EARLY CHILDHOOD DEVELOPMENT IN A LOW-INCOME COMMUNITY: CAREGIVER PERCEPTIONS AND CONTEXTUAL ADAPTATION OF THE PEDS DEVELOPMENTAL SCREENING TOOLS

By Mignon Botes

24047989

A thesis submitted in fulfilment of the requirements for the degree PhD in Speech-Language Pathology

In the Faculty of Humanities at the University of Pretoria

Study leaders: Prof. J. van der Linde and Prof. D. Swanepoel

Date of Submission: December 2022

© University of Pretoria

The language used in the thesis is English (U.K.). Stylistic and language variations required by the specific journals where the manuscripts of the studies were submitted, are indicated where applicable.

No part of this work may be reproduced in any form or means, electronically, mechanically, by print or otherwise without prior permission by the author.

Mignon Botes
Department of Speech-Language Pathology and Audiology
University of Pretoria
Pretoria
South Africa

mignon.botes1@gmail.com

Copyright © 2022 Pretoria University. All rights reserved

© University of Pretoria

ACKNOWLEDGEMENT:

Looking back at these past few years, I could have only completed this PhD with the support from my village! I am forever grateful for their role in this process, especially in giving me the time to complete this degree. This has been a dream come true to render this final product.

To my husband Weitz – you are my fire! The one to give light, warmth, guidance and encouragement. You are the fire in me, around me and sometimes (when much needed) under me!

To my village – Noël, Schylah (also for the editing), Ingrid, Weitz and study buddy Nicki. This was only possible because of your support with my children, and your interest in my work.

To my children – Mikal, Weitz and Eckard – Mamma is nou klaar!

To Jeannie and De Wet – thank you for reading every word on these pages! For the guidance and every comment, correction, and meeting.

Ps 23:1 "The Lord is my Shepard, I lack nothing"

The loving guidance of the Lord Jesus still amazes me. Giving me what I needed (physically, mentally, emotionally and financially) in every step in this process. You absolutely know my heart Lord, and I love you!

© University of Pretoria

TABLE OF CONTENTS

LIST OF TABLES 6
LIST OF FIGURES 7
PUBLICATION AND RESEARCH OUTPUT 8
PLAGIARISM DECLARATION 9
ETHICS STATEMENT 10
ABSTRACT 11
KEYWORDS 13
ABBREVIATIONS 14
CHAPTER 1 INTRODUCTION 15
1.1 INTRODUCTION 16
CHAPTER 2 METHODOLOGY 21
2.1 RESEARCH OBJECTIVES 22
2.2 RESEARCH CONTEXT 24
2.3 RESEARCH DESIGN 24
2.4 ETHICAL CONSIDERATIONS 24
2.5 RESEARCH PARTICIPANTS 3029
2.5.1 Sampling 3029
2.5.2 Participant selection criteria 3029
2.6 RESEARCH MATERIAL 3231
2.6.1 Focus group discussion guide: 3231
2.6.2 Community Questionnaire: 3231
2.6.3 Expert panel Questionnaire (Modified Delphi Method): 3332
2.7 DATA COLLECTION AND ANALYSIS PROCEDURES 3635
2.8 VALIDITY AND RELIABILITY OF THE METHOD 3938
CHAPTER 3 CAREGIVER VIEWS ON EARLY CHILDHOOD DEVELOPMENT, RESOURCES AND SERVICES IN A SOUTH AFRICAN COMMUNITY 4039
3.1 ABSTRACT 4140
3.2 INTRODUCTION 4140
3.3 METHOD 4342
3.3.1 Setting 4342
3.3.2 Participants 4342
3.3.3 Data collection 4443
3.4 DATA ANALYSIS AND CODING 4443

© University of Pretoria

3.5 RESULTS 4544
3.5.1 Early Childhood Development 4544
3.5.2 Services in the community 4645
3.5.3 Resource in the community 4746
3.6 DISCUSSION 4847
3.7 LIMITATIONS 5049
3.8 CONCLUSION 5049
3.9 REFERENCES: 5250
CHAPTER 4 CULTURAL AND LINGUISTIC APPLICABILITY OF THE ENGLISH PEDS TOOLS IN A LOW-INCOME COMMUNITY: A CAREGIVER PERSPECTIVE 5552
4.1 ABSTRACT: 5653
4.2 INTRODUCTION 5653
4.3 METHOD 5956
4.3.1 Setting 5956
4.3.2 Participants 5956
4.3.3 Material and apparatus 6057
4.3.4 Data collection 6057
4.3.5 Analysis of data 6158
4.4 RESULTS 6158
4.4.1 PEDS 6158
4.4.2 PEDS-DM 6259
4.5 DISCUSSION 6461
4.6 STRENGTHS AND LIMITATIONS 6663
4.7 CONCLUSION 6764
4.8 REFERENCES: 6865
4.9 SUPPLEMENTARY MATERIAL 7168
CHAPTER 5 A MULTI-PHASED CULTURAL AND CONTEXTUAL ADAPTATION OF THE PARENTS' EVALUATION OF DEVELOPMENTAL STATUS TOOLS FOR A LOW-INCOME COMMUNITY: A SOUTH AFRICAN CASE STUDY 7875
5.1 ABSTRACT: 7976
5.2 INTRODUCTION 8077
5.3 METHOD AND RESULTS 8279
5.3.1 Phase One: Community suggested adaptations 8279
5.3.2 Phase two: expert panel consensus 8683
5.3.3 Phase three: Consultation with the authors 8986
5.4 DISCUSSION 9087
5.5 STRENGTHS AND LIMITATIONS 9289
5.6 CONCLUSION 9289
5.7 REFERENCES: 9491

© University of Pretoria

5.8 SUPPLEMENTARY TABLES 9794

CHAPTER 6 SUMMARY OF RESEARCH, CLINICAL IMPLICATIONS AND CONCLUSION 112109

6.1 SUMMARY OF RESEARCH FINDINGS 113110

6.2 CLINICAL AND THEORETICAL IMPLICATIONS OF THE FINDINGS 118115

6.3 STRENGTHS AND LIMITATIONS 122119

6.3.1 Study strengths 122119

6.3.2 Study Limitations 122119

6.4 RECOMMENDATIONS FOR FUTURE RESEARCH 123120

6.5 CONCLUSION 123120

REFERENCES 125122

7.1 REFERENCES 126123

APPENDICES 130127

APPENDIX A: INFORMED CONSENT FOR PHASE A 131128

APPENDIX B: INFORMED CONSENT FOR PHASE B 135132

APPENDIX C: INFORMED CONSENT FOR PHASE C 139136

APPENDIX D: INFORMED CONSENT FOR PHASE D 143140

APPENDIX E: BIOGRAPHICAL INFORMATION QUESTIONNAIRE 148145

APPENDIX F: SELF-DEVELOPED QUESTIONNAIRE FOR PEDS TOOLS 153150

APPENDIX G: REFERRAL LETTER FOR AT RISK CHILDREN 177174

APPENDIX H: MILESTONE INFORMATION BROCHURE 179176

APPENDIX I: FOCUS GROUP DISCUSSION GUIDE FOR PHASE A 191188

APPENDIX J: FOCUS GROUP DISCUSSION GUIDE FOR PHASE D 194191

APPENDIX K: MODIFIED DELPHI METHOD QUESTIONNAIRE 1 206203

APPENDIX L: MODIFIED DELPHI METHOD QUESTIONNAIRE 2 224221

APPENDIX M: CLINIC PERMISSION FOR RESEARCH 233230

APPENDIX N: GAUTENG PERMISSION FOR RESEARCH 237234

APPENDIX O: UNIVERSITY OF PRETORIA PERMISSION FOR RESEARCH 239236

APPENDIX P: PEDS TOOLS-SA 241238

APPENDIX Q: PROOF OF SUBMISSION FOR ARTICLE 1 260257

APPENDIX R: PROOF OF SUBMISSION FOR ARTICLE 2 262259

APPENDIX S: PROOF OF SUBMISSION FOR ARTICLE 3 AND ARTICLE AS PUBLISHED IN JOURNAL 264261

© University of Pretoria

LIST OF TABLES

Table 2. 1 Summary of study 1 to 4 with proposed title, objectives, journal and phases for data collection 23
Table 2. 2 Summary of ethical consideration and application to the study 2625
Table 2. 3 Summary of the participants, sample size and selection criteria for the different phases of the study 3130
Table 2. 4 Research material and apparatus for the different phases of the study 3534
Table 2. 5 Summary of the data collection and data analysis for the different phases of the study 3736

Table 4. 1 Linguistic appropriateness of the word "concerns" in the questions of the PEDS (N=102) 6260
Table 4. 2 Distribution of questions identified as problematic on each form 6361
Table 4. 3 Distribution of questions identified as problematic across the developmental domains 6462

Table 5. 1 Demographic information of focus group participants (n=11). 8381
Table 5. 2 Participant quotes/suggestions and themes that emerged from the focus group. 8482
Table 5. 3 Examples of community participants' suggested changes in each identified theme. 8583
Table 5. 4 Details of expert panel participants 8684

Table 6. 1 Examples of an expert suggestion on a problematic item on the PEDS tools. 117115
Table 6. 2 Examples of expert suggestions amending the community suggestion. 1181165

© University of Pretoria

LIST OF FIGURES

Figure 1. 1 WHO (2016) and ITC (2017) guidelines for translation and adaptation of a test instrument 19

Figure 2. 1 Example of a question in the agree/disagree questionnaire 3433
Figure 2. 2 Example of a question in the most preferred question questionnaire 3433
Figure 2. 3 Data collection phases 3635

Figure 3. 1 Core and sub-themes in caregiver perceptions about ECD, services and resources ... 4544

Figure 4. 1 Visual representation of the PEDS tools and an example of the utility questionnaire 6159
Figure 4. 2 Steps in the adaptation of the PEDS tools for a South African low-income community 6563

Figure 5. 1 Phases in the study design 8280
Figure 5. 2 Themes identified in the focus group discussion to change questions on the PEDS tools (number of questions identified in each theme) 8583
Figure 5. 3 Steps in the Delphi method for consensus on the PEDS tools. 8886

Figure 6. 1 A Framework for cultural adaptation of a screening tool within the WHO and ITC guidelines 119117
Figure 6. 2 Summary of research results within the cultural adaptation framework. 120118

© University of Pretoria

PUBLICATION AND RESEARCH OUTPUT

The thesis is based on the following original articles:

1. Botes, M., van der Linde, J., & Swanepoel, D. Caregiver views on early childhood development, resources and services in a South African Community. Submitted to *PHCFM*
2. Botes, M., Swanepoel, D., Graham, M., & van der Linde, J. (in press). Cultural and linguistic applicability of the English PEDS tools in a low-income community: a caregiver perspective. *SAJCH.*
3. Botes, M., van der Linde, J., & Swanepoel, D. (2022). A multi-phased cultural and contextual adaptation of the Parents' Evaluation of Developmental Status tools for a low-income community: a South African case study. *Child: Care, Health and Development,* DOI: 10.111/cch.13083

Parts of this thesis have been presented at the following seminars:

Botes, M., Van der Linde, J., & Swanepoel, D. Cultural and contextual adaptation of the PEDS tools for a low-income community in South Africa. *Presentation at SpeechBase conference, Online, 17 November 2021.*

© University of Pretoria

PLAGIARISM DECLARATION

UNIVERSTIY OF PRETORIA
FACULTY OF HUMANITIES
DEPARTMENT OF SPEECH-LANGUAGE PATHOLOGY AND AUDIOLOGY

Full name: Mignon Botes
Student Number: u24047989
Degree: PhD (Speech-Language Pathology)
Title: Early childhood development in low-income communities: Parental perceptions and contextual adaptation of screening tools

I declare that this thesis is my own original work. Where secondary material is included, it has been acknowledged and referenced in accordance with university requirements.

I understand what plagiarism is and I am aware of the university policy and implications in this regard.



Signature

December 2022
Date

© University of Pretoria

ETHICS STATEMENT

The author, whose name appears on the title page of this thesis, has obtained, for the research described in this work, the applicable research ethics approval.

The author declares that she has observed the ethical standards required in terms of the University of Pretoria's Code of ethics for researchers and the Policy guidelines for responsible research.

By submitting this thesis/dissertation electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by the University of Pretoria will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.



Mignon Botes
December 2022

© University of Pretoria

ABSTRACT

Background:

Screening tools are often developed and standardised in high-income countries (HICs), then adapted and translated for lower-middle income countries (LMICs) to save costs of developing a new tool. However, adapting and translating screening tools for a low-income community (LIC) is challenging due to cultural and contextual differences and viewpoints.

Objectives:

This study aimed to describe caregivers' views on early childhood development (ECD), resources and available services in a LIC South African community. Caregiver perspectives on linguistic and cultural appropriateness of the Parents' Evaluation of Developmental Status (PEDS) and the PEDS: Developmental Milestones (DM), as a first step in the cultural adaptation of the tool, was also determined. Lastly, the PEDS tools were adapted for a LIC using a novel multi-phased cultural and contextual adaption process.

Methods:

A multi-phased mixed-method design relying on triangulation of data was employed in this study. Convenience sampling was used in phases A to C of the research. Caregivers at a clinic in Mamelodi volunteered to participate for focus group discussions and the completion of surveys. Purposive sampling was employed to form an expert panel that agreed to partake in an online questionnaire. In phase A the qualitative data was analysed using a hybrid approach of inductive and deductive analyses; qualitative data in phase C was analysed through an inductive process. Phase D involved a two-round modified Delphi method.

Results:

Core themes were identified in phase A *a priori*, and subthemes emerged using thematic analysis. The findings shed light on caregivers' knowledge needs related to ECD, the importance of developmental screening in identifying delays and disabilities, and the need for services to be extended. In phase B, the qualitative data showed that 38.2% of participants found the term "development" on question 1 on the PEDS not suitable; and 51% preferred the phrase "sometimes worry" more than the phrase "have any concerns" for questions 2-9. On the PEDS:DM 58 of the 124 questions were deemed difficult. Most questions were problematic due to cultural or linguistic differences (49 questions); and some questions too difficult for the child's age (9 questions). The expressive language developmental domain had the most challenges. In phase C the topics of the focus group explored the possible changes on the PEDS tools to make it more relevant for the community. Themes identified included to describe/elaborate and item; to change the wording; to

© University of Pretoria

change the item; to add/leave out parts; and for some items no input could be given. In phase D 12 experts in the field of ECD achieved consensus on the recommended changes on the PEDS tools, based on the community suggestions in phase C. In phase E, a draft of the PEDS tools-SA was presented to the authors of the PEDS tools for final approval. A final version of the PEDS tools-SA was created.

Conclusion:

This study used a novel method to adapt the PEDS tools for a LIC. Cultural changes were based on community views from the initial steps, making the PEDS tools-SA more contextually relevant and clinically applicable. The cultural and linguistic applicable PEDS tools-SA was developed through a high-quality adaptation, which may successfully be implemented in similar LICs in the future.

© University of Pretoria

KEYWORDS

Caregiver knowledge
Caregiver perspective
Community involvement
Cultural adaptation
Contextual adaptation
Cultural appropriateness
Developmental screening
Early childhood development
Early identification
Low-income community
Parenting
PEDS tools
Resource
South Africa

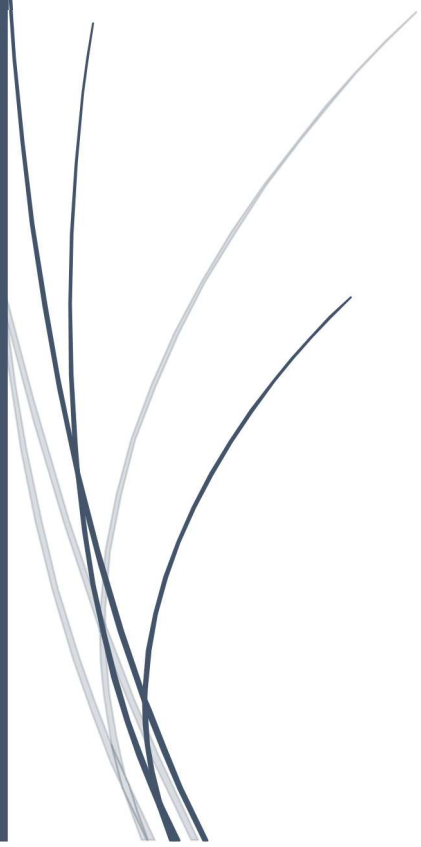
© University of Pretoria

ABBREVIATIONS

ECD	Early childhood development
HCPs	Healthcare Providers
HICs	High-income countries
ITC	International Test Commission
LIC	Low income community
LMICs	Lower-middle income countries
mHealth	mobile Health
PEDS	Parents' Evaluation of Developmental Status
PEDS: DM	Parents' Evaluation of Developmental Status: Developmental milestones
RTHB	Road to Health Booklet
WHO	World Health Organisation

© University of Pretoria

CHAPTER 1 INTRODUCTION



© University of Pretoria

Chapter aim: This chapter provides a global and local perspective on developmental delays and disabilities and the need for adequate developmental screening. The lack of valid and reliable, culturally adapted screening tools is described with a focus on South Africa. Current guidelines to culturally adapt an instrument are critically discussed. An explanation to improve early detection of developmental delays and disabilities with a reliable cultural adjustment is given.

1.1 INTRODUCTION

It is likely that more than 350 million children in low- and middle-income counties (LMICs) are at risk for developmental delays and disabilities (Global Research on Developmental Disabilities Collaborators, 2018). The highest number of these children reside in South Asia and Sub-Saharan Africa (Global Research on Developmental Disabilities Collaborators, 2018). However, it is difficult to estimate the prevalence of developmental delays and disabilities in children in South Africa, because of various definitions of disability; various methods of identifying delays and disabilities; and the fact that South Africa does not have a standardised measuring tool to identify developmental delays and disabilities (DSD, DWCPD and UNICEF, 2012). Still, estimations are that up to 35% of children under the age of 5 are at risk of developmental delays or disabilities (Slemming & Bamford, 2018). The majority of these children are likely to live in low-income communities, where around 2.5 million South African children live in severe poverty (DSD, DWCPD and UNICEF., 2012; Hall et al., 2019). This means a significant portion of South African children are born in environments that inhibit their ability to develop, and the likelihood of developmental delay is increased due to the cumulative effects of environmental and other risks.

Children with possible developmental delays and disabilities should be identified as early as possible for them and their families to receive early intervention services to support optimal outcomes (Guralnick, 2017). Early identification and intervention in the first five years of life have been demonstrated to be effective in improving overall development and general well-being; language, cognitive, motor, and socio-emotional development, as well as educational success (Hirai et al., 2018; Rousseau et al., 2021). To identify developmental concerns in a timely manner, children should be checked regularly, preferably during routine health visits (Small et al., 2019). These ongoing checks are known as developmental surveillance, which is the continuous monitoring of a child's developmental and behavioural status (Small et al., 2019). Monitoring is performed by gathering information about the child through direct observation by healthcare providers (HCPs) or using developmental screening tools (Rousseau et al., 2021; Rydz et al., 2005). In low-income communities, HCPs may include community health workers, school health nurses, and healthcare professionals like

© University of Pretoria

speech-language therapists or early childhood development practitioners (Du Toit et al., in press), that form part of the developmental HCP team.

Early identification of developmental delays and disabilities is universally supported as the primary prevention strategy. The World Health Organization (WHO) prioritised early identification over a decade ago (World Health Organization, 2005). High-income countries (HICs) such as Australia and America have endorsed early identification by HCPs with initiatives such as the "*Healthy under 5 kids'* program" in Australia and the "I" project by the American Academy of Paediatrics (Department of Health and Families & Graduate School for Health Practices, 2010; American Academy of Paediatrics, 2001). Both programmes made developmental checks mandatory during every health visit. To increase the successful identification of children with developmental delays or disabilities, the use of standardised developmental screening tools, as opposed to clinical judgement, at specific age intervals, have been recommended (Rousseau et al., 2021; Small et al., 2019). This is referred to as developmental screening (Rousseau et al., 2021). Great strides have been made in HICs, and children are identified much earlier than in the past (Lipkin et al., 2020)

However, identifying at-risk children in South Africa is still problematic. The South African Department of Health launched a programme in 2010 to expand service delivery for infants and children through the application of a national developmental screening checklist called the Road to Health Booklet (RTHB), which was updated in 2018 (Western Cape Provincial Government, 2022; Van der Linde et al., 2015). Unfortunately, early identification of delays and disabilities is still not a priority for healthcare facilities in South Africa, and fewer than 1% of public hospitals and clinics offer universal screening for developmental delays and disabilities (DSD, DWCPD and UNICEF., 2012). In addition, the previous version of the RTHB has presented significant limitations in identifying children with developmental delays or disabilities in South Africa (Van der Linde et al., 2015). This can be attributed partly to a lack of validation (Slemming & Bamford, 2018) and no clear guidelines on who children need to be referred to once identified, making the referral process inadequate (Slemming & Bamford, 2018). It has also been reported that the both the old and new RTHB have not been used optimally in public settings due to a shortage of developmental HCPs (Slemming & Bamford, 2018; Win & Mlambo, 2020) or an insufficient understanding of the RTHB by developmental HCPs (Cloete et al., 2013; Win & Mlambo, 2020).

