995). The development and ecology of antisocial behavior. In D. Cicchetti & D. Cohen (Eds.), *Developmental psychopathology: Vol. 2. Risk, disorder, and adaptation* (pp. 388-394). New York: Wiley.

Dryborg, J., Warborg Larson, F., Nielsen, S., Byman, J., Buhl Nielsen, B., & Gautre-Delay, F. (1999). The Children's Global Assessment Scale (CGAS) and Global Assessment of Psychosocial Disability (GAPD) in clinical practice – substance and reliability as judged by intraclass correlations. *European Child & Adolescent Psychiatry, 9,* 195-201.

Economic Planning Unit. (n.d.). *Ninth Malaysia Plan 2006-2010.* Retrieved May 7, 2006, from http:epu.jpm.my?rm9/html/English.htm.

Education Act. (1997). Akta 550, Kerajaan Persekutuan Malaysia.

Endicott, J., Spitzer, R. L., Fleiss, J. L. & Cohen, J. (1976). The Global Assessment Scale: A procedure for measuring overall severity of psychiatric disturbance. *Archives of General Psychiatry, 33,* 766-771.

Farran, D. C. (2000). Another decade of intervention for children who are low income or disabled: What do we know now? In J. Shonkoff and S. Meisels (Eds.), Handbook of early childhood intervention (2nd ed., pp. 510-548). New York: Cambridge University Press.

Frankenburg, W. K., Dodds, J., Archer, P., Shapiro, H., & Bresnick, B. (1992). *The DENVER-II training manual.* Denver, CO: Denver Developmental Materials.

Gierl, M. (2005). Using dimensionality-based DIF analyses to identify and interpret constructs that elicit group differences. *Educational Measurement and Practice, Spring, 3-14.*

Glascoe, F. P. (2000). Evidence-based approach to developmental and behavior surveillance using parent's concerns. *Child Care, Health and Development, 26*(2), 137-150.

Glascoe, F. P. (2005). Screening for developmental and behavioral problems. *Mental Retardation and Developmental Disabilities Research Reviews, 11,* 173-179.

Gleason, M. M., & Zeanah, C. H. (2006). Infant mental health. In M. Hersen and J. C. Thomas (Eds.), *Comprehensive Handbook of Personality and Psychology* (pp. 85-99). New York: Wiley.

Green, B., Shirk, S., Hanze, D., & Wanstrath, J. (1994). The Children's Global Assessment Scale in clinical practice: An empirical evaluation. *Journal of American Child & Adolescent Psychiatry, 33*(8).

Guralnick, M. J. (1997). *The effectiveness of early intervention*. Baltimore: Brookes.

Halfon, N., Regalado, M., Sareen, H., Inkelas, M., Reuland, C., Glascoe, F. P. & Olson, L. M. (2004). Assessing development in the pediatric office. *Pediatrics, 113*(6), 1926-1933.

Hambleton, R. K. (2005). Issues, designs, and technical guidelines for adapting tests into multiple languages and cultures. In R. K. Hambleton, P. F. Merenda, & C. D. Spielberger (Eds.), *Adapting educational and psychological tests for cross-cultural assessment* (pp. 3-37). Mahwah, NJ: Erlbaum.

Haque, A. (2005). Mental health concepts and program development in Malaysia, *Journal of Mental Health, 14*(2), 183-195.

Haque, A., & Masuan, K. A. (2002). Religious psychology in Malaysia. *The International Journal for the Psychology of Religion, 12*(4), 277-289.

Hatta, S. (2001). Islamic issues in forensic psychiatry and the instinct theory: The Malaysian scenario. In A. Haque (Ed.), *Mental health in Malaysia: Issues and concerns* (pp. 181-196). Kuala Lumpur, Malaysia: University of Malaya Press.

Hewitt, B., & Mahoney, C. (2000). Malaysian parents' ideal and actual perceptions of pre-school education. *International Journal of Early Years Education, 8*(1), 83-92.