The issue of timely early identification due to the lack of a validated and standardised developmental screening tool in South Africa has been partly addressed by recent efforts to translate and adapt

© University of Pretoria

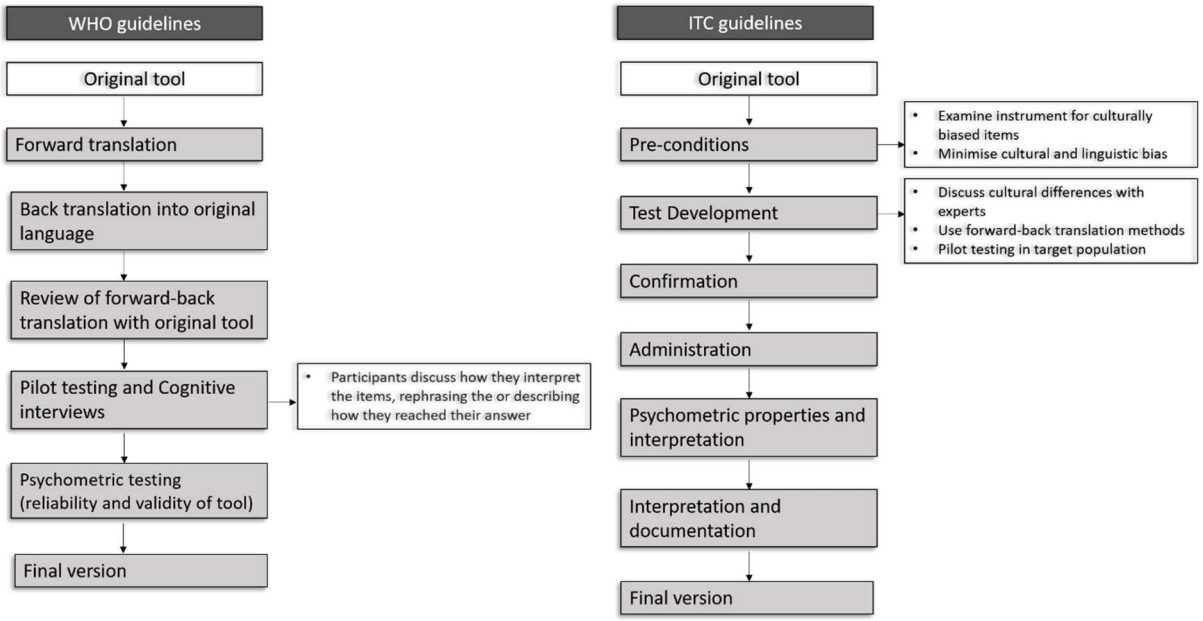
standardised developmental screening tools for specific communities (Abdoola, 2015; Bornman et al., 2010; Fyvie et al., 2016; Maleka et al., 2021; Van der Merwe et al., 2017). This is an international trend, to adapt and translate screening tools from high-income countries (HICs) for LMICs (El-Behadli et al., 2015; Rousseau et al., 2021), probably because it is more cost-effective than developing an original tool (DuBay & Watson, 2019). The most popular developmental screening tools adapted internationally are the Denver Developmental Screening Test, the Ages and Stages Questionnaire (ASQ) and the Parents Evaluation of Developmental Status (PEDS) (El-Behadli et al., 2015). For low-income communities, the PEDS tools have been recommended because they require minimum additional material and are very easy to administer (Faruk et al., 2020). In South Africa, the PEDS tools have been translated into Northern Sotho and Zulu (Fyvie et al., 2016; Maleka et al., 2021; Van der Merwe et al., 2017); and the ASQ has been translated into Afrikaans, Zulu, Sesotho, and Hindi (Abdoola, 2015; Bornman et al., 2010; Hsiao et al., 2017; Visser et al., 2016). A significant challenge in South Africa is that these translated screening tools are not available in all the official languages of South Africa, and members from minority languages, such as Xitsonga, siSwati and isiNdebele ,will not be afforded the same opportunity for linguistically appropriate screenings. Another challenge in this trend of translating tools from HICs is not providing culturally sensitive screening tools, which should include not only translation, but cultural adaptations as well (Faruk et al., 2020). The use of a culturally inappropriate screening tool can lead to unreliable results, including over or under-recognition of delays, problematic identification of delays and disabilities, and services that are introduced too late (Gladstone et al., 2008; D'Aprano et al., 2016). This was specifically seen in the Mandarin translation of the PEDS. The results of the Mandarin PEDS indicated that parents' understanding of the concept of "concern" was different across languages and cultures, and resulted in over-recognition of delays (Kiing, Low, Chan, & Neihart, 2011). A later study also translated the PEDS in Mandarin and noted that the word "concern" directly translated in Mandarin meant "do you care about?" (as in do you care about your child?) (Toh et al., 2017). Rather than directly translating, the authors replaced that word with a word meaning "a little worried" (Toh et al., 2017). The results of the newly adapted version of the Mandarin PEDS indicated an incidence of developmental delay similar to the prevalence of delays in the country (Toh et al., 2017).

The WHO (World Health Organization, 2016) and International Test Committee (ITC) (International Test Commission, 2017) published guidelines for the translation of instruments; however, the cultural adaptations of screening tools are embedded in these translation guidelines resulting in uncertain procedures for cultural adaptations of instruments. Figure 1.1 represents the steps for the translation and adaption of an instrument as outlined by the WHO (2016) and ITC (2017).

© University of Pretoria

Figure 1. 1

WHO (2016) and ITC (2017) guidelines for translation and adaptation of a test instrument



Due to the guidelines for the cultural adaptation process being ambiguous, an inconsistency in the cultural adaptation of screening tools has been noted in research studies (Rousseau et al., 2021). El-Behadli et al. (2015) found that of 63 translated developmental screening tools, only 28 (44%) were culturally adapted. The adaptations made in instruments vary from changes to account for local conditions (e.g., changing the picture of a snowman in the Afrikaans ASQ, as snow is rare in South Africa) and linguistic differences (e.g., in the Japanese Denver Developmental Screening Test the item "use plurals" was excluded because there is no distinction of singular and plural in Japanese) (El-Behadli et al., 2015). Rousseau et al. (2021) did a scoping review on the cultural adaptation of the ASQ and found that language, visual, and/or conceptual modifications were reported in 70.3% of the adapted tools. Cultural content modifications were reported in only 64.9% of adaptations reported in the systematic review (Rousseau et al., 2021). A reported concern with the cultural changes made during the adaptation process was that it is limited to minor modifications to the tool, such as changes

© University of Pretoria

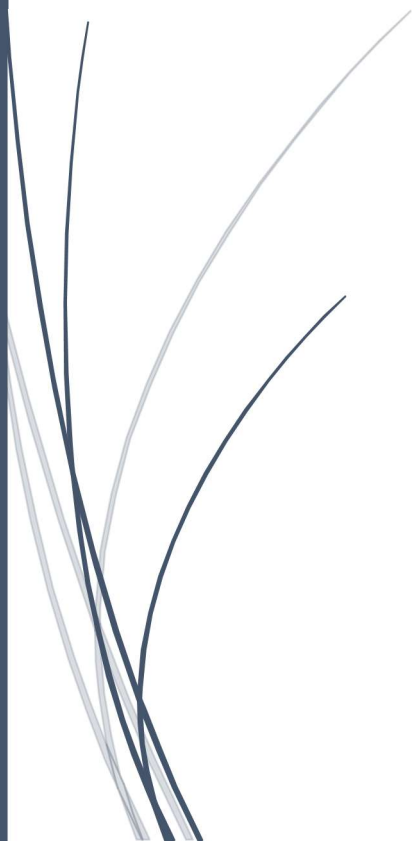
in ethnicity or measuring systems, known as process adaptations (Bernal & Domenech Rodríguez, 2012; Rousseau et al., 2021). These process adaptations do not address the targeted community's core values, competence, beliefs or norms. In order for a more culturally sensitive tool, local expression or customs, language and parental understanding have to be considered, as well as family values and traditions. Similarly, terms or concepts unfamiliar to the child or family must be amended or modified (D'Aprano et al., 2016; Gladstone et al., 2008). That means content adaptation is required to address the deeper structural changes during the adaptation process (Bernal & Domenech Rodríguez, 2012).

One way to ensure adequate process and content adaptation is to involve the target community from the initial steps of the adaptation process through to its completion. There should be a heightened sensitivity to the importance of involving local communities in designing, leading, and implementing developmental screenings and early intervention services (Halpern, 2000; Rousseau et al., 2021). For developmental screenings and interventions to be successful, the context and the perspectives of the beneficiary community should be considered (Steinberg et al., 2018). Using the perspectives of communities to adapt and design developmental screening tools can improve the outcome of these tools (Adams & Sherar, 2018). These cultural changes can ensure that test-takers interpret the items correctly for accurate developmental screenings (DuBay & Watson, 2019). Rigorous cultural adaptation, spearheaded by community input that provides both process and content adaptations, can ensure that developmental screening tools are contextually responsive and locally appropriate, increasing the likelihood of accurate early identification within a setting.

There is a pressing need for quick, reliable developmental screening tools in South Africa that can accurately identify developmental delays and disabilities expeditiously, across cultures, languages, and ethnicities. Therefore, research is required to culturally adapt a developmental screening tool for use in low-income South African communities. This study aimed to culturally adapt the PEDS tools (PEDS and PEDS: DM) for the South African low-income population. The study operationalised this by incorporating the perspectives of the caregivers who are from the community. The research question addressed is: *How should the PEDS tools be adapted for the low-income population in South Africa to be culturally appropriate, considering caregiver perception and cultural beliefs?*

© University of Pretoria

CHAPTER 2 METHODOLOGY



© University of Pretoria

Chapter aim: In this chapter an outline of the aim and objectives of the research project is given. A detailed description of the methods used in this multi-phased study is included.

2.1 RESEARCH OBJECTIVES

This research project considers caregivers' perception and cultural beliefs from a low-income South African community to adapt the PEDS tools (PEDS and PEDS: DM) for the developmental screening of delays and disabilities in these settings. Table 2.1 sets out the three research studies with titles and objectives submitted to an ISI-accredited peer-reviewed journal. The phases of data collection are also provided in the table.

© University of Pretoria

Table 2. 1

Summary of study 1 to 4 with proposed title, objectives, journal, and phases for data collection

Study	**1**	**2**	**3**
Title	Caregiver views on early childhood development, resources, and services in a South African community	Cultural and linguistic applicability of the English PEDS tools in a low-income community: a caregiver perspective	A multi-phased cultural and contextual adaptation of the Parents' Evaluation of Developmental Status tools for a low-income community: A South African case study
Research question	What are the caregiver perspectives on early childhood development, resources, and available services in a low-income community in South Africa?	What are the caregiver perspectives on the cultural and linguistic applicability of the PEDS tools for a low-income community in South Africa?	How should the PEDS tools be adapted to be a culturally and contextually relevant screening tool for the low-income population in South Africa using caregiver input?
Objectives	To explore the perspectives of caregivers from a low-income community in South Africa about early development, available resources, and services.	To discover the perspectives of caregivers from a low-income community in South Africa on the cultural and linguistic applicability of the PEDS tools.	To modify the PEDS tools to be culturally and contextually suitable for the low-income South African context by incorporating caregivers' needs, customs, beliefs, and language use.
Journal	African Journal of Primary Health Care and Family Medicine	South African Journal of Child Health	Child: Care, Health and Development
Chapter	3	4	5
Publication status	Submitted to journal Under review	In press	Published
Data collection	Phase A	Phase B	Phase C-E

© University of Pretoria

2.2 RESEARCH CONTEXT

Data was collected at the Stanza Bopape Community Health Clinic. This is a clinical, non-contrived setting in Mamelodi, in the City of Tshwane. Mamelodi is one of the largest poverty-stricken low-income populations in the City of Tshwane, with approximate 334 600 people living in the area (Statistics South Africa, 2011). This clinic was formed to provide services for the health needs of communities on the Eastern side of Mamelodi. Informal settlements on both the east and north of Tsamaya Road surround the clinic and formal houses on the south and west sides. The District Health Information System (DHIS) reported that in 2016 the clinic served a catchment of 221 136 people. The population is continuously increasing with the rapid development of informal settlements around this area (Report of the Portfolio Committee on Health on oversight visit to Gauteng Province, 2017). Immunisation and maternity health services form part of the services rendered at the clinic, and this section of the clinic was used during the sampling of participants.

2.3 RESEARCH DESIGN

A triangulation mixed-method design was followed in the overarching research project. With this design, both qualitative and quantitative data were collected simultaneously (McMillan & Schumacher, 2010; Ormrod & Leedy, 2015). This mixed-method design ensured a comprehensive set of data that is more valid. The quantitative data from the questionnaires and the qualitative data from the focus groups allow for convergence and increased credibility of the findings (McMillan & Schumacher, 2010). A modified Delphi method that incorporated the knowledge of experts in the field of early development, together with the qualitative and quantitative data was subsequently used to culturally adapt the PEDS tools for a low-income South African population.

2.4 ETHICAL CONSIDERATIONS

When researching the medical and healthcare system, the Guidelines for Good Practice in the Conduct of Clinical Trials with Human Participants in South Africa set ethical standards to adhere to (2006). These guidelines afford the people of South Africa the guarantee that the rights, safety, and well-being of all participants are protected. It also ensures that the data is reliable (Department of Health, 2006).

© University of Pretoria

All ethical considerations and principles, as set out by the Guidelines for Good Practice in the Conduct of Clinical Trials with Human Participants in South Africa (2006), as well as ethical guidelines for research in humans (University of Pretoria, 2016) are set out in Table 2.2.

© University of Pretoria

Table 2. 2

Summary of ethical consideration and application to the study

Principle	***Description***	**Application in study**
Study Rationale and Motivation	*The findings of the proposed study should be translatable into mechanisms for improving the health status of South Africans. Solutions should have the potential for implementation*	A clear rationale and motivation for the study are set out in section 2 of this research document. The study aimed to culturally adapt the PEDS tools (PEDS and PEDS: DM) for the South African low-income population for use in developmental screening to identify children at risk for developing delays or disabilities.
Study Designs	*Appropriate study designs are critical in contributing to answering scientific questions. Therefore, the study design must demonstrate a high probability for providing answers to specific research questions. Adequate supporting information and explanation on the study sample size and study population must be provided.*	The study design is set out in section 2 of this research document and is adhered to. The research questions: *How should the PEDS tools be adapted for the low-income population in South Africa to be culturally appropriate, considering parental perception and cultural beliefs?* was answered by using a triangulation mixed-method design. The quantitative and qualitative data were merged, and the main aim of this method was to ensure that the data is more comprehensive and valid. The recruitment, selection, exclusion, and inclusion of participants for research were just and fair. No person was unjustly excluded from the study, and inclusion and exclusion criteria were chosen to answer the research question. The proposed sample size was reasonable to answer the research question. The recruitment method for participants was neutral and is discussed in detail in Table 2.3 and Table 2.5 of this research document.
Investigator Competence	*The Principal Investigator's (and other investigators') competence is assessed by two major parameters: technical and humanistic.* ***Technical competence*** *which includes research competence is assessed by education, knowledge, certification, and experience such that the*	Technical: The principal investigator is a South African resident registered with the HPCSA (STA0029149), with 12 years' experience in the field of speech therapy. The needed prerequisite degrees have been obtained.

© University of Pretoria

	investigator can assume responsibility for the proper conduct of a trial, should meet all the qualifications specified by applicable regulatory requirement(s), and should provide evidence of such qualifications through an up-to-date curriculum vitae. ***Humanistic parameters*** *require compassion and empathy. This is provided by a proper clinical and research environment, encompassing good research mentoring. In all cases, the Principal Investigator for each site must be a South African-based scientist (resident in South Africa).*	ORCID ID of supervisors are as follows: Prof. J van Linde: 0000-0002-8706-6605 Prof. D. Swanepoel: 0000-0001-8313-1636 The supervisors are competent and knowledgeable in the field of the research study. They are lecturers at the Department of Speech-Language Pathology and Audiology, University of Pretoria. Humanistic: the aim was to provide a proper clinical and research environment. Appropriate research mentoring was provided.
Balance of Harm and Benefit	*A risk-benefit analysis of the study should precede the conduct of the research itself.*	There were no risks for participants in this study. The inconvenience of extra time spent at the clinical setting was the only consideration. An information letter was be given to each participant explaining what was expected of them if they chose to participate, but this information was also be given verbally. Participants had the right to withdraw at any stage during the data collection. Participants were not exposed to unusual stress, embarrassment, or loss of self-esteem. A benefit for participants was that their child, needs be, was identified as having a delay or disability. If a child was identified, a referral letter was be given to the parents. This referral letter had the details of the appropriate professional, with clear instructions on the next step in order for the child to receive the correct early intervention services.
Privacy, confidentiality, and anonymity	*Participants' right to privacy must be protected at all costs. Confidentiality is the researcher's responsibility to protect the information entrusted to researchers for research purposes from unauthorised access, use, disclosure, modification, loss or theft.*	Participants' privacy was protected by using a numerical code for the questionnaires being completed. Only the researcher knew the identity of the participant represented by the code. Only the researcher had access to the data. All questionnaires are stored for 15 years at the Department of Speech-Language Pathology and Audiology, the University of Pretoria in room 2-6 in hard copy. All computer data used the same numerical code, and no personal details were used. All electronic data was saved on an external memory device and is stored for 15

© University of Pretoria

		years at the Department of Speech-Language Pathology and Audiology, the University of Pretoria in room 2-6 Audio recordings of focus groups is stored electronically on an external memory device for 15 years at the Department of Speech-Language Pathology and Audiology, the University of Pretoria in room 2-6. Only the researcher will have access to audio recordings. Audio recordings will not be stored on a computer. A numerical number was used to identify the participants in the focus groups.
Ethical Review	*The ethical review provides an objective appraisal of the research proposal as it affects the potential participants and the general day-to-day functioning of the health system.*	Ethical clearance was obtained from the Faculty of Humanities and Health Science research ethics committee, University of Pretoria. Research approval from the Gauteng/Tshwane District Provincial Health Research Committee (PHRC) was obtained by completing the necessary forms and submitting them electronically through the website http://nhrd.hst.org.za. IRB clearance (HUM027/0819) was obtained for this study
Informed Consent	*Informed consent is an essential component of ethical research. Obtaining informed consent implies the provision of information to potential participants regarding the nature of the research procedure, scientific purpose, and alternatives to study participation.* *Participants' comprehension is addressed by laying out this information in a clear and simple style. In South Africa, this must be achieved via the use of culturally acceptable practices including the use of the participant's language of choice.* *Withdrawal from the clinical trial at any time will not result in undue clinical penalties to the participant.*	Freely given written informed consent was obtained from every participant through the use of an informed consent form. This form was available in English only. Part of the selection criteria was that participants must have a minimum education level of grade 10, ensuring that the consent given was understood. The information letter and consent slip stipulated information about the nature of the research, procedure, and scientific purpose. What was expected from participants, the duration of participation, how privacy and confidentiality were ensured, risks or benefits were also addressed. The text was in basic language and was easy to understand.
Safety Monitoring	*Safety monitoring of participants during and for defined periods after a clinical trial is an ethical requirement. This involves the prevention,*	Each parent or caregiver participating in the research received an age-appropriate brochure on milestones, development, and stimulation for development.

© University of Pretoria

	appropriate monitoring, prompt reporting and appropriate management of serious adverse events.	If a child was identified as being at risk for a developmental delay or disability, the child was referred to the appropriate professional using a referral letter with details of the appropriate professional. The study was conducted at a clinic with early intervention services, and children identified could enrol on the early intervention programmes.
Reimbursements	*Participants should not have to incur expenses to take part in the research. participants may be reimbursed for inconvenience and time spent*	No reimbursement was needed, as there were no expenses for the participants in this study. Refreshments were available for participants of the focus group discussions.
Key role players	*If community samples are used throughout the research process, researchers are encouraged to engage key role players, such as community leaders. This engagement will likely improve the quality and rigour of the research, increase the acceptability of the research and offset power differentials where these exist.*	The researcher aimed to include key role players in the focus group discussion. The clinic manager or healthcare provider at the clinic recommended key role players that adhere to the inclusion and exclusion criteria to be part of the focus group discussion. The focus group discussions included healthcare workers or other community members working with children.

© University of Pretoria

2.5 RESEARCH PARTICIPANTS

2.5.1 Sampling

For phases A to C (see section 2.6 on data collection) a purposeful sampling method was used. This is defined as a small number of persons from a larger population that is selected based on the selection criteria (McMillan & Schumacher, 2010). With this sampling method the researcher aimed at obtaining a representative sample of key stakeholders in the community and to have varied and information-rich data sources. A site selection strategy (McMillan & Schumacher, 2010) was used, where the context (as described in section 2.2) had been selected as the most appropriate site to gather the data needed. The advantage of such a sampling method was that participants could be easily accessed, participants were representatives of the community, and it was less time-consuming (McMillan & Schumacher, 2010; Ormrod & Leedy, 2015). The disadvantage of this sampling method was that the data is limited to the selected population, and generalisation is limited (McMillan & Schumacher, 2010).

In **phase D**, for the expert panel that participated in the modified Delphi Method, purposive sampling was used. This is the deliberate choice of a participant, due to the qualities the participant possesses (McMillan & Schumacher, 2010). For this study, the researcher targeted participants that were experts in the field of early childhood development who were willing to offer their insights and knowledge on early childhood development (Ormrod & Leedy, 2015).

2.5.2 Participant selection criteria

The participants, sample size, and selection criteria for the different phases are described in Table 2.3.

© University of Pretoria

Table 2. 3

Summary of the participants, sample size and selection criteria for the different phases of the study

	Phase A	**Phase B**	**Phase C**	**Phase D**
Study	1	2	3	
Participants	Parents or caregivers from the community			An expert panel in the field of early childhood development
Sample Size	9 caregivers from the community with children between the ages of 0-8 years to form one focus group.	102 caregivers of children between the ages of 0-8 years, completing questionnaires 1 to 4 (see research material).	11 caregivers from the community with children between the ages 0-8 years to form one focus group.	12 experts in the field of early childhood development. Among the experts were 2 speech therapists, 3 occupational therapists, 1 physiotherapist, 1 psychologist, 1 paediatrician, 1 remedial teacher, 1 paediatric neurologist and 2 community health nurses.
Selection criteria	Participants were 18 years and older. They were proficient in English and were a parent or caregiver of a child between 0-8 years. They had a Grade 10 minimum education level as all the questionnaires or focus group discussions were in English.			Professionals were specialists in early childhood development with a minimum of 5 years of experience. They were proficient in English.

© University of Pretoria

2.6 RESEARCH MATERIAL

2.6.1 Focus group discussion guide:

A focus group was used to explore the caregiver's knowledge and experience (Kitzinger, 1995) in Phase A and C. Focus groups are particularly sensitive to cultural variables; they can bring to light the respondent's attitude, priorities, language, and framework of understanding (Geisinger, 1994). A focus group can create a social environment where each participant's perspectives and opinions stimulate members. This did, in turn, increase the quality and richness of data (McMillan & Schumacher, 2010). For phases A and C, a focus group discussion guide was utilised that consisted of semi-structured questions (See Appendix I and J) (McMillan & Schumacher, 2010). The questions were verbalised to allow for individual responses. Questions were open-ended, but specific in their goal (McMillan & Schumacher, 2010). The discussion guide for phase A focused on caregiver perspectives regarding child development, available resources, and services. For phase D, the discussion guide focused on the changes needed on the items (identified on the PEDS) and tools that were inappropriate.

2.6.2 Community Questionnaire:

The PEDS tools are parent-administered developmental screening tools that comprise the PEDS and PEDS: DM. The PEDS was developed in 1997 by Prof. F. Glascoe for the developmental-behavioural screening and surveillance of children from birth to 8 years. The PEDS consists of 10 questions regarding the child's general development. It has five evidence-based pathways of referral (Glascoe, 1997).

Pathway A – when two or more predictive concerns about self-help, social, school, or receptive language skills are present, a child has to be referred to allied healthcare professional/s for an assessment.

Pathway B – when one predictive concern is present, a child has to be screened using a developmental screening tool.

Pathway C – parents need to be counselled when non-predictive concerns are present, and a follow-up screening is recommended.

Pathway D – when parents have difficulty communicating their concerns, a child has to be screened with a tool that elicits their skills.

Pathway E – no concerns, a child is typically developing (Glascoe, 1997).

In validation studies from the USA, results have shown the PEDS to have a sensitivity of 91-97% and specificity of 73-86% for the precision of parental concerns in detecting children at high or moderate

© University of Pretoria

developmental risk (Glascoe, 1998). The PEDS has been translated into more than 20 languages and is used worldwide (PEDS tools in other languages, n.d.).

The PEDS: DM (Parents' Evaluation of Developmental Status: Developmental Milestones) was designed by K. Brothers, Prof. F. Glascoe and N. Robertshaw in 2008. The PEDS: DM is designed for children from birth to 8 years as a milestone-focused measure and consists of 6-8 questions per visit or age range. Each item represents a different domain (fine motor, gross motor, social-emotional, self-help, expressive language, receptive language; and pre-literacy and mathematic skills for older children) (Brothers et al., 2008). If a child has one milestone not achieved for the appropriate age, the test outcome is deemed a fail (Brothers et al., 2008). The sensitivity of the PEDS: DM was consistently greater than 70% and the specificity ranged from 77 to 93% (Brother et al., 2008). The PEDS: DM takes less than 5 minutes to administer and costs around $0.02 (Brothers et al., 2008). The PEDS tools start with the PEDS, where pathway A signifies a fail, regardless of the PEDS: DM. With Pathway B to E, the PEDS: DM results determined the actual pass or fail (Van der Linde, 2015).

Parents or caregivers were asked to complete the PEDS and PEDS: DM for their child's age. A self-developed utility questionnaire was also used, asking caregivers about the ease of understanding the questions and the appropriateness of the items. Two closed-form type questions and a "comments" section were included for each item on the PEDS tools (McMillan & Schumacher, 2010). Caregivers were asked to complete the closest questionnaire to their child's age (Appendix F).

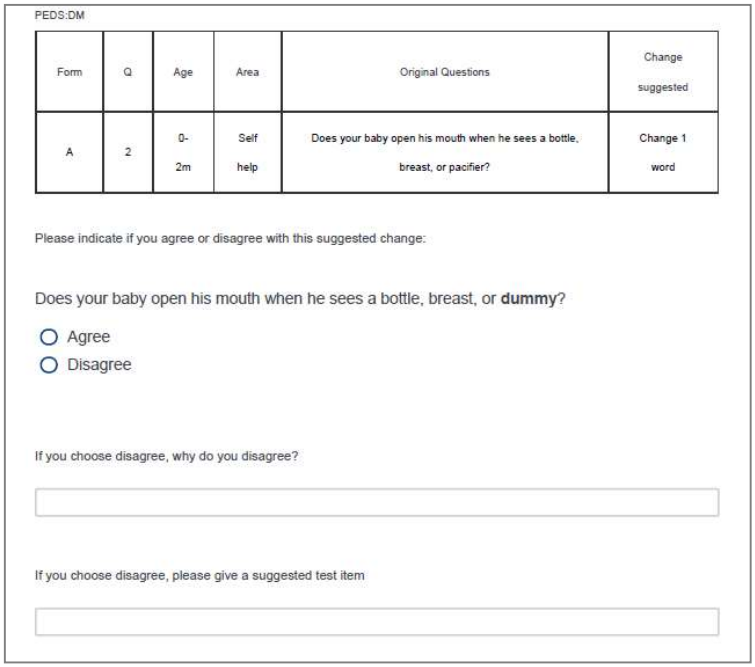
2.6.3 Expert panel Questionnaire (Modified Delphi Method):

Two self-developed survey questionnaires were used for the Delphi method. The first questionnaire consisted of a agree/disagree option with an option to give feedback. Figure 2.1 provides an example of the agree/disagree questionnaire (see Appendix K for the complete questionnaire)

© University of Pretoria

Figure 2. 1

Example of a question in the agree/disagree questionnaire



PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
A	2	0-2m	Self help	Does your baby open his mouth when he sees a bottle, breast, or pacifier?	Change 1 word

Please indicate if you agree or disagree with this suggested change:

Does your baby open his mouth when he sees a bottle, breast, or **dummy**?

- ○ Agree
- ○ Disagree

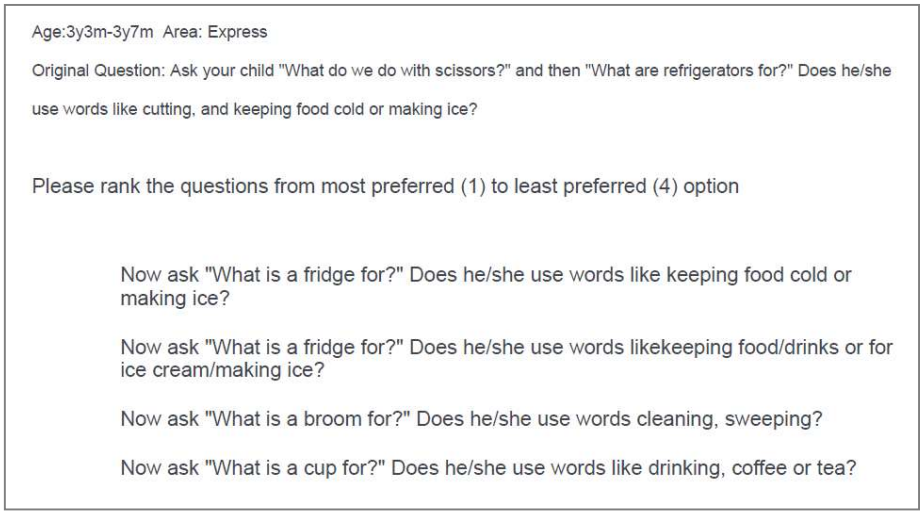
If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

The second was a ranking questionnaire, where the aim was for experts to order the list of answers from the most preferred to the least preferred option. An example of the questionnaire is provided in Figure 2.2 (see Appendix L for the full questionnaire)

Figure 2. 2

Example of a question in the most preferred question questionnaire



Age:3y3m-3y7m Area: Express

Original Question: Ask your child "What do we do with scissors?" and then "What are refrigerators for?" Does he/she use words like cutting, and keeping food cold or making ice?

Please rank the questions from most preferred (1) to least preferred (4) option

Now ask "What is a fridge for?" Does he/she use words like keeping food cold or making ice?

Now ask "What is a fridge for?" Does he/she use words likekeeping food/drinks or for ice cream/making ice?

Now ask "What is a broom for?" Does he/she use words cleaning, sweeping?

Now ask "What is a cup for?" Does he/she use words like drinking, coffee or tea?

Table 2.4 describes the different research materials and apparatus that were used for the different phases of the study.

© University of Pretoria

Table 2. 4

Research material and apparatus for the different phases of the study

Research Material	Phase	Study
Focus group discussion guide for phase A	A	1
Biographical information questionnaire	A, B, C	1,2,3
PEDS	B, C	2,3
PEDS: DM	B, C	2,3
A self-developed questionnaire that consists of the ten questions of the PEDS with a utility checklist for each question where the participants could choose the item s/he agreed with. Two closed-form type questions and a "comments" section as included for each item on the PEDS.	B	2
A self-developed utility questionnaire that consisted of 6-8 items per age category of the PEDS: DM for ages 0-8 years with a checklist for each question where the participants could choose the item s/he agreed with. Two to three closed-form type questions and a "comments" section were included for each item on the PEDS: DM for the age range 0-8 years. The questionnaire was subdivided into age groups (different forms of the PEDS: DM) Questionnaire 1: Form A – Form E Age: 0m-13m Questionnaire 2: Form F – Form J Age: 14m-25m Questionnaire 3: Form K – Form P Age: 2y,2m-4y0m Questionnaire 4: Form Q – Form V Age: 4y1m-7y11m	B	2
Focus group discussion guide that focused on the inappropriate items on the PEDS tools.	C	3
An expert panel questionnaire for round 1 of the Delphi method consisted of the item on the PEDS tools that needed adaptation with a agree/disagree option.	D	3
An expert panel questionnaire for round 2 of the Delphi method consisted of the item on the PEDS tools that needed adaptation with a ranking scale option.	D	3
An audio recorder	A, C	1,3
Referral letter for at-risk children	B	2
Information brochure on developmental milestones	B	2

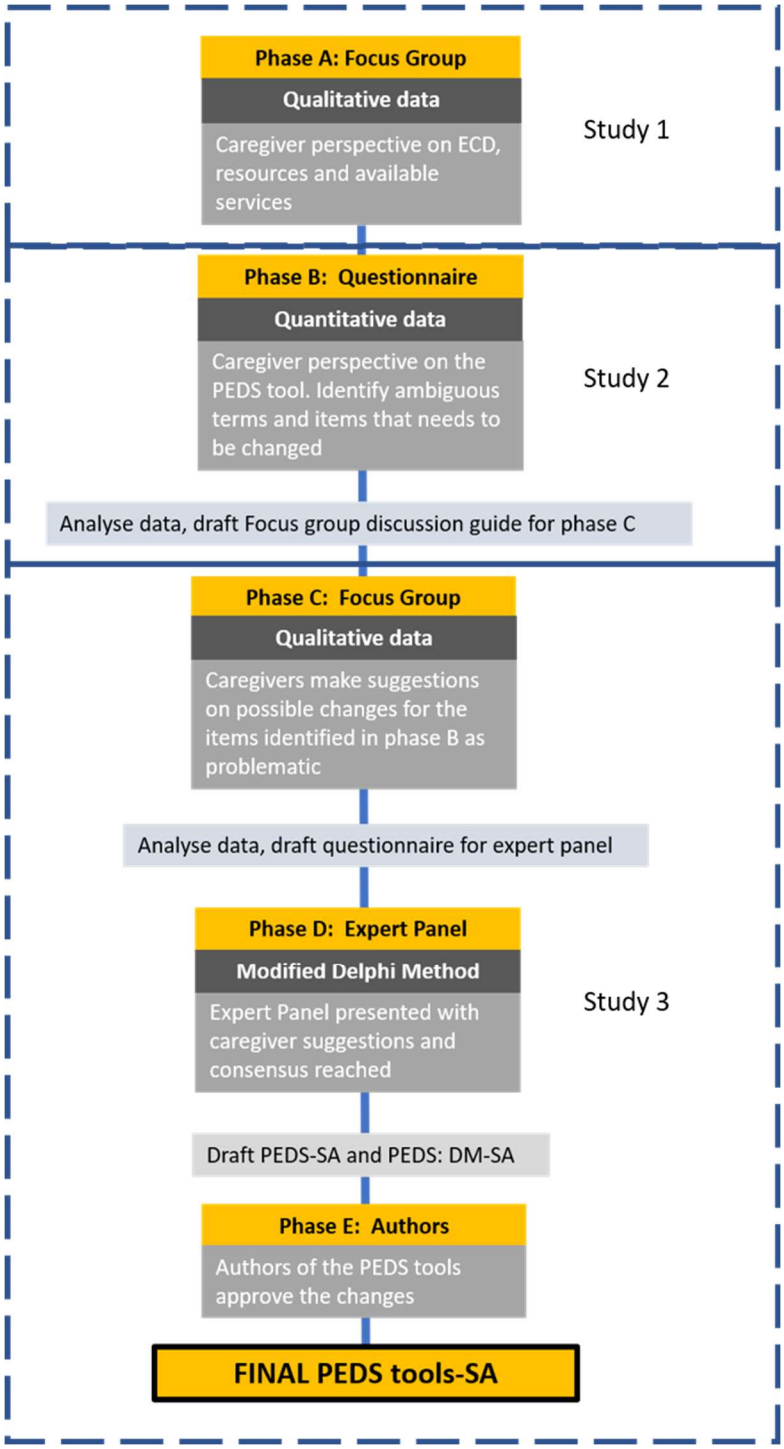
© University of Pretoria

2.7 DATA COLLECTION AND ANALYSIS PROCEDURES

A visual representation of the data collection phases and the materials used in each phase is depicted in figure 2.3.

Figure 2. 3

Data collection phases



© University of Pretoria

Data collection and data analysis for the different phases of the study are described in Table 2.5. IRB clearance (HUM027/0819) was obtained for this study prior to any data collection.

Table 2. 5

Summary of the data collection and data analysis for the different phases of the study

Phase A: Focus Group (study 1)	
Data Collection	Caregivers from the community, with children between the ages of 0-8 years, were approached by the researcher on a specific day at the clinic. Caregivers visited the clinic for medical reasons, but mainly for the immunisation of their infants and children. The researcher explained the study verbally, and an information letter was given to the participant (Appendix A). Written informed consent was obtained (Appendix A). A focus group discussion was set for the same day at a set time and place at the clinic. The focus group was held in an available private room in the clinic to ensure and maintain confidentiality. A focus group discussion guide was used to structure the discussion (Appendix I). The discussion was audio-recorded and lasted 60 minutes. The focus group discussion concentrated on caregiver perceptions regarding child development, available resources, and services within the low-income community.
Data Analysis	An experienced transcriber transcribed the data, and the first author checked the transcription against the audio recording for consistency and accuracy. According to the ethical guidelines, the transcriber retained no hard copy or digital copy of the transcript. The analysis was based on a hybrid approach of inductive and deductive reasoning that incorporated both the deductive *a priori* code templates as well as the data-driven inductive approach. *A priori* themes were identified to answer the research question: "What are the perspectives of caregivers on early childhood development, resources, and services within the community?" Identified themes included early childhood development (ECD), community services and community resources. The transcribed data was read and re-read and coded with these core themes by the first author. Using a data-driven inductive approach, a thematic analysis of the data was conducted, and sub-themes were derived.
Phase B: Questionnaire (study 2)	
Data Collection	The researcher approached caregivers from the community with children between the ages of 0-8 years at the clinic. The researcher went to the clinic on a weekly basis for 6 months until all data was collected. The clinic was mostly visited by parents or caregivers who were seeking vaccinations for their infants or children, or for medical reasons. The researcher explained the study verbally, and an information letter was given (Appendix B). Written informed consent was obtained (Appendix B). Each participant independently filled out the biographical information questionnaire (Appendix E), the PEDS, the PEDS: DM for their child's age, as well as the self-developed questionnaire about the PEDS and PEDS: DM (Appendix F). Each parent completed the questionnaire closest to their child's age (for example, if a child was 22 months, parents completed the questionnaire 2: 14m-25m). Participants received a brochure on milestones for their child's age (Appendix H). The PEDS and PEDS: DM was scored immediately after the researcher had received it back. If the PEDS or PEDS: DM resulted in Pathway A-D, that is, a child might have a delay or disability, a referral letter with the appropriate professional was given to the parents, with explicit instruction on the next step for the child to receive the appropriate early intervention services (Appendix G).

© University of Pretoria

Data Analysis	For continuous variables, means, standard deviations, and minimum and maximum values were calculated by a qualified statistician. For categorical variables, frequency distributions were created. In order to analyse the data, the PEDS tool cloud-based server data was exported to an MS Excel sheet. The data was then imported into the Statistical Package for Social Sciences (SPSS) version 26. The data was used for the next phase.
Phase C: Focus Group (study 3)	
Data Collection	The researcher made contact with caregivers of children between 0-8 years on a particular day at the clinic. Caregivers visited the clinic primarily for immunisation of their children but could also be there for any medical reason. After explaining the research verbally, an information letter was given. Written informed consent was obtained (Appendix C). A focus group discussion was set for the same day and time, in a private room at the clinic. A focus group discussion guide was used to direct the discussion (Appendix J). The discussion was audio-recorded and lasted 103 minutes. Using the data from phase B, the questions that were identified that needed adaptations, were discussed. The discussion was aimed at getting possible suggestions on what the adaptations should be.
Data Analysis	Data was transcribed by an experienced transcriber, and the first author checked the transcription against the audio recording for consistency and accuracy. No hard copy or digital copy of the transcript was retained by the transcriber. The data underwent multiple initial readings by the first author. The researchers coded and categorised the transcripts to identify themes. The analysis was predominantly deductive. The data was used for the next phase.
Phase D: Expert Panel using modified Delphi Method (study 3)	
Data Collection	15 Experts in the field of early childhood development were contacted through an English email to participate in the study. 12 Experts with a minimum of 5 years of experience consented to join in the study. A modified Delphi method, that included two rounds of surveys to achieve consensus on the changes in the PEDS tools that the community suggested, was used. The study was electronically explained in the survey, and experts also had to consent electronically in order to complete the survey (Appendix D). Experts were surveyed using Qualtrics Software. Round 1 was an agree/disagree survey, and round 2 was a ranking question option (Appendix K and L).
Data Analysis	Data from round 1 of the Delphi Method was analysed using frequency distribution analysis. In round 2 of the Delphi Method, the average ranking for each answer choice was calculated to determine which answer choice was the most preferred overall. The answer with the largest ranking was the preferred choice. The analyses from rounds one and two were incorporated to draft a version of the PEDS tools-SA.
Phase E: Original Author approval (study 3)	
Data collection	The authors of the PEDS tools were contacted via email. The study was explained to them, and the results were presented to them. The authors were asked to approve the changes suggested by the researcher to form the PEDS tools-SA
Data Analysis	The authors approved all the changes and the final version of the PEDS tools-SA was drafted.

© University of Pretoria

2.8 VALIDITY AND RELIABILITY OF THE METHOD

This study used a triangulation mixed-method design to increase the validity and reliability of the results. This study used multiple data sources to answer the research question. For the qualitative data in studies 1 and 3, focus groups were used. For the quantitative data in studies 2 and 3, self-developed questionnaires were utilised. Qualitative and quantitative data were combined to analyse equivalence, reliability, and concurrent validity (Ormrod & Leedy, 2015). Furthermore, an evidence-based research approach was followed. An evidence-based study uses prior research to inform a new study in a systematic, transparent, and efficient way to prove the research's validity, efficiency, and accessibility (Robinson et al., 2021).

© University of Pretoria

CHAPTER 3 CAREGIVER VIEWS ON EARLY CHILDHOOD DEVELOPMENT, RESOURCES AND SERVICES IN A SOUTH AFRICAN COMMUNITY

Authors: Mignon Botes, Jeannie van der Linde & De Wet Swanepoel

Journal: African Journal of Primary Health Care and Family Medicine
Date of submission: 15 October 2022
Proof of submission: Appendix Q
Publication: Under review

Keywords: early childhood development, caregiver knowledge, low-income community, parenting, resource

Highlights:

- Caregivers in low-income communities want more knowledge about early childhood development.
- Developmental screening is important to identify early developmental delays and disabilities.
- Using perspectives of caregivers to design and deliver early intervention services, can sensitise and improve the outcome of these services

© University of Pretoria

3.1 ABSTRACT

Background

Caregivers play a critical role in the early childhood development (ECD). Using the perspectives of caregivers to design and deliver early intervention services, can sensitise and improve the outcome of these services.

Aim

This study aimed to describe the views of caregivers on ECD, resources and available services in a low-income community (LIC) in South Africa.

Setting

In a clinic setting in Mamelodi, caregivers of children between the ages of 0 to 8 years were recruited using convenience sampling for a focus group discussion.

Method and results

Data was analysed using a hybrid approach of inductive and deductive analyses. Core themes were identified *a priori*, and subthemes emerged using thematic analysis. Under the core theme 'ECD', 'knowledge of caregivers regarding ECD', 'the role of the caregiver in ECD' and 'support for the caregiver in ECD' were identified. The core theme 'services in the community' include subthemes of 'role of the service provider', 'mismatch between need and services' and 'caregiver knowledge about service providers'. The 'resources in the community' core theme included 'utilisation of resources', 'school as an important resource in the community' and 'caregiver recommendations to improve resources'.