Jellinek, M., Patel, B. P. & Froehle, M. C. (2003). Bright futures in practice: Mental health, volume 1, practice guide and volume 2, tool kit. *Journal of the American Academy of Child and Adolescent Psychiatry, 42,* 507-508.

Kaplan, E., Fein, D., Kramer, J., Delis, D., & Morris, R. (2003). *Wechsler Intelligence Scale for children* (4th ed.). San Antonio: Harcourt.

Kelleher, K. J., Childs, G. E., Wasserman, R. C., McInerny, T. K., Nutting, P. A., & Gardner, W. P. (1997). Insurance status and recognition of psychosocial problems: A report from PROS and ASPN. *Archives of Pediatrics and Adolescent Medicine, 15,* 1109-1115.

King, T. M. & Glascoe, F. P. (2003). Developmental surveillance of infants and young children in pediatric primary care. *Current Opinion in Pediatrics, 15*(6), 624-629.

Knitzer, J. (2000). Early childhood mental health services: A policy and systems development perspective. In J. Shonkoff and S. Meisels (Eds.), *Handbook of early childhood intervention* (2nd ed., pp. 416-438). New York: Cambridge University Press.

Krane, P. K., van Belle, G., & Larson, E. B. (2004). Test bias in a cognitive test: differential item functioning in the CASI. *Statistics in Medicine, 23,* 241-256.

Lavigne, J. V., Arend, R., Rosenbaum. R., Binns, H. J., Christoffel, K. K., & Gibbons, R. D. (1998). Psychiatric disorders with onset in the preschool years: 1. Stability of diagnoses. *Journal of the American Academy of Child and Adolescent Psychiatry, 37,* 1246-1254.

Liew, P. G. S., Gan, T. H., & Sia, P. W. (1999). Tahap kecerdasan emosi murid-murid tahun lima kawasan Miri. *Jurnal Penyelidikan Pendidikan, Maktab Perguruan Sarawak, 4*(1), 1-13.

Linacre, J. M. (2005). *A user's guide to Winsteps Ministep Rasch-Model computer programs.* Chicago, IL: Winsteps

Ling, C. P. (1988, August). *Pre-school education in Malaysia at the crossroads: A need to understand the nature of our dilemma.* Paper presented at the Fourth National Education Convention, Shah Alam, Malaysia.

Liptak, G. (1996). The pediatrician's role in caring for the developmentally disabled child. *Pediatrics in Review, 17*(6), 203-210.

Madison, C. L., Madison, N., & Dittman, S. (1986). Special education and rehabilitation services in Malaysia: An example of a developing nation. *Rural Special Education, 7*(3).

Mallinga-Sellapan, S. (2004, September). *Early intervention program: A shared responsibility.* Paper presented at National Seminar on Special Education, Bangi, Malaysia.

Mamat, N. (2004, September). *Tahap kecerdasan emosi (EQ) kanak-kanak di tadika Hulu Bernam dan pembelajaran social emosi.* Paper presented at National Seminar on Early Childhood and Special Education, Pulau Pinang, Malaysia.

Masters, G. N. (1982). A Rasch model for partial credit scoring. *Psychometrika, 47,* 149-174.

Mat-Akib, S. Z. (2004, September). *Preschool education for children with special needs: issues and challenges*. Paper presented at Seminar on Sharing UK-Malaysia Experience in Early Childhood Care and Education, Kuala Lumpur, Malaysia.

Mathiesen, K. S., & Sanson, A. (2000). Dimensions of early childhood behavior problems: Stability and predictors of change from 18 to 30 months. *Journal of Abnormal Child Psychology, 28,* 15-31.

McLean, M. (2004). Assessment and its importance in early intervention/early childhood special education. In M. McLean, M. Wolery, & D. B. Bailey (Eds.), *Assessing infants and preschoolers with special needs*. Cambridge, UK: Pearson.

McLean, M., Wolery, M., & Bailey, D. B. (2004). *Assessing infants and preschoolers with special needs*. Cambridge, UK: Pearson.