Conclusion

Findings highlight the knowledge needs of caregivers about ECD, the value of developmental screening to identify delays and disabilities; the utilisation of available resources, and the need to extend services.

Contribution

The study is one of a few qualitative studies that addressed a gap in the literature by exploring the opinions of a LIC to better understand their views within the community.

3.2 INTRODUCTION

Caregivers play a critical role in the early childhood development (ECD) of their children (Kok et al. 2015). Knowledge that caregivers have about processes of child development, developmental norms and milestones, and awareness of parenting skills influences how caregivers understand their children's behaviour and how they interact with them (Huang et al.

© University of Pretoria

2005). Knowledgeable caregivers practise positive parenting and provide nurturing care as they are more sensitive to their children's health, nutritional, emotional, and developmental needs (Gould & Ward 2015). These interactions support their children's social and cognitive development (Gould & Ward 2015).

On the contrary, caregivers who have limited developmental literacy, are prone not to interact effectively with their children as they underestimate their children's abilities (Huang et al. 2005). Mothers with less than 12 years of education are 4 to 15 times more likely to have a child with mild cognitive impairment (Chapman, Scott & Mason 2002). Age-appropriate ECD outcomes are also less likely if children are born in low-income communities. An estimated 219 million (39%) children younger than 5 years (under-5s) are at risk of developmental delays and disabilities in low-income communities (Black et al. 2017). Roughly 60% of South African pupils that start grade 1 will eventually drop out rather than complete the 12th Grade, where the highest number of school drop-outs are seen in the low-income communities (ed. Statistics South Africa 2017). It is estimated that up to 65% of children under the age of six live in a household below the upper poverty line, and 2.5 million young children live below the food poverty line (Hall et al. 2019). That means that the largest proportion of South African children are born into environments with less educated caregivers living in poverty. This decreases their likelihood to fulfil their developmental potential and increases the risk of developmental delay due to the cumulative effect of these risks.

A recognised strategy to improve ECD is to advance developmental literacy in caregivers (Jeyaseelan & Sawyer 2017). Programmes such as the Triple P-Positive Parenting Program, Webster-Stratton's Incredible Years Parent Training Program, and Strengthening Families Program have reported positive advances in caregiver and child (Butler et al. 2020). Increased developmental literacy can decrease the damaging consequences of risk factors on brain development, especially during the early years (Black et al. 2017). Another strategy to improve ECD is through developmental screening by healthcare professionals (HCPs) during mandatory health visits (Macy 2012). Studies have demonstrated that caregivers feel that developmental screening help them to understand their child's current development and help them to anticipate upcoming developmental milestones (Partain et al. 2019). Early identification, through screening, is the entry point to early intervention, with which the aim is to reduce or eliminate developmental delays as early as possible (Macy 2012).

© University of Pretoria

There is a vast need in South Africa for sustainable programmes that can support the ECD of children. Yet, limited programmes to increase developmental literacy are available (Hall et al. 2019); developmental screenings are lacking, and early intervention services are limited (Storbeck & Moodley 2011). There should be a heightened sensitivity to the importance of involving local communities in designing, leading and implementing sustainable interventions (Halpern 2000). For any strategy or intervention to be successful, the context and the perspectives of the beneficiary community should be considered (Steinberg et al. 2018). Using the perspectives of communities to design and deliver intervention services can improve the outcome of these services (Adams & Sherar 2018). Perspectives of caregivers in a low-income community may inform the implementation of services such as developmental screenings or developmental literacy programmes; however, limited qualitative research has been done on the perspectives of caregivers about ECD, services and resources in South Africa.

This study, therefore, aimed to determine the views of caregivers on ECD, resources and available services in a low-income community in South Africa.

3.3 METHOD

IRB clearance (HUM027/0819) was obtained for this study. Signed consent was obtained from all participants to partake in the study

3.3.1 Setting

This study was conducted in a clinic setting in Mamelodi, South Africa. Mamelodi is one of the largest poverty-stricken low-income populations in the Tshwane Area in South Africa, with approximately 334 600 people living in the area. The District Health Information System noted that in 2016 the clinic served a catchment of 221 136 people. The population is increasing with the rapid development of informal settlements around the area.

3.3.2 Participants

Caregivers of children between the ages of 0 to 8 years, who were verbally competent in English, were recruited employing convenience sampling. Nine participants were recruited, of which 8 were female and 1 was male. Six of the nine participants were the primary caregivers, and three were secondary caregivers. The researcher explained the study to a group of caregivers, and they were asked to participate in a focus group discussion.

© University of Pretoria

3.3.3 Data collection

A focus group was chosen as the primary mode of data collection to obtain insight from the community and explore the participant's knowledge and experience. The focus group was aimed at examining caregivers' perceptions regarding early childhood development, services and resources in the clinic and community. The focus group, conducted in English, was held in a private room in the clinic. The conversation was recorded in audio format to ensure accurate orthographic transcription. A focus group discussion guide, including major questions and topics (*What do you understand about early childhood development?*), along with probes (*Would you give an example of your child's development?; Can you think what else development of a child means you to?*) was used. The discussion was approximately 60 minutes, and participants were provided with refreshments. During the development, analysis and interpretation of the data, the researcher engaged in reflexivity to reduce bias.

3.4 DATA ANALYSIS AND CODING

The data was transcribed by a professional transcriber and verified by the first author against the audio recording for consistency and accuracy. No digital or hard copy of the transcript was retained by the transcriber. A hybrid approach of inductive and deductive analyses was used, which incorporates both the deductive, *a priori* template of codes and the data-driven inductive approach. The authors identified the deductive a priori themes to answer the research question: what are the perspectives of caregivers on early childhood development, resources, and services with the community? Multiple researchers were involved in data coding. The transcript was read by the first author and passages were coded with the major themes: early childhood development (ECD), services in the community and resources in the community. These passages were grouped together. The second and third author independently read and coded the data, and only passages that were consistent were included. A thematic analysis of the data followed using the data-driven inductive approach. When a theme or thread was identified, it was colour coded that identified it with other items that belonged with that thread. All the passages with the same colour code were grouped together. The rater reread the passages and came up with a word or phrase to describe the common characteristics or those passages. Inter-rater reliability was ensured by having the second and third author, that are specialists early childhood development, independently read and code the data. The subthemes that were the same were included.

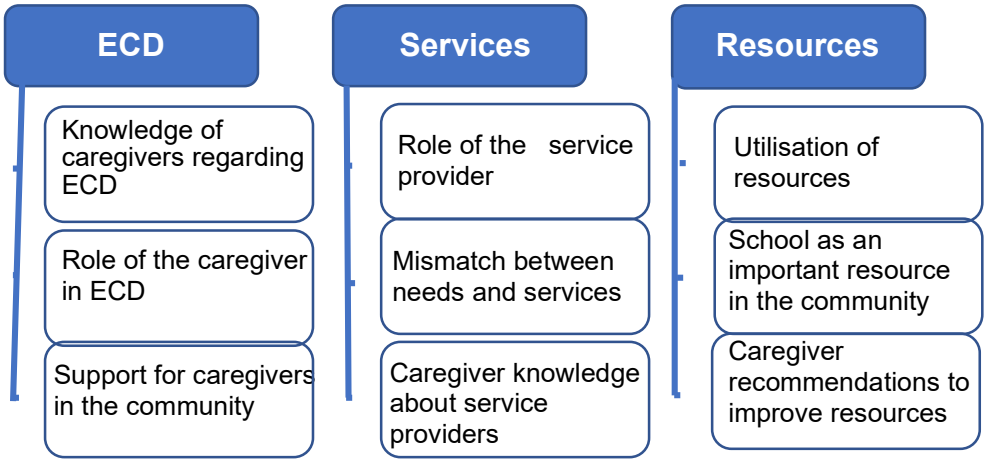
© University of Pretoria

3.5 RESULTS

The core themes and sub-themes are schematically represented in Figure 3.1.

Figure 3. 1

Core and sub-themes in caregiver perceptions about ECD, services and resources



3.5.1 Early Childhood Development

Caregiver knowledge of ECD

Participants struggled to formulate a definition of ECD and used short phrases or words to describe what they understood about ECD. As a group, all the domains of ECD could be identified using their unique interpretation of what development meant to them. However, not one participant could identify all the domains or give a full definition of ECD. Most participants defined ECD as *growing up.*

Participants could not give specific information about age-appropriate developmental milestones and the assumption that *you just know* what a child should do indicated that caregivers rely on their intuition when it comes to development and may be unaware of age-specific milestones. This may also imply that caregivers do not have the knowledge to identify a possible developmental delay if they are unaware of age-specific milestones. For example, on female caregiver said,

> …like you know already…maybe at nine months or ten months you know already they must know the baby must start moving… crawling…

© University of Pretoria

Participants had an understanding of what could be done at home to stimulate ECD. Activities such as singing, playing with toys, playing games, especially ball games, reading and running were identified

Role of the caregiver in ECD

All participants felt that the caregivers play an active role in ECD. They indicated that it is their role to help the child to develop by working with the child at home and assessing development. They noted that it was not only during early childhood years but extended into school-aged years where they must ensure that the child is progressing at school; they must especially help with homework every day and assess the child's progress. All participants revealed that they had enough time during the day to fulfil this role. One female secondary caregiver explained,

> You play a big role. Every day you see her…at such a time the baby must do this…and you see already…You must assess your child every day…when he comes from school, check the books see how he's doing at school…so [you] must assess every day.

Support for caregivers in the community

Caregivers felt that the community, especially other caregivers do not share information or knowledge about ECD. There are no community support groups for new mothers and most participants felt that the clinic was their only support in ECD. One female caregiver described it as,

> We only focus to the clinic and hospitals, the community everyone is for himself…

3.5.2 Services in the community

Role of the service provider

All participants recognised the role of the service provider (nurses, HCPs or doctors) to assess and identify developmental delays. Caregivers also indicated that the service providers must educate the caregivers in developmental milestones and what they should expect in the next phase of development. Participants also strongly agreed that both the health and development of the child is equally important and should be treated equally during healthcare visits.

Mismatch between needs and services

© University of Pretoria

All participants expressed a need for HCPs to do a developmental screening during each health visit. HCPs only do developmental screenings if caregivers communicate their concerns about their child's development. However, as noted previously, caregivers are unsure what typical ECD is and how to effectively screen for developmental delays. A female caregiver said,

> …I don't know if the child has a problem, so if they check they will…see…they find it before that thing becomes a big problem…they don't [check the development]…unless if we ask them some questions. Maybe we are concerned about my baby then I ask the health worker like maybe her eyes or her ears, or nose or something is not working, then it's when you can…[get checked]

Caregiver knowledge about service providers

Participants were asked to identify the role of healthcare professionals such as the paediatrician, occupational therapist, speech therapist, physiotherapist, dietician, and audiologist. All participants could identify the role of the paediatrician to *check the health of the baby,* and the role of the dietician to *help with the eating and weight*. Few participants had heard about an occupational therapist and speech therapist but could not identify their roles. Not one of the participants had heard about a physiotherapist or audiologist.

3.5.3 Resource in the community

Utilisation of resources

Some participants mentioned that free pamphlets were available in the clinic. Few pamphlets were about the development of your child, but not all participants were aware of this resource Participants also mentioned that books on ECD were available at local supermarkets. All participants indicated that they had some form of resources regarding ECD. Only one participant had the Road to Health Booklet; other participants had an immunisation card. Participants were unaware that the Road to Health Booklet exists, that it is free or that it should be used during check-ups.

School as an important resource in the community

All participants indicated that their children had never received a hearing or vision screenings at the clinic. However, participants with school-going children, from the age of 6 and up, had

© University of Pretoria

all mentioned hearing and vision screenings at the school. A female secondary caregiver explained,

> They go to the school…they check. Then [the school] give you a form to fill it in if you are going to get your child checked (for hearing and visual screening)

Generally, the teachers at the school are the first persons to identify a developmental delay. All the participants' children, however, only started formal schooling the year they turned 6.

Caregiver recommendations to improve resources

Participants indicated that they would be willing to fill in a developmental checklist if they received training in it. These screening checklists should be available at the clinic. Participants identified a mobile or travelling information centre as a resource within the community because some participants have to travel far to the clinic. Caregivers also mentioned that home visits would be beneficial to help them with ECD of their child. A female caregiver said,

> …maybe the health workers…can organise some mobile information…or if there is a baby in the home, they come in then they check how's the baby doing…the ears are well, the eyes, the bones, they growing, they playing, they eating… everything…

3.6 DISCUSSION

The first major theme, ECD, highlights need that caregivers said they had with regards to ECD. There is a direct association between caregiver developmental literacy and positive childhood developmental outcomes. A previous study of a low-income community in South Africa indicated that caregivers had inadequate knowledge about almost all developmental areas (Meintjes & van Belkum 2013), but improvements in parental supervision, positive parenting and social support was reported when parents received instruction in these areas (Hall et al. 2019; Bartlett, Guzman, & Ramos-Olazagasti 2018).). The World Health Organisation (WHO) emphasises the need for policy and program initiatives to expand parenting knowledge (World Health Organization 2009). In South Africa, education programmes are not regularly available, and such programmes are particularly uncommon in low-income communities, where the need is the greatest (Hall et al. 2019). Research should explore developmental literacy programmes in South Africa and the effectiveness of these programmes.

© University of Pretoria

The second major theme, services within the community, reflects the lack of services within the low-income community. Participants viewed the healthcare provider as primarily responsible for doing developmental screenings and educating caregivers in their child's development. A study in a low-income community in South Africa also found that caregivers viewed the role of the HCPs in the same way (Meintjes & van Belkum 2013). Developmental screenings are necessary for the early identification of developmental delays and disabilities (Macy 2012; Lipkin et al. 2020). HCPs should do these developmental screenings during every routine healthcare visit, such as immunisations visits. However, participants in the study agreed that developmental screening is still infrequently practised. HCPs typically do not administer developmental screenings, especially in low-income communities (Rydz et al. 2005; Lipkin et al. 2020.) Barriers include limited time and resources (Partain et al. 2019), health and not It may also be that HCPs still focus primarily on health and not on the development or early developmental delays (Macy 2012). Inadequate training on screening and uncertainty about the value of early identification are also reasons for infrequent screening by HCPs (Scherzer et al. 2012). In South Africa, an unsupportive infrastructure, in terms of insufficient staffing, lack of administrative processes and applicable policies, is another barrier towards the adequate implementation of developmental screenings. Further research is needed on the barriers that HCPs in South Africa experience to implement frequent, culturally appropriate screenings at each healthcare visit.

Developmental screenings can help to increase parental knowledge about ECD (Nelson et al. 2011; Partain et al. 2019). A study noted that caregivers felt that it was important for HCPs to educate them in the outcome of the screening tool, provide information about development and expectant milestones; and refer them to appropriate early intervention services (Partain et al. 2019). In another study, caregivers found the screening process to be an opportunity to express their concerns, to learn and to engage in a conversation with HCPs (Nelson et al. 2011).

The third major theme, resources within the community suggests that available resources are not utilised but also that the community seeks more resources. Participants expressed a need for resources that are easily accessible, like a mobile clinic. Caregivers from low-income communities internationally face the same problem: access to clinics or services is limited due to financial or travel constraints (Partain et al. 2019). To address these issues, research in the use of mobile phones for healthcare programmes (mHealth) to assist people living in low-income communities has shown great potential (Chib, van Velthoven & Car 2015). In South Africa, a mHealth programme MomConnect, is an initiative that gives pregnant women

© University of Pretoria

information through SMS. The programme has reached over 1.5 million pregnant women and has resulted in advances in the quality of health services for pregnant women (Barron et al. 2016). Other research on the effectiveness of mHealth in the areas of developmental literacy programs (Brown et al. 2020), developmental screening (Maleka et al. 2016) and hearing screening (Hussein et al. 2016) has shown that mHealth can be successful and needs further expansion.

3.7 LIMITATIONS

The participants represent a small sample from a broader community. While the participants display much of the community's diversity, the small sample size, and limitations of participants to speak English limited the generalisability of the results. Seeing as the researcher is from a different ethnic group, the researcher's bias, values, and context might have shaped the narrative considerably. Measures, such as creating a thorough research plan and following the plan, data being reviewed by multiple people and maintaining detailed research records, were put in place to limit the influence of research bias.

3.8 CONCLUSION

The study is one of a few qualitative studies that addressed a gap in the literature by exploring the opinions of a low-income community in South Africa to better understand their views on ECD, services, and resources within the community. The findings highlight the importance of caregivers' knowledge about ECD, the value of developmental screening to guide caregivers in their role and identify developmental delays and disabilities, and the utilisation of available resources or the need to extend resources. These findings can inform future studies in designing or implementing interventions for this specific low-income community. The role that culture plays in the perceptions of caregivers should be explored in future studies. Overall, caregivers felt that they have a significant role in the development of their children; that developmental screenings are important – for both identification of developmental delays and disabilities and educating parents in development; and that there is a need for more resources that are easily accessible. Expanding caregiver developmental literacy is vital to enhance children's development. This can be done by implementing parenting programmes that will support parents in the setting and educate caregivers during mandatory developmental screenings at healthcare visits. mHealth resources should be explored as a viable platform to enhance

© University of Pretoria

developmental literacy and ensure the early identification of developmental delays and disabilities.

© University of Pretoria

3.9 REFERENCES:

Adams, E.J. & Sherar, L.B., 2018, 'Community perceptions of the implementation and impact of an intervention to improve the neighbourhood physical environment to promote walking for transport: a qualitative study', *BMC Public Health*, 18(1), 714.

Bartlett J. D., Guzman L., Ramos-Olazagasti M. A., 2018, Parenting knowledge among first-time parents of young children. Bethesda, *MD: Child Trends*. Retrieved from https://www.childtrends.org/wp-content/uploads/2018/07/ParentingKnowledge_ChildTrends_July2018.pdf.

Barron, P., Pillay, Y., Fernandes, A., Sebidi, J. & Allen, R., 2016, 'The MomConnect mHealth initiative in South Africa: Early impact on the supply side of MCH services', *Journal of Public Health Policy*, 37, 201–212.

Black, M.M., Walker, S.P., Fernald, L.C.H., Andersen, C.T., DiGirolamo, A.M., Lu, C., McCoy, D.C., Fink, G., Shawar, Y.R., Shiffman, J., Devercelli, A.E., Wodon, Q.T., Vargas-Barón, E. & Grantham-McGregor, S., 2017, 'Early childhood development coming of age: science through the life course', *The Lancet*, 389(10064), 77–90.

Brown, C., Eccles, R., Graham, M. & Linde, J. van der, 2020, 'The effect of mHealth and conventional awareness campaigns on caregivers' developmental literacy', *Early Child Development and Care*.

Butler, J., Gregg, L., Calam, R. & Wittkowski, A., 2020, 'Parents' Perceptions and Experiences of Parenting Programmes: A Systematic Review and Metasynthesis of the Qualitative Literature', *Clinical Child and Family Psychology Review*, 23(2), 176–204.

Chapman, D.A., Scott, K.G. & Mason, C.A., 2002, 'Early Risk Factors for Mental Retardation: Role of Maternal Age and Maternal Education', *American journal on mental retardation*, 107(1), 14.

Chib, A., Velthoven, M.H. van & Car, J., 2015, 'mHealth Adoption in Low-Resource Environments: A Review of the Use of Mobile Healthcare in Developing Countries', *Journal of Health Communication*, 20(1), 4–34.

Gould, C. & Ward, C.L., 2015, 'Positive parenting in South Africa', *Institute for Security Studies.*, (Policy Brief 77), 8.

Hall, K., Sambu, W., Almeleh, C., Mabaso, K., Giese, S. & Proudlock, P., 2019, *South African Early Childhood Review*, Children's Institute, University of Cape Town and Ilifa Labantwana, Cape Town.

Halpern, R., 2000, 'Early childhood intervention for low-income children and families', in J.P. Shonkoff & S.J. Meisels (eds.), *Handbook of Early Intervention*, 2nd edn., Cambridge University Press, New York.

Huang, K.-Y., O'Brien Caughy, M., Genevro, J.L. & Miller, T.L., 2005, 'Maternal knowledge of child development and quality of parenting among White, African-American and Hispanic mothers', *Journal of Applied Developmental Psychology*, 26(2), 149–170.

© University of Pretoria

Hussein, Y.S., Swanepoel, D.W., Biagio de Jager, L., Myburgh, H.C., Eikelboom, R.H. & Hugo, J., 2016, 'Smartphone hearing screening in mHealth assisted community-based primary care', *Journal of Telemedicine and Telecare*, 22(7), 405–412.

Jeyaseelan, D.C. & Sawyer, M.G., 2017, 'Developmental literacy: A universal intervention to help children with developmental disorders', *Journal of Paediatrics and Child Health*, 53(2), 101–104.

Kok, R., Thijssen, S., Bakermans-Kranenburg, M.J., Jaddoe, V.W.V., Verhulst, F.C., White, T., IJzendoorn, M.H. van & Tiemeier, H., 2015, 'Normal Variation in Early Parental Sensitivity Predicts Child Structural Brain Development', *Journal of the American Academy of Child & Adolescent Psychiatry*, 54(10), 824-831.e1.

Lipkin PH, Macias MM; Council on Children With Disabilities, Section on Developmental and Behavioral Pediatrics, 2020, Promoting optimal development: identifying infants and young children with developmental disorders through developmental surveillance and screening. *Pediatric*s.; 145:e20193449. doi: 10.1542/peds.2019-3449

Macy, M., 2012, 'The Evidence Behind Developmental Screening Instruments', *Infants & Young Children*, 25(1), 19–61.

Maleka, B.K., Van Der Linde, J., Glascoe, F.P. & Swanepoel, D.W., 2016, 'Developmental Screening—Evaluation of an m-Health Version of the Parents Evaluation Developmental Status Tools', *Telemedicine and e-Health*, 22(12), 1013–1018.

Meintjes, J.S. & Belkum, C. van, 2013, 'Caregivers' knowledge regarding early childhood development in Soshanguwe, South Africa.', *Africa Journal of Nursing and Midwifery*, 15(2).

Nelson, B.B., Chung, P.J., DuPlessis, H.M., Flores, L., Ryan, G.W. & Kataoka, S.H., 2011, 'Strengthening Families of Children with Developmental Concerns: Parent Perceptions of Developmental Screening and Services in Head Start', *Ethnicity & disease*, 21(3 0 1), S1-89–93.

Partain, P.I., Kumbamu, A., Asiedu, G.B., Cristiani, V., Deling, M., Weis, C. & Lynch, B., 2019, 'Evaluation of Community Programs for Early Childhood Development: Parental Perspectives and Recommendations', *Maternal and Child Health Journal*, 23(1), 120–130.

Rydz, D., Shevell, M.I., Majnemer, A. & Oskoui, M., 2005, 'Topical Review: Developmental Screening', *Journal of Child Neurology*, 20(1), 4–21.

Scherzer, A., Chhagan, M., Kauchali, S. & Susser, E., 2012, 'Global perspective on early diagnosis and intervention for children with developmental delays and disabilities', *Developmental medicine and child neurology*, 54(12), 10.1111/j.1469-8749.2012.04348.x.

Statistics South Africa (ed.), 2017, *Educational enrolment and achievement, 2016*, Report., vol. no. 92-01-03, Statistics South Africa, Pretoria.

Steinberg, J.R., Bruce, J.S., Marin-Nevarez, P., Phan, K., Merrell, S.B. & Chamberlain, L.J., 2018, 'Early Childhood Learning and the Pediatrician: A Qualitative Study Among Diverse, Low-Income Caregivers', *Journal of Developmental & Behavioral Pediatrics*, 39(5), 376–386.

© University of Pretoria

Storbeck, C. & Moodley, S., 2011, 'ECD policies in South Africa – What about children with disabilities?', *Journal of African Studies and Development*, 3, 1–8.

World Health Organization, 2009, Preventing violence through the development of safe, stable and nurturing relationships between children and their parents and caregivers, World Health Organization

© University of Pretoria

CHAPTER 4 CULTURAL AND LINGUISTIC APPLICABILITY OF THE ENGLISH PEDS TOOLS IN A LOW-INCOME COMMUNITY: A CAREGIVER PERSPECTIVE

Authors: Mignon Botes; De Wet Swanepoel [a]; Marien Graham [b] and Jeannie van der Linde [a]

Journal: South African Journal of Child Health
Date of submission: 20 October 2022
Proof of submission: Appendix R
Publication: In press

Keywords: Cultural adaptation, developmental screening, caregiver perspective, early identification, cultural appropriateness, PEDS tools

Highlights:

- Contextual adaptation of developmental screening instruments must consider caregiver perspectives on linguistic and cultural appropriateness
- Community steered adaptation of developmental screening tools can lead to cultural appropriate adaptation.
- Community involvement can ensure cultural and contextual applicability of a developmental screening tools
- Rigour in cultural adaptation methods of screening tools should be considered for future studies

© University of Pretoria

4.1 ABSTRACT:

Background:

Regular developmental surveillance using structured developmental screening tools is a proven way to effectively identify developmental delays and disabilities. Most screening tools are developed and standardized in high-income countries and then adapted and translated for low- and middle-income countries. However, cultural differences and viewpoints make it challenging to translate and adapt developmental screening tools for low-income communities.

Objectives:

This study aimed to determine the caregiver perspective on linguistic and cultural appropriateness of the Parents' Evaluation of Developmental Status (PEDS) and the PEDS: Developmental Milestones (DM) as a first step in the adaptation process for low-income communities in South Africa.

Method:

One hundred and two participants were selected using convenience sampling at an immunization clinic. This study used a survey research design. Quantitative data were analysed using descriptive statistics; qualitative feedback on the survey was analysed using a data-driven inductive methodology.

Results:

On the PEDS, 38.2% of participants indicated the term "development" on question 1 was not suitable; and 51% preferred the phrase "sometimes worry" more than the phrase "have any concerns" for questions 2-9. On the PEDS:DM 58 of the 124 questions were deemed difficult. Most questions were problematic due to cultural or linguistic differences (49 questions); and 9 questions were too difficult for the child's age. The expressive language developmental domain had the most challenges.

Conclusion:

This study relied on robust community participation, enabling community-led adaptation of the PEDS tools. Items on the tools were viewed solely from a community perspective, empowering the community to be "experts" in this process, ensuring greater contextual relevance and applicability of the tools, transferable to similar low-income communities.

4.2 INTRODUCTION

Early identification of developmental delays or disabilities in children through developmental surveillance is often the entry point to early intervention services (Rydz et al., 2005). With early intervention, the impact of developmental delays and disabilities on children and families

© University of Pretoria

can be reduced (Guralnick, 2017). Developmental surveillance also allows health care workers to continuously monitor a child's developmental and behavioural status (Rydz et al., 2005). Regular developmental surveillance, during health visits using structured developmental screening tools, is a successful way to identify developmental delays and disabilities in a timely manner (Guevara et al., 2013). Developmental surveillance is crucial in low-and middle-income countries (LMICs), where children are at increased risk of developmental delays with lifelong consequences (Rydz et al., 2005).The adverse effects of developmental delays and disabilities for children include failure at school, an increased risk of leaving school without graduating, and a higher risk of not attending school (Engle & Black, 2008).These children are prone to be unemployed or generate low income, have high fertility statistics, are unable to provide adequate care for their children and therefore continuing the circle of poverty (Grantham-McGregor et al., 2007). It is estimated that more than 350 million children in LMICs are at risk for developmental delays and disabilities, with the majority residing in South Asia and sub-Saharan Africa (Olusanya et al., 2018). Slemming & Bamford (2018) estimated that up to 35% of children, in South Africa, under the age of 5 may suffer from developmental delays or disabilities.

Despite the need for early childhood development services, standardized and validated developmental screening tools are not readily available for children in LMICs (Gladstone et al., 2008). Screening tools are typically developed, standardized and validated in high-income countries and then adapted and translated for low-income settings (Gladstone et al., 2008). Modifying an existing tool for use in a new population is usually preferred as it is more achievable and cost-effective (DuBay & Watson, 2019). Some popular developmental screening tools adapted and translated for use internationally include the Denver Developmental Screening Test, the Ages and Stages Questionnaire (ASQ) and the Parents Evaluation of Developmental Status (PEDS) (El-Behadli et al., 2015).

For most developmental screening tools (or diagnostic developmental tools), the adaptation process of a tool is part of the translation process and is done by experts in the field of development (El-Behadli et al., 2015).For instance, in the process of translating and adapting the Mullen Scales of Early Learning (a measure of cognitive functioning for infants and preschool-age children from birth through age 68 months) and the Ages and Stages Questionnaire (ASQ) for the South African Afrikaans speaking population, a review committee adapted the questions to make it culturally appropriate (e.g. the metric system of measurement

© University of Pretoria

was employed instead of the imperial system; the word applesauce changed to jam) (Bornman et al., 2010). The translated and adapted tools were then evaluated by community members, more specifically teachers, to determine cultural appropriateness (Bornman et al., 2010). In translating the ASQ for Hindi and Zulu speaking populations in South Africa, no cultural adaptations were mentioned for the Hindi translation, yet for the Zulu translation, some content was changed by an expert panel to improve contextual relevance of the test items (e.g. "last name" changed to "surname") (Abdoola, 2015; Hsiao et al., 2017). Yet, when the PEDS was translated into Zulu and Northern Sotho, no cultural adaptations were made (Fyvie et al., 2016; Van der Merwe et al., 2017). Utilizing translated developmental tools, still ingrained with Western concepts, may be laden with difficulties in African, low-income settings (Geiger & Alant, 2005); as African cultures, traditions and languages are very different from those in Western contexts (Bornman et al., 2010).

It is challenging to translate and adapt developmental screening tools as cultural differences influence parenting and child development (DuBay & Watson, 2019). Different cultures have different views on when a child should learn specific skills, how they interact with other people and what is considered appropriate behaviour (DuBay & Watson, 2019; van Widenfelt et al., 2005). Cultural viewpoints on parenting will also influence the way people understand and answer questions about development (Beaton et al., 2000). Thus, cultural adaptation of a tool is critical to ensure the accuracy of the screening tools for a specific population.

Often, cultural considerations do not receive the necessary attention in the translation and adaptation process of developmental screening tools. El-Behadli et al. (2015) reported in an evidence map that cultural considerations were taken into account in only 44% (28/63) of developmental screening tools identified. A further concern is that the details of the methods employed to culturally adapt screening tools are rarely reported (Soto et al., 2015). A comprehensive cultural adaptation process is required to appropriately modify an instrument for use with a new population (Acquadro et al., 2008; Beaton et al., 2000), because data collected for the developmental screening process is entirely dependent on the items' wording and how the questions are interpreted (DuBay & Watson, 2019).

Limited research has also been done on the community perspective of linguistic and cultural appropriateness of developmental screening tools, especially within a framework where the caregivers and community are seen as experts and their input used as a first step in the

© University of Pretoria

adaptation and translation of a tool, as opposed to one of the last steps. D'Aprano et al. (2016) followed a 5-step adaptation and translation process of the ASQ for the Aboriginal Australians, where the community input was one of the first steps. This resulted in a tool that was accepted by the community to be culturally and linguistically appropriate (D'Aprano, Silburn, Johnston, Bailie, et al., 2016). Staff and caregivers expressed high levels of satisfaction (Simpson et al., 2016).

There is a widespread need for developmental screening tools in countries like South Africa that are proven to be appropriate across linguistic and cultural backgrounds. This implies that tools that are available in English should be adapted specifically for the South African population. This study aimed to determine caregiver perspectives on linguistic and cultural appropriateness of the PEDS tools, and the applicability of the tools in a low-income community, as a first step in the contextual adaptation for South Africa.

4.3 METHOD

The survey study was approved by the Institutional review board (IRB) before any data was collected (HUM027/0819).

4.3.1 Setting

The study was conducted at an immunization clinic in a low-income peri-urban community in Gauteng, South Africa. Mamelodi has a population of around 334 557 is characterized by high levels of unemployment (24.2%), low levels of education (38.5% completed high school) and growing informal settlements (growth rate of 3.1%) (Statistics South Africa, 2012). The Community Health Clinic, where data was collected, offers a full set of services, including a baby wellness clinic.

4.3.2 Participants

Participants were selected using convenience sampling. Parents or caregivers waiting in line at the baby wellness clinic, who could communicate in English and had a minimum education level of Grade 10, were invited to participate. The participants also had to be caregivers of an infant or child between 0-8 years. 102 participants took part in the study. All participants (n=102) were mothers of the infant or child, and their ages ranged from 17 to 43 years (mean = 30.4; SD = 5.7). The average age of the infant or child ranged from 6 weeks to 7 years 11

© University of Pretoria

months (mean = 43.3; SD = 26.7). The most spoken first language of participants was Sepedi (n= 49; 48.0%). Seventy per cent of the participants completed grade 12 (68.6%), and 24 (23.6%) achieved a diploma or degree. However, 60 (59.0%) participants were unemployed. Eighty-nine (82.7%) were not married or living with a partner.

4.3.3 Material and apparatus

The PEDS tools, an English developmental screening tool, consist of the PEDS and the PEDS:DM. This developmental screening tool was designed to be parent-administered or administered by an interview—the PEDS consist of 10 questions about the general development of the infant or child followed (depending on the results of the PEDS) by the PEDS: Developmental Milestones (PEDS:DM). The PEDS:DM for ages 0-7 years 11 months consists of six to eight questions per age group about the child's development. The questions represent each development area, including fine and gross motor, receptive and expressive language, self-help skills, socio-emotional development, preliteracy and mathematic skills. The questions differ depending on the child's age and are subdivided into forms A to V corresponding to the child's age with 124 questions in total (see figure 4.1). The PEDS tools start with the PEDS, where pathway A signifies a fail, regardless of the PEDS:DM. With Pathway B to E, the PEDS:DM results determined the actual pass or fail (Van der Linde et al., 2015). The benefits of the PEDS tools specifically for a low-income community are that it takes less than 5 minutes to complete and costs around $0.02 (Brothers et al., 2008). The PEDS has also been adapted and translated into more than 20 languages and is used worldwide.

4.3.4 Data collection

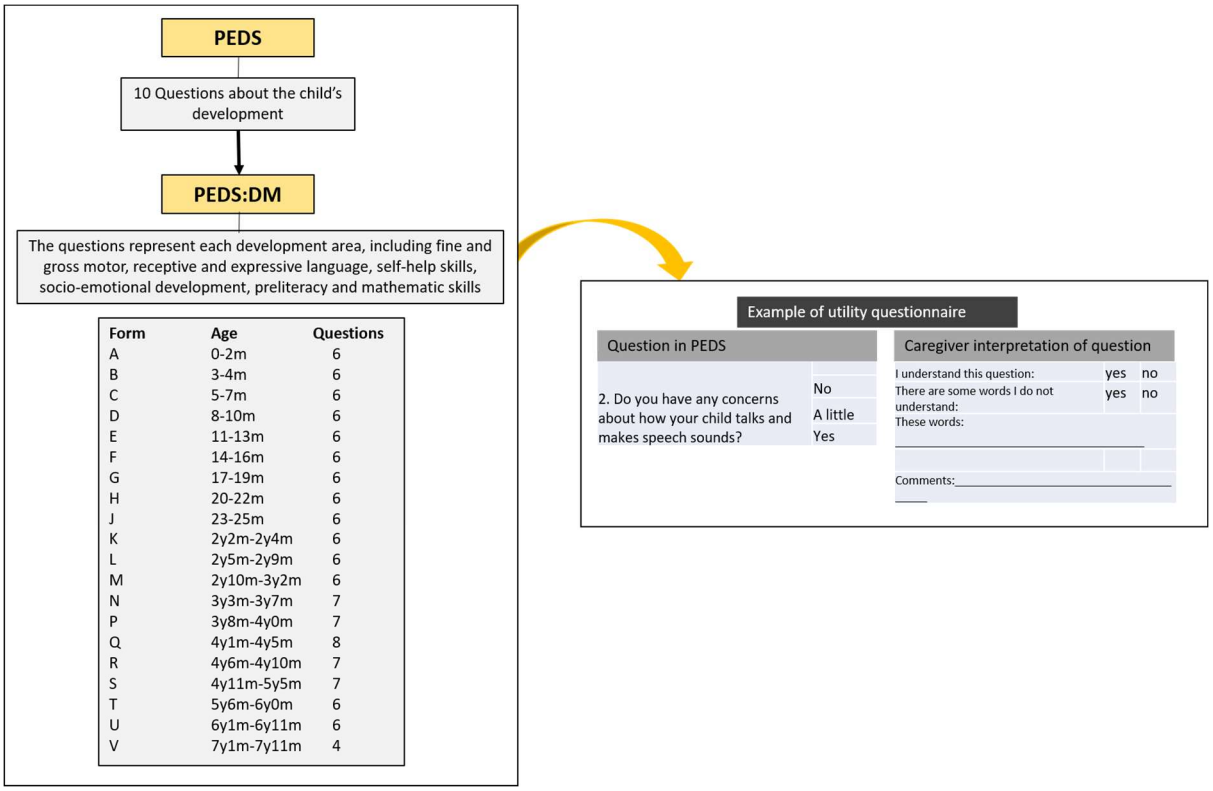
Participants signed the consent and were asked to complete a background information questionnaire, the PEDS and PEDS: DM for their child. Participants also completed a self-developed utility questionnaire, asking caregivers about the ease of understanding the questions and the appropriateness of the items on the PEDS tools. Two closed-form type and a "comments" section were included for each item on the PEDS tools (see figure 4.1). Participants had to complete the utility questionnaire of the PEDS:DM on 4 to 5 forms close to their child's age. Each participant had to answer an average of 39 questions, including the 10 questions of the PEDS and an average of 29 questions on the PEDS:DM. For forms A-E, 18 participants completed the questionnaire, forms F-J 17 participants, forms K-P 17 participants

© University of Pretoria

and forms Q-V 50 participants, for a total of 102 participants (see table 4.2). Figure 4.1 sets out a visual representation of the PEDS tools and an example of the utility questionnaire.

Figure 4. 1

Visual representation of the PEDS tools and an example of the utility questionnaire



Form	Age	Questions
A	0-2m	6
B	3-4m	6
C	5-7m	6
D	8-10m	6
E	11-13m	6
F	14-16m	6
G	17-19m	6
H	20-22m	6
J	23-25m	6
K	2y2m-2y4m	6
L	2y5m-2y9m	6
M	2y10m-3y2m	6
N	3y3m-3y7m	7
P	3y8m-4y0m	7
Q	4y1m-4y5m	8
R	4y6m-4y10m	7
S	4y11m-5y5m	7
T	5y6m-6y0m	6
U	6y1m-6y11m	6
V	7y1m-7y11m	4

4.3.5 Analysis of data

Descriptive statistics were employed to describe the quantitative data. A data-driven inductive approach was used to analyse the qualitative comments on the questionnaire. For continuous variables, means, standard deviations, minimum and maximum values were computed. For categorical variables, frequency distributions were created. Data were extracted from the PEDS tools cloud-based server to an MS Excel sheet. The data was imported from MS Excel into the Statistical Package for Social Sciences (SPSS) version 26, used for statistical analysis.

4.4 RESULTS

4.4.1 PEDS

More than a third of participants (n=39, 38.2%) indicated that the term "*development"* in question 1 (*Please list any concerns about your child's learning, development, and behaviour*)

© University of Pretoria

was not suitable. Most participants also raised issues about the word "*concern*" in questions 2 to 9 (e.g., *Do you have any concerns about how your child talks and makes speech sounds?*). When given the option, 51.0% preferred the term *"sometimes worry"* more so than the phrases *"have any problems"* or *"have any concerns"*. Question 10 of the PEDS states: "*Please list any other concerns*", however, when given the option, 47.1% of the participants felt that the question should read, *"Please list any other worries"* (See Table 4.1).

Table 4. 1

Linguistic appropriateness of the word "concerns" in the questions of the PEDS (N=102)

Question 1-9:	**Preferred option n (%)**	**Not preferred option n (%)**	**Total**
Do you have any concerns…	27 (26.5%)	75 (73.5%)	**102 (100%)**
Do you sometimes worry about…	52 (51.0%)	50 (49.0%)	**102 (100%)**
Do you have any problems with…	23 (22.5%)	79 (77.5%)	**102 (100%)**
Question 10:			
Please list other concerns	23 (22.5%)	79 (77.5%)	**102 (100%)**
Please list other worries	48 (47.1%)	54 (52.9%)	**102 (100%)**
Please list other problems	31 (30.4%)	71 (69.6%)	**102 (100%)**

4.4.2 PEDS-DM

On the PEDS:DM participants had problems with 58 of the 124 (46.8%) questions.

Of the 124 questions in the PEDS:DM participants indicated that 31 questions (25%) were difficult to understand by marking the option "*I do not understand the question*" on the questionnaire. Question 6 on form D was the most difficult (*Does your baby like to play peek-a-boo?*), with 88.9% of participants indicating that they had trouble understanding the question. 76.5% of the participants indicated that question 1 on form M (*Can you child scribble with a crayon or marker without going off the page much?*) was difficult and 72.2% indicated that question 5 of form A (*Does your baby try to keep his or her head steady?*) was problematic (see supplementary tables). Participants indicated that 41 of the questions (33%) used unfamiliar words by choosing the option "*I do not understand the word*" on the questionnaire and indicating which words were unfamiliar. All participants (100%) had issues with the terms "pacifier" (Form A question 2), "scooting on his bottom" (Form D question 5), "Busy Boxes and squeaking toys" (Form E question 6); and "scribble" (Form H and J question 1) (refer to supplementary tables). Participants felt that 9 of the questions (7%) were problematic because it is too difficult for the child's age (see supplementary tables); as mentioned by the participants in the comment section of the questionnaire. A little more than a third (35.0%) of the participants felt that question 1 on form R (*Can you child write any letters of the alphabet?*)

© University of Pretoria

was too difficult for the age group 4y6m-4y10m, and 27.0% of the participants indicated that question 4 and 8 on form Q for age group 4y1m-4y5m were also too difficult (*Does your child use words that tell about time like morning, afternoon, night, yesterday, or tomorrow?; Point to the letters and ask, Where's the A?... Where's the X... Where's the O" Keep trying to see if he or she can point to two or three correctly. How did your child do?*).