McMillan, J. H. (2004). *Educational research: Fundamentals for the consumer*. Boston: Pearson Education.

Meisels, S., & Shonkoff, J. P (2000). Early childhood intervention: A continuing evolution. In J. P. Shonkoff and S. Meisels (Eds.), *Handbook of early childhood intervention* (2nd ed., pp. 3-31). New York: Cambridge University Press.

Mental Health Act, (2001). Akta 615, Kerajaan Persekutuan Malaysia.

Merenda, P. F. (2005). Cross-cultural adaptation of educational and psychological testing. In R. K. Hambleton, P. F. Merenda, & C. D. Spielberger (Eds.), *Adapting educational and psychological tests for cross-cultural assessment* (pp. 321-367). Mahwah, NJ: Erlbaum.

Ministry of Health. (n.d.). *Statistics.* Retrieved February 10, 2006, from http://www.moe.com.my

Mohd-Kassim, A. B. (2004, September). *Program kesihatan kanak-kanak berkeperluan khas.* Paper presented at National Seminar on Special Education, Bangi, Malaysia.

Mohd-Majzub, R. (1984). *Differences in priorities for kindergarten goals among parents, teachers, and experts in Malaysia*. Doctoral dissertation, University of Michigan, Ann Arbor.

Mubarak, A. R. (2003). Malaysia's social policies on mental health: A critical theory. *Journal of Health and Social Policy, 17*(1), 55-72.

Mubarak, A. R. (2005). Mental health concepts and program development in Malaysia. *Journal of Mental Health, 14*(2), 183-195.

National Policy on Mental Health. (2001). Kerajaan Persekutuan Malaysia.

Nelson, A. C. (2000). The neurobiological bases of early intervention. In J. P. Shonkoff and S. Meisels (Eds.), *Handbook of early childhood intervention* (2nd ed., pp. 204-299). New York: Cambridge University Press.

Nickel, R.E., & Squires, J. (2000). Developmental screening and surveillance. In R. E. Nickel & L. W. Desch (Eds.), *The physician's guide to caring for children with disabilities and chronic conditions* (pp. 15-30). Baltimore: Brookes.

Odom, S. L., & McEvoy, M. A., (1988). Integration of young children with handicaps and normally developing children. In S. L. Odom and M. B. Karnes (Eds.), *Early intervention for infants and children with handicaps* (pp. 241-267). Baltimore: Brookes.

Pang, H. Y. (2004, March). *Changing the rules for the disabled.* The Star. Retrieved November 3, 2005, from http://www.autisticsociety.org/autism-article499.html

Peng, R. (1999, August). *Good parenting ¾ fact or fantasies.* Paper presented at the 33rd Malaysia-Singapore Congress of Medicine, Kuala Lumpur, Malaysia.

Rogoff, B. (2003). *The cultural nature of human development.* New York: Oxford.

Salvia, J., & Ysseldyke, J. E. (2006). *Assessment in special and inclusive education.* Boston: Houghton-Mifflin.

Sameroff, A. J. (1995). General systems theories and developmental psychopathology. In Cicchetti, D., & Cohen, D. J. (Eds.), *Developmental psychopathology, Vol. 1. Theory and methods* (pp. 659-695). New York: Wiley.

Sameroff, A., & Chandler, R. (1975) Transactional models in early social relations. *Human Development, 18,* 65-79.

Sameroff, A. J., & Fiese, B. (2000). Models of development and developmental risks. In C. H. Zeanah (Ed.), *Handbook of infant mental health* (pp. 3-19). New York: Guilford.

Sameroff, A. J., Seifer, R., & McDonough, S. C. (2004). Contextual contributors to the assessment of infant mental health. In R. Del Carmen & A. Carter (Eds.), *Handbook of infant, toddler, and preschool mental health assessment.* New York: Oxford University Press.

Schorre, B., & Vandvik, I. (2003). Global assessment of psychosocial functioning in child and adolescent psychiatry – A review of three unidimensional scales (CGAS, GAF, GAPD). *European Child & Adolescent Psychiatry, 9,* 195-201.

Shaffer, D., Gould, M. S., Brasic, J., Ambrosini, P., Fisher, P., Bird, H., & Aluwahlia, S. (1983). A Children's Global Assessment Scale (CGAS). *Archives of General Psychiatry, 40,* 1228-1231.

Shonkoff , J., & Phillips, D. (2000). *From neurons to neighborhoods: The science of early childhood development.* Washington, DC: National Academy Press.

Shore, R. (1997). *Rethinking the brain: New insights into early development.* New York: Families and Work Institute.

Sireci, S. G. (2005). Evaluating cross-lingual test comparability using bilingual research design. In R. K. Hambleton, P. F. Merenda, & C. D. Spielberger (Eds.), *Adapting educational and psychological tests for cross-cultural assessment* (pp. 321-367). Mahwah, NJ: Erlbaum.

Sparrow, S., Balla, D., & Cicchetti, D. (1998). *Vineland social and emotional early childhood scale (SEECS).* Circle Pines, MN: American Guidance Service.

Sprague, J., & Walker, H. (2000). Early identification and intervention for youth with antisocial and violent behavior. *Exceptional Children, 66,* 367-379.

Squires, J. (1996). Parent-completed developmental questionnaire: A low-cost strategy for child-find and screening. *Infants and Young Children, 9,* 16-28.

Squires, J. K. (2000). Identifying social/emotional and behavioral problems in infants and toddlers. *Infant-Toddler Intervention, 10*(2), 107-119.

Squires, J., Bricker, D., Heo, K., & Twombly, E. (2001). Identification of social-emotional problems in young children using a parent-completed screening measure. *Early Childhood Research Quarterly, 16*(4), 405-419.

Squires, J., Bricker, D., & Twombly, E. (2002). *The ages stages questionnaires: Social emotional.* Baltimore: Brookes.

Squires, J., Bricker, D., & Twombly, E. (2004). Parent-completed screening for social emotional problems in young children: The effects of risk/disability status and gender on performance. *Infant Mental Health Journal, 25*(1), 62-73.

Squires, J., & Nickel, R. (2003). Never too soon: Identifying social-emotional problems in infants and toddlers. *Contemporary Pediatrics, March,* 117-125.

Steinhausen, H. C. (1987). Global assessment of child psychopathology. *Journal of American Child & Adolescent Psychiatry, 26,* 203-206.

Teoh, H., & Peng, R. (2001). Child mental health: Integrating Malaysian needs with international experience. In A. Haque (Ed.), *Mental health in Malaysia: Issues and concerns* (pp. 103-130). Kuala Lumpur, Malaysia: University of Malaya Press.

Teresi, J. A., Kleinman, M., & Ocepek-Welikson, K. (2000). Modern psychometric methods for detection of differential item functioning: Application to cognitive assessment measures. *Statistics in Medicine, 19*, 1651-1683.

Walker, H., Colvin, G., & Ramsey, E. (1995). *Antisocial behavior in school: Strategies and best practice.* Pacific Grove, CA: Brookes/Cole.

Walker, H.M., & Sprague, J.R. (2000). The path to school failure, delinquency, and violence: Causal factors and some potential solutions. *Intervention in School and Clinic, 35*(2), 67.

Wechsler, D. (2002). *Wechsler preschool and primary scale of intelligence* (3rd ed.). San Antonio, TX: Harcourt.

Yong, T. K. (2001). *Tightening laws to educate disabled.* The New Straits Times. Retrieved June 3, 2001, from http://adtimes.nstp.com.my/jobstory/2001/jun3.htm.

Zain, A. (2001). Mental illness and Malay culture. In A. Haque (Ed.), *Mental health in Malaysia: Issues and concerns* (pp. 197-220). Kuala Lumpur, Malaysia: University of Malaya Press.