Table 4. 2

Distribution of questions identified as problematic on each form

Form	No. of participants that completed the questionnaire	Age Range	% questions with difficulties on each form (n/total nr of questions on each form)	% of total no. questions with difficulties (n/58)
A	18	0-2 months	33.3 (2/6)	3.5 (2/58)
B		3-4 months	16.6 (1/6)	1.7 (1/58)
C		5-7 months	16.6 (1/6)	1.7 (1/58)
D		8-10 months	83.3 (5/6)	8.6 (5/58)
E		11-13 months	33.3 (2/6)	3.5 (2/58)
F	17	14-16 months	50.0 (3/6)	5.2 (3/58)
G		17-19 months	50.0 (3/6)	5.2 (3/58)
H		20-22 months	66.6 (4/6)	6.9 (4/58)
J		23-25 months	33.3 (2/6)	3.5 (2/58)
K	18	2y2m-2y4m	66.6 (4/6)	6.8 (4/58)
L		2y5m-2y9m	33.3 (2/6)	3.5 (2/58)
M		2y10m-3y2m	50.0 (3/6)	5.2 (3/58)
N		3y3m-3y7m	28.6 (2/7)	3.5 (2/58)
P		3y8m-4y0m	42.9 (3/7)	5.2 (3/58)
Q	50	4y1m-4y5m	50.0 (4/8)	6.8 (4/58)
R		4y6m-4y10m	57.1 (4/7)	6.8 (4/58)
S		4y11m-5y5m	42.9 (3/7)	5.2 (3/58)
T		5y6m-6y0m	100 (6/6)	10.3 (6/58)
U		6y1m-6y11m	50.0 (3/6)	5.2 (3/58)
V		7y1m-7y11m	25.0 (1/4)	1.7 (1/58)
Total	102		(58/124)	100

Table 4.2 summarises the number of questions on each form identified as difficult and the percentage of difficulty from the total number of questions with difficulty (n=58). Form T for ages 5y6m-6y0m had the most questions with difficulties: all questions on the form posed problems; however, with 5 of the 6 questions 10% or less of participants had issues. This represents 10.3% of the total number (n=58) of questions with difficulty in the PEDS:DM. On form D for ages 8 to 10 months, 5 out of the 6 questions (83.3%) were identified as problematic.

© University of Pretoria

Table 4.3 illustrates the distribution of questions identified as problematic across the developmental domains. The expressive language developmental domain had the most challenges, with 12 from a possible 19 questions showing difficulty (63.2%), representing 20.7% of the total number (n=58) of questions with difficulty in the PEDS:DM. Receptive language had the least difficulty, with 4 out of a possible 20 questions showing a problem (20.0%), representing 6.9% of the total number of questions with difficulty. No statistically significant differences were found for domain difficulties associated with age.

Table 4. 3

Distribution of questions identified as problematic across the developmental domains

Developmental domain	% of questions with difficulties (n/total nr of questions per domain)	% of total nr of questions with difficulties (n/58)	Significance of domain difficulties associated with age p-value*
Fine motor	55.0 (11/20)	19.0 (11/58)	0.394
Self-help	47.4 (9/19)	15.5 (9/58)	0.056
Receptive language	20.0 (4/20)	6.9 (4/58)	0.186
Expressive language	63.2 (12/19)	20.7 (12/58)	0.694
Gross motor	46.7 (7/15)	12.1 (7/58)	0.213
Socio-emotional	29.4 (5/17)	8.6 (5/58)	0.660
Early math skills	57.1 (4/7)	6.9 (4/58)	0.747
Preliteracy skills	85.7 (6/7)	10.3 (6/58)	0.877
Total		100 (58/58)	

*Significance was set as $p<0.05$

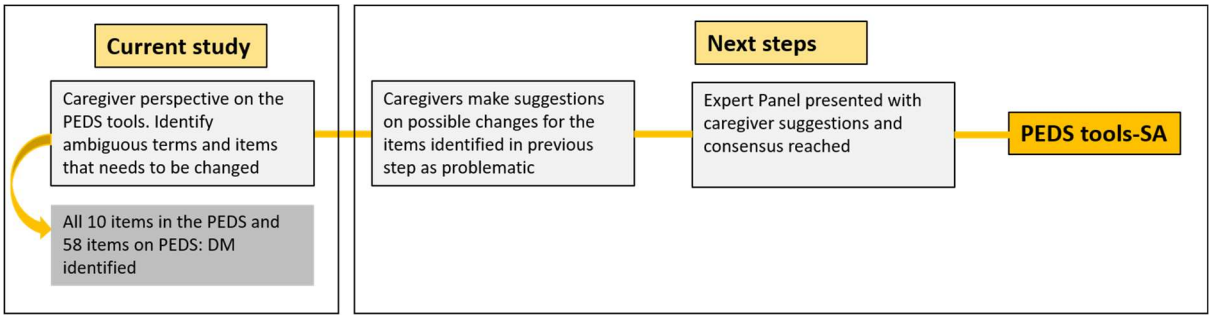
4.5 DISCUSSION

This study set out to obtain a systematic and thorough understanding of caregivers' perspectives on the cultural and linguistic appropriateness; and the applicability of the PEDS tools in a low-income community. This is a necessary step towards the adaptation of the PEDS tools for low-income communities in South Africa, as many items (10/10 items of the PEDS and 58/124 items on the PEDS:DM) were identified as needing cultural or linguistic adaptation for the population. The next step is to adapt the items identified by the community to create a version of the PEDS tools suitable for the low-income community (Botes et al., 2022). Figure 4.2 sets out the steps for the cultural adaption of the PEDS tools and highlights the importance of the caregiver perspectives on the cultural and linguistic appropriateness of the tools. The guidelines for the translation of instruments as set out by the WHO (World Health Organization, 2016) and International Test Committee (ITC) (International Test Commission., 2017) was used as a framework for these steps.

© University of Pretoria

Figure 4. 2

Steps in the adaptation of the PEDS tools for a South African low-income community



In this study, caregivers specified on the PEDS that they preferred to change the term "concern" to a more understandable term "worry about" on all the questions on the PEDS. In the development of the PEDS, families did not respond appropriately to the word "worry" or "problem" because "worries" might have been too strong (Glascoe, 2013). However, in Singapore, the PEDS was translated into Mandarin and Malay to screen children for developmental delays in a Southeast Asian context (Kiing et al., 2012). The results indicated that parents' understanding of the concept of "concern" was different across language and culture (Kiing et al., 2012). A later study also translated the PEDS into Mandarin and noted that the word "concern" directly translated in Mandarin meant "do you care about" (as in do you care about your child?) (Toh et al., 2017). This could explain the results of the first study. However, rather than directly translating, the authors replaced that word with a word meaning "a little worried" The adapted version of the Mandarin PEDS indicated an incidence of developmental delay similar to the prevalence of delays in the country (Toh et al., 2017). Participants in this study also indicated that the word "development" was problematic. This correlates with the findings in the development of the PEDS, where only about 50% of families understood the word "development" (Glascoe, 2013).

On the PEDS: DM the caregivers from the community perceived 58 of the 124 (46.8%) questions to have cultural or linguistic problems. In adapting developmental screening tools, a systematic adaptation process is lacking as most studies only report on the type of adaptation made and not on the number of items that had to be adapted (Soto et al., 2015). This study is one of the few to describe the problematic items from a community perspective as cultural or linguistic problems are typically identified and modified by an expert panel. In South West Ethiopia, 28.8% of the test items on the Denver II Developmental Screening Test were identified by an expert panel for adaptation (Abessa et al., 2016). In Sri Lanka only 5 items on the Denver II were adapted by an expert panel (Abessa et al., 2016). In South Africa, the review

© University of Pretoria

committee only changed items with specific measuring systems, currency, climate-related questions or food-specific questions when adapting the ASQ and Mullen Scales of Early Learning (Bornman et al., 2010). In Australia, when adapting the ASQ for the Aboriginal community, specific coastal items were replaced with more general items that would be found in remote communities (D'Aprano, Silburn, Johnston, Robinson, et al., 2016). However, none of the studies reported the number of problematic items. There are also no studies available on the adaptation of the PEDS: DM for a community, only on the translation of the PEDS. The PEDS has been translated into over 23 languages, but less than half of that published (El-Behadli et al., 2015). In 2015, El-Behadli (2015) reported that cultural considerations were only taken into account in the Swahili translation of the PEDS. When adapting a developmental screening tool, a more meticulous approach that includes the cultural adaptations of items should be employed and reported on in future studies.

Most adaptations on developmental screening tools are in the socio-emotional domain, with the least adaptation in the gross motor domain (Gladstone et al., 2008). Socio-emotional skills seem to be more prone to socio-cultural influences than gross motor skills (Abessa et al., 2016). However, on the PEDS: DM, the expressive language developmental domain was the most problematic as the community found 63.2% of the questions in this domain to be culturally or linguistically inappropriate. In contrast, the socio-emotional domain was one of the domains that caregivers identified as needing the least adaptation. Concepts or wording of the items in the expressive language domain might not be familiar to the millions of people that use English in South Africa as *lingua franca,* a second or third language; and more common use of language should be considered in the next steps in adapting the PEDS tools for SA.

This study exemplifies robust community participation that enabled the community to lead the adaptation process. This process ensured that items on the tools were viewed solely from a community perspective, empowering the community to be "experts" in this process. Future studies can compare the community's views on problematic items on developmental screening tools to the views of experts in the field.

4.6 STRENGTHS AND LIMITATIONS

A strength of this study is that it is one of the first to undertake the testing of critical concepts and vocabulary within a community setting to ensure that interpretation, local culture, and

© University of Pretoria

background be considered once the PEDS tools are adapted for the population. This research also sheds light on the cultural adaptation process that could encourage similar research endeavours to increase the rigour in adaptation methods of screening tools. A limitation of the current study was that it was carried out in a single setting which limits the generalization. It is recommended that the study be duplicated in other low-income communities across South Africa. It is further recommended that the next step be followed to culturally adapt the PEDS tools for a low-income community in South Africa as set out in figure 4.2.

4.7 CONCLUSION

For optimal child development to happen, culturally appropriate early identification and intervention processes must be in place. In low-income communities, the cross-cultural adaptation of existing developmental screening tools is critical. Caregiver perspectives in the adaptation of a screening tool can confirm a screening tool's linguistic and cultural appropriateness, ensuring a tool accepted by the community to identify possible developmental delays and disabilities better. This adaptation method also highlights the gaps in research in making a developmental screening tool culturally appropriate. This method can guide future research in the necessity to include the community perspectives as a starting point to ensure culturally appropriate adaptations. Although the process can be intensive and time-consuming, the community perspectives on the cultural and linguistic appropriateness of developmental screening tools from high-income countries are important, to ensure that the tool is valid and relevant for low-income communities.

© University of Pretoria

4.8 REFERENCES:

Abdoola, S. (2015). Translating tools for better parent-based assessment: An exploratory study. *South African Journal of Communication Disorders*, *62*(1), 12 pages. https://doi.org/10.4102/sajcd.v62i1.73

Abessa, T. G., Worku, B. N., Kibebew, M. W., Valy, J., Lemmens, J., Thijs, H., Yimer, W. K., Kolsteren, P., & Granitzer, M. (2016). Adaptation and standardization of a Western tool for assessing child development in non-Western low-income context. *BMC Public Health*, *16*(1), 652. https://doi.org/10.1186/s12889-016-3288-2

Acquadro, C., Conway, K., Hareendran, A., & Aaronson, N. (2008). Literature Review of Methods to Translate Health-Related Quality of Life Questionnaires for Use in Multinational Clinical Trials. *Value in Health*, *11*(3), 509–521. https://doi.org/10.1111/j.1524-4733.2007.00292.x

Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures: *Spine*, *25*(24), 3186–3191. https://doi.org/10.1097/00007632-200012150-00014

Bornman, J., Sevcik, R. A., Romski, M., & Pae, H. K. (2010). Successfully Translating Language and Culture when Adapting Assessment Measures: Translating Assessment Measures. *Journal of Policy and Practice in Intellectual Disabilities*, *7*(2), 111–118. https://doi.org/10.1111/j.1741-1130.2010.00254.x

Botes, M., Van Der Linde, J., & Swanepoel, D. (2022). A multi-phase cultural and contextual adaptation of the Parents' Evaluation of Developmental Status tools for a low-income community: A South African case study. *Child: Care, Health and Development*. https://doi.org/10.111/cch.13083

Brothers, K. B., Glascoe, F. P., & Robertshaw, N. S. (2008). PEDS: Developmental Milestones—An Accurate Brief Tool for Surveillance and Screening. *Clinical Pediatrics*, *47*(3), 271–279. https://doi.org/10.1177/0009922807309419

D'Aprano, A., Silburn, S., Johnston, V., Bailie, R., Mensah, F., Oberklaid, F., & Robinson, G. (2016). Challenges in monitoring the development of young children in remote Aboriginal health services: Clinical audit findings and recommendations for improving practice. *Rural and Remote Health*. https://doi.org/10.22605/RRH3852

D'Aprano, A., Silburn, S., Johnston, V., Robinson, G., Oberklaid, F., & Squires, J. (2016). Adaptation of the Ages and Stages Questionnaire for Remote Aboriginal Australia. *Qualitative Health Research*, *26*(5), 613–625. https://doi.org/10.1177/1049732314562891

DuBay, M., & Watson, L. R. (2019). Translation and cultural adaptation of parent-report developmental assessments: Improving rigor in methodology. *Research in Autism Spectrum Disorders*, *62*, 55–65. https://doi.org/10.1016/j.rasd.2019.02.005

El-Behadli, A. F., Neger, E. N., Perrin, E. C., & Sheldrick, R. C. (2015). Translations of Developmental Screening Instruments: An Evidence Map of Available Research. *Behavioral Pediatrics*, *36*(6), 13.

Engle, P. L., & Black, M. M. (2008). The Effect of Poverty on Child Development and Educational Outcomes. *Annals of the New York Academy of Sciences*, *1136*(1), 243–256. https://doi.org/10.1196/annals.1425.023

© University of Pretoria

Fyvie, L., Anderson, J., Kruger, C.-J., Roux, M. le, & Linde, J. van der. (2016). The outcome of a developmental screening tool (PEDS) in English and Northern Sotho: A comparative study. *Language Matters*, *47*(3), 415–426. https://doi.org/10.1080/10228195.2016.1196718

Geiger, M., & Alant, E. (2005). Child-rearing practices and children's communicative interactions in a village in Botswana. *Early Years*, *25*(2), 183–191. https://doi.org/10.1080/09575140500128079

Gladstone, M. J., Lancaster, G. A., Jones, A. P., Maleta, K., Mtitimila, E., Ashorn, P., & Smyth, R. L. (2008). Can Western developmental screening tools be modified for use in a rural Malawian setting? *Archives of Disease in Childhood*, *93*(1), 23–29. https://doi.org/10.1136/adc.2006.095471

Glascoe, F. P. (2013). Collaborating with parents: Using Parents' Evaluation of Developmental Status to detect and address developmental and behavioral problems (2nd ed.). PEDStest.com, LLC.

Grantham-McGregor, S., Cheung, Y. B., Cueto, S., Glewwe, P., Richter, L., Strupp, B., & International Child Development Steering Group. (2007). Developmental potential in the first 5 years for children in developing countries. *Lancet (London, England)*, *369*(9555), 60–70. https://doi.org/10.1016/S0140-6736(07)60032-4

Guevara, J. P., Gerdes, M., Localio, R., Huang, Y. V., Pinto-Martin, J., Minkovitz, C. S., Hsu, D., Kyriakou, L., Baglivo, S., Kavanagh, J., & Pati, S. (2013). Effectiveness of Developmental Screening in an Urban Setting. *PediatricS*, *131*(1), 30–37. https://doi.org/10.1542/peds.2012-0765

Guralnick, M. J. (2017). Early Intervention for Children with Intellectual Disabilities: An Update. *Journal of Applied Research in Intellectual Disabilities*, *30*(2), 211–229. https://doi.org/10.1111/jar.12233

Hsiao, C., Richter, L., Makusha, T., Matafwali, B., van Heerden, A., & Mabaso, M. (2017). Use of the ages and stages questionnaire adapted for South Africa and Zambia: Ages and stages questionnaire in southern Africa. *Child: Care, Health and Development*, *43*(1), 59–66. https://doi.org/10.1111/cch.12413

International Test Commission. (2017). *The ITC guidelines for translating and adapting tests (Second edn.)*. https://www.intestcom.org/files/guideline_test_adaptation_2ed.pdf

Kiing, J. S. H., Low, P. S., Chan, Y. H., & Neihart, M. (2012). Interpreting Parents' Concerns About Their Children's Development With the Parents Evaluation of Developmental Status: Culture Matters. *Behavioral Pediatrics*, *33*(2), 5.

Olusanya, B. O., Davis, A. C., Wertlieb, D., Boo, N.-Y., Nair, M. K. C., Halpern, R., Kuper, H., Breinbauer, C., de Vries, P. J., Gladstone, M., Halfon, N., Kancherla, V., Mulaudzi, M. C., Kakooza-Mwesige, A., Ogbo, F. A., Olusanya, J. O., Williams, A. N., Wright, S. M., Manguerra, H., … Kassebaum, N. J. (2018). Developmental disabilities among children younger than 5 years in 195 countries and territories, 1990–2016: A systematic analysis for the Global Burden of Disease Study 2016. *The Lancet Global Health*, *6*(10), e1100–e1121. https://doi.org/10.1016/S2214-109X(18)30309-7

Rydz, D., Shevell, M. I., Majnemer, A., & Oskoui, M. (2005). Topical Review: Developmental Screening. *Journal of Child Neurology*, *20*(1), 4–21. https://doi.org/10.1177/08830738050200010201

Simpson, S., D'Aprano, A., Tayler, C., Toon Khoo, S., & Highfold, R. (2016). Validation of a culturally adapted developmental screening tool for Australian Aboriginal children: Early findings

© University of Pretoria

and next steps. *Early Human Development*, *103*, 91–95. https://doi.org/10.1016/j.earlhumdev.2016.08.005

Slemming, W., & Bamford, L. (2018). The new Road to Health Booklet demands a paradigm shift. *South African Journal of Child Health*, *12*(3), Article 3.

Soto, S., Linas, K., Jacobstein, D., Biel, M., Migdal, T., & Anthony, B. J. (2015). A review of cultural adaptations of screening tools for autism spectrum disorders. *Autism*, *19*(6), 646–661. https://doi.org/10.1177/1362361314541012

Statistics South Africa. (2012). *Census 2011 Census in brief. Report no.: 03-01-41*. http://www.statssa.gov.za/census/census_2011/census_products/Census_2011_Census_in_brief.pdf

Toh, T.-H., Lim, B.-C., Bujang, M. A. B., Haniff, J., Wong, S.-C., & Abdullah, M. R. (2017). Mandarin parents' evaluation of developmental status in the detection of delays. *Pediatrics International*, *59*(8), 861–868. https://doi.org/10.1111/ped.13325

Van der Linde, J., Swanepoel, D. W., Glascoe, F. P., Louw, E. M., Hugo, J. F. M., & Vinck, B. (2015). Risks associated with communication delays in infants from underserved South African communities. *African Journal of Primary Health Care & Family Medicine*, *7*(1). https://doi.org/10.4102/phcfm.v7i1.841

Van der Merwe, M., Cilliers, M., Maré, C., Van der Linde, J., & Le Roux, M. (2017). Evaluation of a Zulu translation of the Parents' Evaluation of Developmental Status. *African Journal of Primary Health Care & Family Medicine*, *9*(1). https://doi.org/10.4102/phcfm.v9i1.1365

van Widenfelt, B. M., Treffers, P. D. A., de Beurs, E., Siebelink, B. M., & Koudijs, E. (2005). Translation and Cross-Cultural Adaptation of Assessment Instruments Used in Psychological Research With Children and Families. *Clinical Child and Family Psychology Review*, *8*(2), 135–147. https://doi.org/10.1007/s10567-005-4752-1

World Health Organization. (2016). *Process of translation and adaptation of instruments*. http://www.who.int/substance_abuse/research_tools/translation/en/

© University of Pretoria

4.9 SUPPLEMENTARY MATERIAL

© University of Pretoria

Supplementary material

Category: Question was difficult to understand

Form	Question number	Questions	% of participants that did not understand the question
D	6	Does your baby like to play peek-a-boo?	88,9
M	1	Can your child scribble with a crayon or marker without going off the page much?	76,5
A	5	Does your baby try to keep his or her head steady?	72,2
G	1	Can your child stack blocks?	72,2
K	1	Does your child try to scribble with crayons or markers?	70,6
L	1	Can your child scribble with a crayon or marker without going off the page much?	70,6
J	1	Does your child try to scribble with crayons or markers?	66,7
H	1	Does your child try to scribble with crayons or markers?	61,6
P	8	Say to your child, "Listen, are these words the same or not the same?" Then say, "**bit-pit: are they the same or not the same?** Then say, "**set-set: are they the same or not the same**?" Then try these: **hide-glide, bat-mat**. How many did he or she answer correctly?	58,8
E	1	Can your baby make squeeze toy squeak – or try to?	50
F	1	Can your child unwrap food or a toy that has been loosely wrapped?	50
M	5	Can your child stand on each foot for a second?	47,1
D	1	Can your baby poke at things with just his or her first finger?	44,4
D	2	Does your baby try to get to toys that are out of reach?	38,9
Q	5	Can your child walk three steps putting one foot in front of the other with heel touching toe?	26
F	3	If you hold out your hand and ask your child to give you something, does he or she give you something even if it is not the right thing?	22,2
J	2	Does your child try to help when it is time to put things away?	22,2
H	5	Does your child try to jump, even if both feet don't leave the ground?	16,7
V	8	Point to the sign for "Fire alarm," and say to your child, "Please read this to me." Try again with "Do not disturb "… and "Wait on curb". How many were right (sounding as if he or she knew what each one meant)?	12

© University of Pretoria

K	2	Does your child try to help when it is time to put things away?	11,8
K	5	When your child tries to run, does each foot leave the ground a little, even if he or she falls often?	11,8
G	5	Does your child try to jump, even if both feet don't leave the ground?	11,1
H	6	Does your child watch people's faces for clues to how they are feeling? Can he or she tell if someone is mad, sad, or happy?	11,1
R	7	Ask your child to give you 2 of something (like toys, coins or books). Then ask for 1, 3, 5 and 4 of something. Does he or she give you the right number of things each time?	10
U	8	Point to the word, "Exit" and say, "What does this say?" then point to "Danger", "caution", and "Poison" and ask your child to read them. How many can he or she read?	10
U	3	Say to your child, "**Point to your hips**,… **wrist**,… **waist**." How many does he or she know?	8
Q	6	When playing, does your child try not to hurt others? If playmates are hurt, does he or she seem concerned?	6
M	2	Can your child slip his or her shoes on?	5,9
P	4	Please show the story on the left to your child and say, "**Please point to the first word**," and then, "**Please point to the last word**." What does your child know?	5,9
E	6	Does your baby look for new things to play with and try to figure out how they work – like busy boxes or squeaking toys?	5,6
G	4	Does your child try to get your attention by pointing to things?	5,6

© University of Pretoria

Supplementary material

Category: The question used unfamiliar words

Form	Question number	Questions	% of participants that did not understand a word/term	The word/term that was not understood
A	2	Does your baby open his mouth when he sees a bottle, breast, or pacifier?	100	Pacifier
D	5	Can your baby get around on hands and knees or by scooting on his or her bottom?	100	Scooting on his bottom
E	6	Does your baby look for new things to play with and try to figure out how they work – like busy boxes or squeaking toys?	100	Busy boxes; squeaking toys
H	1	Does your child try to scribble with crayons or markers?	100	Scribble
J	1	Does your child try to scribble with crayons or markers?	100	Scribble
B	2	Does your baby open his mouth when he sees a bottle, breast, or pacifier?	94,4	Pacifier
N	4	Ask your child "**What do we do with scissors**?" and then "**What are refrigerators for**?" Does he/she use words like cutting, and keeping food cold or making ice?	94,1	Refrigerators
U	4	Point to the picture of the puppy and tell your child, "**Say what I say: 'Puppies make nice pets but need lots of love**'." If there were any mistakes, try again with this: "**Say what I say: 'The girl went swimming in the lake with friends**'." How did your child do?	89,9	Lake
S	6	Can your child play games with rules, like board or card games, kickball, or hopscotch?	89,8	Kickball; hopscotch
D	4	How many different sounds such as "muh", "bah", "duh" or "guh" does your baby say?	88,9	Muh, bah, duh, guh
D	6	Does your baby like to play peek-a-boo?	88,9	Peek-a-boo
R	7	Ask your child to give you 2 of something (like toys, coins or books). Then ask for 1, 3, 5 and 4 of something. Does he or she give you the right number of things each time?	88,9	Coin
U	8	Point to the word, "Exit" and say, "What does this say?" then point to "Danger", "caution", and "Poison" and ask your child to read them. How many can he or she read?	88,9	Caution, Poison, danger
V	8	Point to the sign for "Fire alarm," and say to your child, "Please read this to me." Try again with "Do not disturb "… and "Wait on curb". How many were right (sounding as if he or she knew what each one meant)?	88,9	Do not disturb, wait on the curb, fire alarm

© University of Pretoria

K	1	Does your child try to scribble with crayons or markers?	88,2	Scribble
L	1	Can your child scribble with a crayon or marker without going off the page much?	88,2	Scribble
M	1	Can your child scribble with a crayon or marker without going off the page much?	88,2	Scribble
N	7	If you showed your child a coin and asked, "**What's this**?", would he or she say coin?	88,2	Coin
P	8	Say to your child, "Listen, are these words the same or not the same?" Then say, "**bit-pit: are they the same or not the same?** Then say, "**set-set: are they the same or not the same**?" Then try these: **hide-glide, bat-mat**. How many did he or she answer correctly?	88,2	Bit; pit; set; glide; bat; mat
L	2	Can your child take off loose clothes such as pull-down pants or a coat?	76,5	Coat
P	2	Ask your child, "**What is your name…what is your whole name**?" What does he or she say? (the word last name is in the answer)	76,5	Last Name
A	5	Does your baby try to keep his or her head steady?	72,2	Steady
G	1	Can your child stack blocks?	72,2	Stack
E	1	Can your baby make squeeze toy squeak – or try to?	61,6	Squeeze toy
M	5	Can your child stand on each foot for a second?	58,5	Each foot
Q	6	When playing, does your child try not to hurt others? If playmates are hurt, does he or she seem concerned?	56,7	Concerned
T	2	Ask your child, "**What is your Mom's name**?" or "**What is your Dad's name**?" (Or other caretaker if needed). What does he or she say? (the word last name is in the answer)	56	Last name
Q	5	Can your child walk three steps putting one foot in front of the other with heel touching toe?	55,8	Heel touching toe
F	1	Can your child unwrap food or a toy that has been loosely wrapped?	50	Unwrap; loosely wrapped
S	7	Point to the logs and then to the number 5. Say, "Show me this many." Do this again by pointing to the 6 and then to 7. How many did your child get right?	48	Logs
R	4	Tell your child, "**Say what I say: Jane likes to throw and catch a ball**." If your child made mistakes, try again with this: "**Say what I say: Bob reads good books every time he can**." How did your child do?	45	Jane; Bod

© University of Pretoria

S	3	Tell your child, "**Put your hands above your head**," and then, "**Put your fingers below your eyes**." Now point to a page in a book and say, "**point to the centre of this page**," and then, "**point to the corner**." How many did he or she get right?	45	Below; centre
D	1	Can your baby poke at things with just his or her first finger?	44,4	Poke
D	2	Does your baby try to get to toys that are out of reach?	38,9	Out of reach
U	3	Say to your child, "**Point to your hips**,… **wrist**,… **waist**." How many does he or she know?	32	Hips; writs; waits
J	2	Does your child try to help when it is time to put things away?	22,2	Put
K	2	Does your child try to help when it is time to put things away?	11,8	Put
K	4	If you ask your child, "**What's this**?" and showed things like a spoon, cup, doll, truck, box, crayon, cookie, chair, or light, how many names for these or other things does he or she say?	5,9	Truck
M	2	Can your child slip his or her shoes on?	5,9	Slip
C	4	Does your baby "talk" or make sounds when he or she holds a toy or sees a pet?	5,6	Pet
H	4	If you ask your child, "**What's this**?" and showed things like a spoon, cup, doll, truck, box, crayon, cookie, chair, or light, how many names for these or other things does he or she say?	5,6	Truck

Supplementary material

Category: The question was too difficult for a child's age

Form	**Question number**	**Questions**	**% of participants that thought question was not age-appropriate**
R	1	Can your child write any letters of the alphabet?	35
Q	4	Does your child use words that tell about time like, morning, afternoon, night, yesterday, or tomorrow?	27
Q	8	Point to the letters and ask, "Where's the A?... Where's the X? … Where's the O?" Keep trying to see if he or she can point to two or three correctly. How did your child do?	27
R	8	Point to a letter of the alphabet and ask your child, "What's this?" Try again with other letters to see if your child can name at least one letter correctly. How did he or she do?	18

© University of Pretoria

T	1	Ask your child to write letters of the alphabet starting with “A”. How many can he or she write in order?	10
T	3	Ask your child, “**Where are your heels**?” … “**ankles**?” … “**shoulders**?” … and “**elbows**?” How many does he or she know?	10
T	4	Say to your child, “**I want you to say the alphabet**.” How many can he or she say or sing before making a mistake	10
T	7	Point to the 8 and ask your child, “**What’s this**?” Then point to the 7, … 9, … and 10. How many does he or she name?	10
T	8	Say to your child, “**I’m going to read you a story. When I’m finished, I want you to tell it back to me**.” Then read the story (about the ducks) and say, “**Tell me the story you just heard**.” What can your child tell you?	10

© University of Pretoria

CHAPTER 5 A MULTI-PHASED CULTURAL AND CONTEXTUAL ADAPTATION OF THE PARENTS' EVALUATION OF DEVELOPMENTAL STATUS TOOLS FOR A LOW-INCOME COMMUNITY: A SOUTH AFRICAN CASE STUDY

Authors: Mignon Botes, Jeannie van der Linde and De Wet Swanepoel

Journal: Child: Care, Health and Development
Date of submission: 15 June 2022
Proof of submission: Appendix S
Publication: 2022
DOI: 10.111/cch.13083

Keywords Cultural and contextual adaptation, cultural appropriateness, community involvement, PEDS tools, South Africa, low-income.

Highlights

- A culturally appropriate developmental screening tool was adapted for a low-income community in South Africa
- A systematic method for culturally adapting a screening tool was used in this study
- Community participants from a LIC, and experts in ECD informed the changes to the developmental screening tool

© University of Pretoria

5.1 ABSTRACT:

Introduction

Culturally relevant developmental screening is one of the best ways to appropriately identify developmental delays and disabilities in children as early as possible across diverse cultural backgrounds. This study aimed to adapt the Parents' Evaluation of Developmental Status (PEDS) tools for a low-income community in South Africa by using a detailed multi-phased cultural and contextual adaption process.

Method and results

A three-phase mixed-method design relying on triangulation of data was used. Data were collected at an immunisation clinic in a low-income community in Mamelodi, South Africa. Phase 1 was a focus group discussion with 11 community participants. The topics explored the possible changes to the PEDS tools to make them more relevant to the community. Phase 1 informed Phase 2 where 12 early childhood development experts achieved consensus through a two-round survey on a modified Delphi method. In phase 3, a draft of the PEDS tools-SA was presented to the authors of the PEDS tools for final approval. Of 55 questions that were adapted for the PEDS tools-SA, two original questions (3.6%), 14 questions from the expert suggestions (25.4%) and 39 from the community participant's suggestions (71%) were included. A final version of the PEDS tools-SA was created.

Conclusion

This study used a systematic method to adapt the PEDS tools to create the culturally appropriate PEDS tool-SA for a low-income community in South Africa, informed by community stakeholders' views from the first step. This resulted in a high-quality adaptation process that is more likely to result in a tool that is more acceptable to caregivers from a low-income South African community.

© University of Pretoria

5.2 INTRODUCTION

Developmental screening, using standardised screening tools, during every health visit is one of the best ways to identify developmental delays and disabilities in infants and young children as early as possible and to ensure timely early intervention for the family and child (Lipkin et al., 2020; Macy, 2012). A significant barrier to accurately identifying developmental delays and disabilities in infants and young children in low-income communities is the lack of culturally and linguistically appropriate screening tools (Lipkin et al., 2020; Rousseau et al., 2021). As a result, tools developed in high-income countries are often translated and adapted for use in low-income countries (Munoz-Chereau et al., 2021).

Cultural adaptation involves careful deliberation of cultural values, customs and traditions, using appropriate knowledge and skill (Bernal & Domenech Rodríguez, 2012; Rousseau et al., 2021) while maintaining functional similarity with the original version of the tool. It is a complex and demanding process that involves more than just language translation (Bernal & Domenech Rodríguez, 2012; Rousseau et al., 2021). There is no strong differentiation between translating a tool or culturally adapting a tool, and therefore no clear guidelines for cultural adaptation of screening tools alone. Detailed techniques on cultural adaptation are often not reported (Rousseau et al., 2021; Small et al., 2019). At times, cultural adaptations are not even considered in the translation process (El-Behadli et al., 2015; Lipkin et al., 2020).

Most cultural changes made during the adaptations process are limited to superficial modifications or process adaptations, that is, changes that involve minor modifications to the tool, such as changes in ethnicity or measuring systems (Bernal & Domenech Rodríguez, 2012). For example, the word “Cheerio” was used in the Korean Ages and Stages Questionnaire (ASQ), instead of “black bean” (Heo et al., 2008). In the Afrikaans version of the ASQ, the picture of a snowman was omitted as snow is rare in South Africa (SA) (Bornman et al., 2010). However, these changes do not address the core values, competence, beliefs or norms of the targeted community. Content adaptation is required to address the deeper structural changes during the adaptation process (Bernal & Domenech Rodríguez, 2012; Rousseau et al., 2021).

A developmental screening tools, The Parents Evaluation Developmental Status (PEDS) and PEDS: Developmental Milestones (DM) (collectively known as the PEDS tools), developed in the USA, is a standardised and validated measure that has been translated and adapted for many

© University of Pretoria

populations (*PEDS Tools In Other Languages*, n.d.). This tool has been considered for the use in the public healthcare setting in South Africa because it is quick, reliable and affordable to use (van der Merwe et al., 2019). The PEDS tools have successfully been translated into Zulu and Northern Sotho in South Africa (Fyvie et al., 2016; Maleka et al., 2021; Van der Merwe et al., 2017). However, providing equitable services to all clients in South Africa is challenging because of the country's 11 official languages. Adapting a developmental screening tool for a low-income community in English might ensure that no minority language in a setting is disregarded. Millions of South Africans use English as a second or third language for everyday communication and as the language of instruction in most schools in South Africa (Khokhlova, 2015; Schlebusch & Thobedi, 2015).

Yet, Botes et al., (in press) reported that caregivers in a low-income community in South Africa interpreted the items on, the PEDS:DM , incorrectly on almost half (48%) of the items.. Cultural changes are necessary to ensure that test-takers interpret the items correctly for accurate developmental screenings (DuBay & Watson, 2019). Rigorous cultural adaptation that ensures both process and content adaptations can ensure that developmental screening tools are locally appropriate, increasing the likelihood of accurate early identification within a setting. Involving community participants during the adaptation process is likely to enhance the cultural authenticity of a developmental screening tool, as community members can provide valuable input in the content adaptation.

There is a lack of research on the approaches to culturally adapting developmental screening tools, and the suggested method of using the expert panel to make cultural changes and only allowing community participant's input at the very end might not allow for all the needed content changes. Rousseau et al., (2021) did a scoping review on the cultural adaptation of a developmental screening tool and found that in only 70.3% of the adapted tools, language, visual, and/or conceptual modifications were reported. Cultural content modifications were reported in 64.9% of adaptations. They concluded that most cultural modifications were minor and aimed at establishing an equivalence with the original version. The researchers found that the process of culturally adapting tools varied significantly in studies (Rousseau et al., 2021). The recommendations from the researchers were that the target community be engaged in every step; expert reviews used to verify the cultural, linguistic and developmental appropriateness of the tool and that a systematic methodology that considers language and culture is developed by authors.

© University of Pretoria

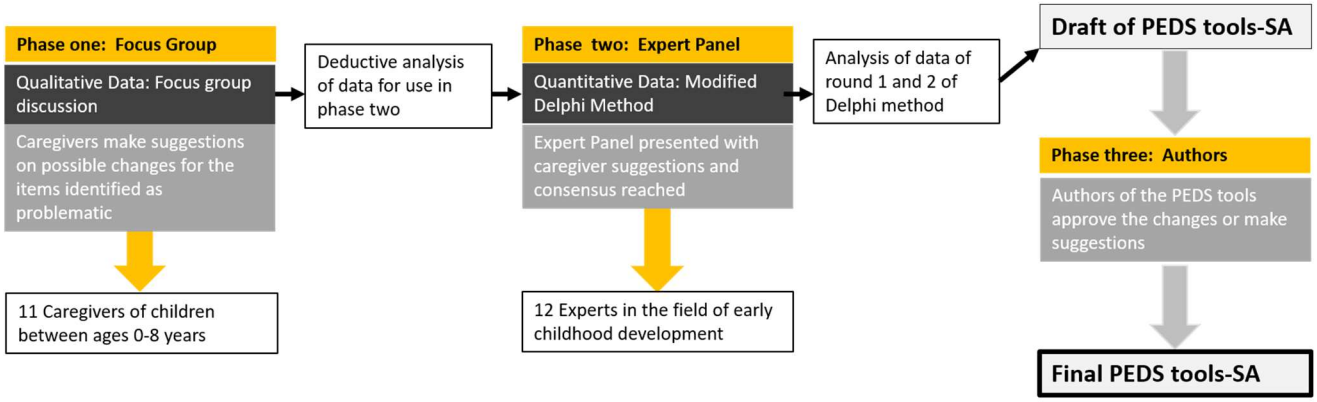
As a result, this study aimed to adapt the PEDS tools for a low-income community in South Africa by using a detailed multi-phased cultural and contextual adaption process. This study opted to use community participants as stakeholders from the start, informing the decisions of the expert panel and therefore permitting the community to give their perspectives regarding the changes needed to bring about the PEDS tools-SA.

5.3 METHOD AND RESULTS

Institutional review board (IRB) clearance (HUM027/0819) was obtained for this study prior to any data collection. All participants, during all phases, provided consent to partake in the study. This study used a mixed-method design relying on triangulation of data for the cultural and contextual adaptation of the PEDS tools in a low-income community to create the PEDS tools-SA. Figure 5.1 represents the phases of the study.

Figure 5. 1

Phases in the study design



5.3.1 Phase One: Community suggested adaptations

Setting and Participants

Data were collected at an immunisation clinic in a low-income community in Mamelodi, South Africa. According to the latest available statistics, Mamelodi has one of the largest poverty-stricken low-income populations in the City of Tshwane (Statistics South Africa, 2011). Most residents are African (98.8%), Women head 40% of households and one-third live on less than R20 000 a year. (Statistics South Africa, 2011). This Community Health Clinic offers a full set of services, including a baby wellness clinic. Participants were selected using convenience sampling. Parents or caregivers, of a child between the ages of 0-8 years, waiting in line at the baby wellness clinic, who were able to communicate in English were invited to participate. The

© University of Pretoria

study aimed to adapt the tool and not translate it; therefore, the focus group was conducted in English, as the original PEDS tools are in English. Demographics of the 11 participants are provided in table 5.1.

Table 5. 1

Demographic information of focus group participants (n=11).

	N (%)
Age of participants	
30 years or younger	7 (63.6)
31 years or older	4 (36.4)
Home language	
Sepedi	7 (63.6)
isiZulu	2 (18.2)
Other	2 (18.2)
Caregiver employment	
Employed	3 (27.3)
Unemployed	8 (72.7)
Education level	
Grade 10-11	2 (18.2)
Grade 12	9 (81.8)
Household	
Single parent	7 (63.6)
Married	2 (18.2)
Living with partner	2 (18.2)
Dwelling	
Brick house	6 (54.5%)
Informal dwelling (shack)	1 (9.1%)
Room in a house	1 (9.1%)
Flat	3 (27.3%)

Material and data analysis

In an earlier study, caregivers from the same community identified 58 of the 124 (46.8%) questions on the PEDS:DM and the ten questions on the PEDS as problematic (Botes et al., in press). Forty-five of the questions on the PEDS: DM, and all 10 questions on the PEDS have been identified by 10% or more of the caregivers as difficult to understand, containing unfamiliar words or as too difficult for the child's age (Botes et al., in press). The focus group was facilitated by the first author, who is an English second language speaker. The facilitator read each original 55 questions and asked the group how they would change it to make it more

© University of Pretoria

relevant to other caregivers in the community. If the question could not be understood, the facilitator used gestures (e.g., walking heel-to-toe) or explained the meaning in simple terms. Each member had an equal opportunity to voice their opinions on the items. Consensus was reached on the suggestion of an item after a conversation from the participants. The topics explored the possible changes to make it more relevant for the community. The focus group discussion, of 103 minutes, was audio-recorded and transcribed. Analysis of the data was generated from the transcripts of the audiotapes. The research question guided the deductive thematic analysis. The first author read the transcript and identified themes and subthemes that were given a code. All items with the same code were grouped together. The rater then reread the passages and came up with a phrase or word that described the typical characteristics of the passages. Inter-rater reliability was conducted by having the second and third author, who has extensive early childhood development knowledge, independently read the data. The themes and subthemes that were consistent and that community participants had consensus on were included. Table 5.2 lists the participants, examples of quotes and the themes that emerged.

Table 5. 2

Participant quotes/suggestions and themes that emerged from the focus group.

Original question presented by moderator	Participant	Quotes/Suggestion	Consensus from community participants	Theme
Does your baby like to play peek-a-boo?	32-year-old female	You must just say what it means. Just say - when you put the blanket on your face, and pull down… then the baby she laughs. The person must just show what it is.	Yes	Describe an item
	27-year-old female	Or can you tickle the baby and then they laugh?	No	Change the item
Can your baby stack blocks?	45-year-old female	Is that like to build something with blocks? You then say - Can your baby build something with blocks.	Yes	Change the item
	39-year-old female	Or can they play with rocks? To say play with rocks?	No	Change the item
Does your child try to jump, even if both feet don't leave the ground?	37-year-old female	What is that? Must the baby just jump? Why you make it difficult? Just say – Can your baby jump?	Yes	Leave out confusing part
Can your baby poke at things with just his or her first finger?	32-year-old female	Is it like this? (gestures poking with finger). You must show them; they will not know. You must put a picture or something.	Yes	Add a picture
	27-year-old female	Like push to push the finger. You say push the finger.	Yes	Change a word

© University of Pretoria

Results

The themes and subthemes that evolved from the analysis are schematically represented in Figure 5.2.

Figure 5. 2

Themes identified in the focus group discussion to change questions on the PEDS tools (number of questions identified in each theme)

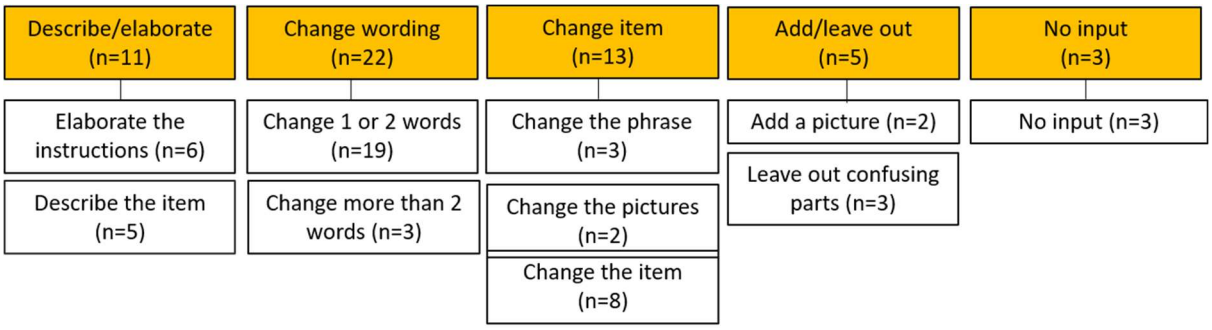


Table 5.3 sets out examples of the changes proposed by community participants according to each theme. Supplementary tables outline all the suggestions made by community participants. These recommendations were applied to the original items of the PEDS tools for presentation to an expert panel in phase two.

Table 5. 3

Examples of community participants' suggested changes in each identified theme.

Theme	Original question examples	Examples of community participant's suggestions
Elaborate the instructions	If you hold out your hand and ask your child to give you something, does he or she give you something even if it is not the right thing	If you hold out your hand and ask your child to give you something like a toy, does he or she give you something in your hand even if it is not the toy?"
Describe the item	Does your baby like to play peek-a-boo?	When you put a blanket on your face and pull it off, does your baby laugh?
Change 1 or 2 words	Does your baby try to keep his or her head steady?	Does your baby try to keep his or her head still?
Change more than 2 words	Can your child scribble with a crayon or marker without going off the page much?	Can your child draw with a pen without going off the pages much?
Change the phrase	Does your baby try to get to toys that are out of reach?	Does your baby try to get to toys that are too far to reach?
Change the picture	Point to the word, "Exit" and say, "What does this say?" then point to "Danger", "caution", and "Poison" and ask your child to read them. How many can he or she read? 	Point to the word, "Exit" and say to your child, "What does this say?" then point to "Danger" and say to your child, "What does this say?", Point to "Stop", and say to your child, "What does this say?" and point to "Poison" and ask "What does this say?". How many can he or she read?

© University of Pretoria

		
Change the item	Can your child stack blocks?	Can your child build a tower with blocks?
Add a picture	Can your child walk three steps putting one foot in front of the other with heel touching toe?	Can your child walk three steps putting one foot in front of the other with heel touching toe? 
Leave out the confusing part	Does your child try to jump, even if both feet don't leave the ground?	Does your child try to jump?
No input	When your child tries to run, does each foot leave the ground a little, even if he or she falls often?	

5.3.2 Phase two: expert panel consensus

Setting and Participants

A modified Delphi method is a structured process for collecting and distilling knowledge from a group of experts through a series of questionnaires. Purposive sampling was used to identify 12 experts in early childhood. Table 5.4 provides the details of the experts These experts were recruited, through e-mail, to form part of the expert panel. This Delphi method used two rounds of online surveys to achieve consensus on the recommended changes in the PEDS tools. Figure 5.3 sets out the steps in the Delphi Method.

Table 5. 4

Details of expert panel participants

	Profession	age	Years of experience	Race	Highest qualification	Field of Expertise
1	Speech Therapist	25-35y	5-10 years	White	PhD	Knowledge of specific community and PEDS tool
2	Speech Therapist	25-35y	> 10 years	White	PhD	Expert in early childhood development and knowledge of PEDS tools
3	Occupational Therapist	56-65y	> 10 years	Black	Bachelors	Expert in early childhood development
4	Occupational Therapist	56-65y	> 10 years	White	PhD	Special interest in low-income communities and expert in early childhood development
5	Psychologist	36-45y	> 10 years	White	PhD	Expert in early childhood development
6	Psychologist	36-45y	5-10 years	Black	Bachelors	Expert in early childhood development
7	Paediatrician	36-45y	5-10 years	White	Specialist Medical Degree	Expert in early childhood development

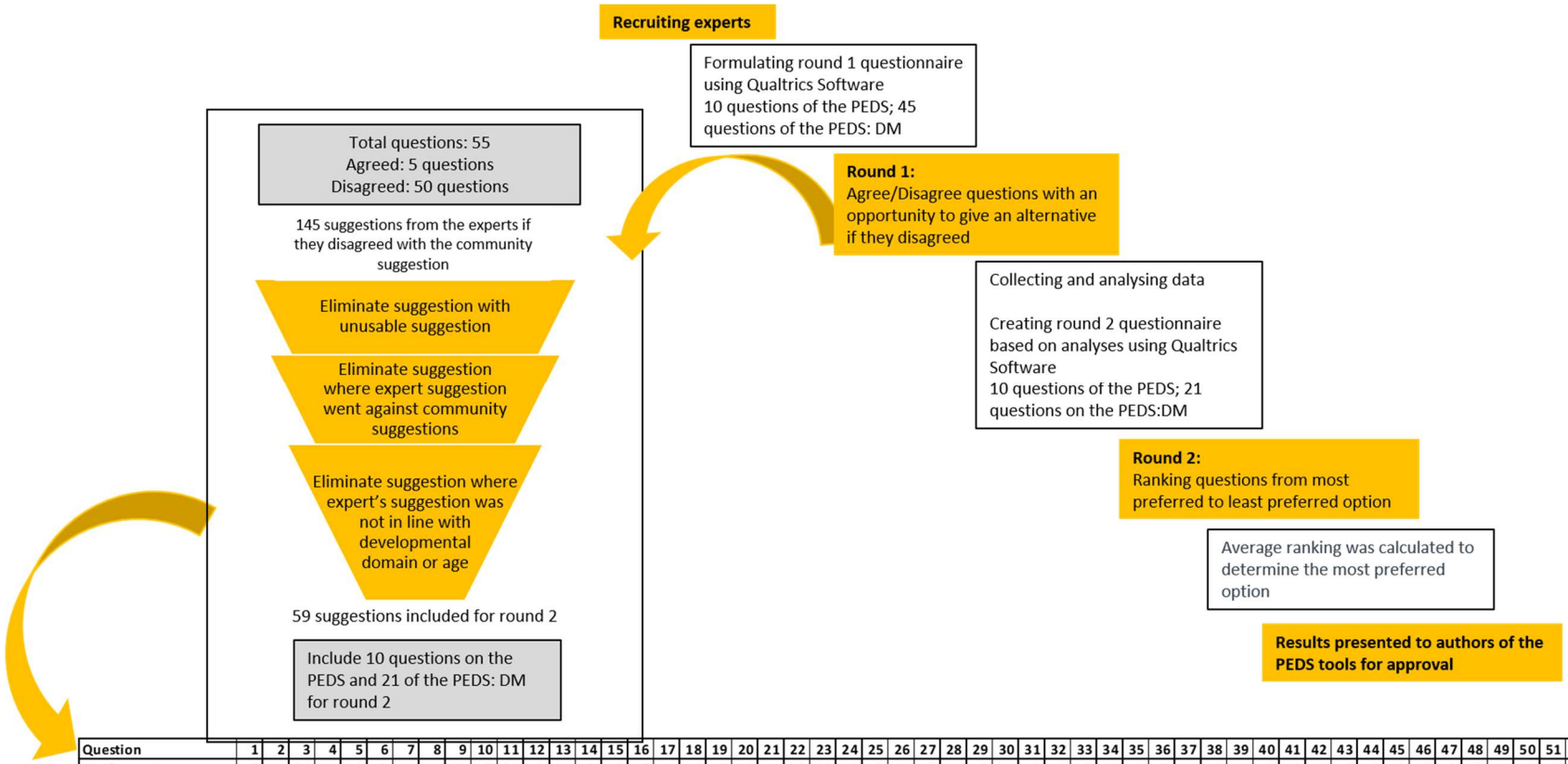
© University of Pretoria

8	Paediatric neurologist	46-55y	> 10 years	White	Specialist Medical Degree	Expert in early childhood development
9	Physiotherapist	46-55y	> 10 years	White	PhD	Special interest in low-income communities and paediatric HIV
10	Healthcare worker	46-55y	> 10 years	Black	Grade 12	Knowledge of specific community, expert in early childhood development
11	Remedial Therapist	46-55y	> 10 years	White	PhD	Special interest in low-income communities and expert in early childhood development
12	Nurse	56-65y	> 10 years	Black	Nursing Diploma	Knowledge of specific community and expert in early childhood development

© University of Pretoria

Figure 5. 3

Steps in the Delphi method for consensus on the PEDS tools.



Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	Total
Nr of experts agree	9	11	10	11	11	9	11	11	10	9	11	5	11	9	10	10	4	9	9	10	4	10	10	10	5	8	8	11	8	11	5	9	9	10	8	7	12	8	10	9	12	12	6	6	9	12	3	10	8	9	9	8	10	3	12	50
Nr of experts disagree	3	1	2	1	1	3	1	1	2	3	1	7	1	3	2	2	8	3	3	2	8	2	2	2	7	4	4	1	4	1	7	3	3	2	4	5	0	4	2	3	0	0	6	6	3	0	9	2	4	3	3	4	2	9	0	5
Nr of suggestion	3	1	2	1	1	3	1	1	2	3	1	6	1	3	2	1	7	3	2	2	7	2	2	2	6	3	4	1	4	1	7	3	3	2	3	4	0	4	2	3	0	0	3	5	3	0	4	1	4	3	3	3	1	6	0	145
Nr of usable suggestions	1	1	1	1	1	1	1	1	2	3	0	3	0	0	0	0	2	3	2	0	3	0	0	0	2	1	0	0	0	0	4	2	3	2	3	2	0	1	0	1	0	0	3	2	0	0	2	0	1	0	1	0	0	3	0	59
Question included in round 2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	N	N	Y	Y	Y	N	Y	N	N	N	Y	Y	N	N	N	N	Y	Y	Y	Y	Y	Y	N	Y	N	Y	N	Y	N	Y	N	N	Y	N	Y	N	Y	N	N	Y	N	Y = 31 N = 24
Original, expert or community suggestion in final draft	C	C	C	C	C	C	C	C	C	C	C	E	C	C	C	C	E	C	C	C	E	C	C	C	E	E	C	C	C	C	C	E	E	E	E	E	C	C	C	O	C	C	E	C	C	C	E	C	E	C	C	C	O	E	C	O = 2 C = 39 E = 14

© University of Pretoria

Material, analysis and results: round 1

Experts were surveyed using the online Qualtrics software. In round 1 of the Delphi Method, the 55 questions from phase one that were adapted with community participant's suggestion were presented to the experts. Round 1 questions consisted of the original question and community participant's suggestion. The experts had a choice to agree with community participant's suggestion or disagree. If they disagreed, they were asked to give a reason and another suggestion to the question.

Of the 55 questions, all experts supported the suggestions made by community participants for 5 of the questions. With the remainder of the 50 questions, some experts disagreed and made alternative suggestions to the question. There was a total of 145 suggestions made by the expert panel for all the questions. Expert suggestions were eliminated (see Figure 5.3) that resulted in 59 usable suggestions on 31 questions (21 of the PEDS: DM and 10 of the PEDS). These suggestions on the questions were used for round 2. The table in figure 5.3 shows the distribution of the expert selections. After round 1, one original question and 23 community suggestions were placed in the first draft of the PEDS tools-SA. On the 23 community suggestion, for five questions, 100% of the experts agreed; for the other 18, more than 67% agreed.

Material, analysis and results: round 2

In round 2 of the Delphi Method, the original questions, the community member's and expert suggestions were presented to the expert panel. The experts were asked to rank the question options from the most preferred to the least preferred option. The average ranking for each answer choice of the 31 questions was calculated. The answer with the highest-ranking was the most preferred choice. The supplementary tables show the highest-ranked questions. On the 31 questions, the experts ranked one original question the highest, 16 community participant's suggestions the highest and 14 expert suggestions the highest.

5.3.3 Phase three: Consultation with the authors

Material and results

When culturally adapting a tool, the integrity of the tool should be maintained. There should be a clear similarity between the original and the adapted tool (DuBay & Watson, 2019). The

© University of Pretoria

authors of the original tool should agree with the changes made, that the integrity of the original tool is evident. The PEDS was developed in 1997 by Dr F. Glascoe for the developmental-behavioural screening and surveillance of children birth to 8 years (Glascoe, 1997). The PEDS:DM was designed by Brothers, Glascoe and Robertshaw in 2008 (Brothers et al., 2008) for children from birth to 8 years as a milestone-focused measure that consists of 6-8 questions per visit or age range.

The results of the two rounds were put together to create a first draft of the PEDS tools-SA. The following were included: 2 questions were kept as the original (3.6%); 14 questions from the expert suggestions were included (25.4%) and 39 from the community participant's suggestions were included (71%). The table in figure 5.3 shows the distribution. This draft was electronically presented to the authors of the PEDS tools for final approval of the suggested changes on the PEDS tools. The authors approved all the changes but suggested that the graphics of the pictures should be enhanced. The final version of the PEDS-tools SA was created.

5.4 DISCUSSION

This study is one of the first examples of culturally and linguistically adapting a developmental screening tool, where community participants were seen as specialists, and their input was not only one of the initial steps in the adaptation process but also invaluable. Understanding community member's perspectives in the decision-making process on adaptations must be prioritised from the outset. Although community involvement is suggested with all cultural adaptions of tools, it forms part of the cognitive interviews, one of the last steps in cultural adaptation of tests recommended by the World Health Organisation (World Health Organization, 2016). The goal of cognitive interviews is to evaluate the questions on a tool to determine whether the true meaning of the question is conveyed to respondents and whether the question is functioning as intended. Questions found to have problems can then be modified to reduce errors in the response process (World Health Organization, 2016). In the current study, the goal was to involve the community members from the start as decision-makers to ensure that the items on the tool for consideration were culturally, linguistically, and contextually informed. This inclusive method incorporates the local expression or customs, language and parental understanding as a point of departure (Kohli-Lynch et al., 2019;

© University of Pretoria

Rousseau et al., 2021). Using this detailed adaptation method, the study resulted in the culturally adapted PEDS-tools for a low-income community in South Africa.

A previous study established that a systematic and detailed adaptation of the PEDS tools was necessary, as many items were identified as being culturally inappropriate or irrelevant for a low-income community in South Africa (Botes et al., in press). The adaptations made to the PEDS tools-SA included modifications of words, phrases and items, using local South African English, illustrations of some items and changing the pictures to make them culturally appropriate. One of the suggestions from community participants to increase the comprehensibility of the questions was to elaborate the instructions. This recommendation was similar to that of the Denver Developmental Screening Test, in the Philippines translation of the item "What is a spoon made of?" that was elaborated to read: "If a table is made of wood, a spoon is made of…?"(Kiing et al., 2012) Another suggestion was to change some words to make them culturally appropriate. On the PEDS: DM, questions on the use of *markers* were changed in this study to *pens*; similarly, questions on the use of *crayons and pencils* on the ASQ-3 for the Australian aboriginal community were changed to *drawing with sticks* (D'Aprano et al., 2016).

In some circumstances, items can be identified that may not be suitable for the target population. Botes et al., (in press) noted that items in the pre-literacy category in the age group 4 to 5 years of the PEDS: DM were not age-appropriate for the community, as many children cannot identify the alphabet letters. This was also the case in the Arabic translation of the ASQ-II where many children were not yet taught the Arabic alphabet at the age interval of 4 to 5 years (Charafeddine et al., 2013; Rousseau et al., 2021). Such items can be replaced with age-appropriate questions that still examine the developmental domain.

What set this study apart was the community member's involvement from the onset of the study on the cultural adaptations. Usually, it is the role of an expert panel to make the cultural adaptations to a tool as an initial step in the adaptation process (World Health Organization, 2016). One of the limitations of using an expert panel to make cultural adaptations to a tool is that the changes might only be minimal modifications (Bernal & Domenech Rodríguez, 2012). The changes that experts make are based upon their understanding of the culture and their knowledge in their field of expertise In this study, the community members were part of the developmental process that resulted in a version of the PEDS tools that is more accessible to

© University of Pretoria

South African caregivers in low-income communities, representative of the majority of the country. Detailing this adaptation process provides an example of the procedure to address the lack of guidelines for cultural adaptations of tools. This procedure can be duplicated in other settings to attain a quality cross-cultural adaptation of screening tools for linguistically and culturally diverse low-income communities.

The thorough method of cultural adaptation in this study involving community member's suggestions in the beginning steps of the adaptation process demonstrates significant value, with more than two-thirds (71%) of community participant's suggestions incorporated in the final version of the PEDS tools-SA. Further research studies can incorporate this method of involving the community to make suggestions on items to ensure a better culturally adapted tool.

5.5 STRENGTHS AND LIMITATIONS

This adaptation method is unique in that it sets out that community involvement should be the primary method to culturally adapt a tool and that an expert panel, as a next step, should only strive for consensus on the community suggestions. A limitation of this study is that it was carried out in a single setting with community participants representing a small sample from a broader community. In spite of the fact that the participants demonstrate much of the diversity of the community, the small sample size limited the generalisability of the findings. The authors chose to separate the adaptation from the testing and/or validation of the PEDS tools-SA to give full attention to the cultural adaptation process. The finalised tool was therefore, not validated in the setting, and it is proposed that future studies validate the PEDS tools-SA in a low-income community in South Africa.

5.6 CONCLUSION

This study used a systematic method to adapt the PEDS tools to create the culturally appropriate PEDS tool-SA for a low-income community in South Africa informed by community stakeholders' views from the onset of the study. These adaptations were achieved by community participation and expert panel agreement. This systematic process for culturally adapting a tool is an example of how community involvement can create a linguistically, culturally and contextually sound tool by incorporating language, norms, values, beliefs, and customs from the community. This high-quality adaptation method resulted in a version of the

© University of Pretoria

PEDS tool that is more likely to result in a tool that is more acceptable to caregivers from a low-income South African community.

© University of Pretoria

5.7 REFERENCES:

Bernal, G., & Domenech Rodríguez, M. M. (2012). *Cultural adaptations: Tools for evidence-based practice with diverse populations.* American Psychological Association.

Bornman, J., Sevcik, R. A., Romski, M., & Pae, H. K. (2010). Successfully Translating Language and Culture when Adapting Assessment Measures: Translating Assessment Measures. *Journal of Policy and Practice in Intellectual Disabilities*, *7*(2), 111–118. https://doi.org/10.1111/j.1741-1130.2010.00254.x

Botes, M., Van Der Linde, J., & Swanepoel, D. (in press). Cultural and linguistic applicability of the PEDS tools in a low-income community: A caregiver perspective. *SAJCH.*

Brothers, K. B., Glascoe, F. P., & Robertshaw, N. S. (2008). PEDS: Developmental Milestones—An Accurate Brief Tool for Surveillance and Screening. *Clinical Pediatrics*, *47*(3), 271–279. https://doi.org/10.1177/0009922807309419

Charafeddine, L., Sinno, D., Ammous, F., Yassin, W., Al-Shaar, L., & Mikati, M. A. (2013). Ages and Stages Questionnaires: Adaptation to an Arabic speaking population and cultural sensitivity. *European Journal of Paediatric Neurology*, *17*(5), 471–478. https://doi.org/10.1016/j.ejpn.2013.03.001

D'Aprano, A., Silburn, S., Johnston, V., Bailie, R., Mensah, F., Oberklaid, F., & Robinson, G. (2016). Challenges in monitoring the development of young children in remote Aboriginal health services: Clinical audit findings and recommendations for improving practice. *Rural and Remote Health*. https://doi.org/10.22605/RRH3852

DSD, DWCPD and UNICEF. (2012). *Children with Disabilities in South Africa: A Situation Analysis: 2001-2011.* Pretoria: Department of Social Development/Department of Women, Children and People with Disabilities/UNICEF. https://www.unicef.org/southafrica/media/1336/file/ZAF-Children-with-disabilities-in%20South-Africa-2001-11-situation-analysis.pdf

DuBay, M., & Watson, L. R. (2019). Translation and cultural adaptation of parent-report developmental assessments: Improving rigor in methodology. *Research in Autism Spectrum Disorders*, *62*, 55–65. https://doi.org/10.1016/j.rasd.2019.02.005

El-Behadli, A. F., Neger, E. N., Perrin, E. C., & Sheldrick, R. C. (2015). Translations of Developmental Screening Instruments: An Evidence Map of Available Research. *Behavioral Pediatrics*, *36*(6), 13.

Fyvie, L., Anderson, J., Kruger, C.-J., Roux, M. le, & Linde, J. van der. (2016). The outcome of a developmental screening tool (PEDS) in English and Northern Sotho: A comparative study. *Language Matters*, *47*(3), 415–426. https://doi.org/10.1080/10228195.2016.1196718

Glascoe, F. P. (1997). Parents' evaluation of developmental status (PEDS). *Ellsworth & Vandermeer Press, Ltd.*

Heo, K. H., Squires, J., & Yovanoff, P. (2008). Cross-cultural adaptation of a pre-school screening instrument: Comparison of Korean and US populations. *Journal of Intellectual Disability Research*, *52*(3), 195–206. https://doi.org/10.1111/j.1365-2788.2007.01000.x

© University of Pretoria

Hirai, A. H., Kogan, M. D., Kandasamy, V., Reuland, C., & Bethell, C. (2018). Prevalence and Variation of Developmental Screening and Surveillance in Early Childhood. *JAMA Pediatrics*, *172*(9), 857. https://doi.org/10.1001/jamapediatrics.2018.1524

Khokhlova, I. (2015). Lingua Franca English of South Africa. *Procedia - Social and Behavioral Sciences*, *214*, 983–991. https://doi.org/10.1016/j.sbspro.2015.11.689

Kiing, J. S. H., Low, P. S., Chan, Y. H., & Neihart, M. (2012). Interpreting Parents' Concerns About Their Children's Development With the Parents Evaluation of Developmental Status: Culture Matters. *Behavioral Pediatrics*, *33*(2), 5.

Kohli-Lynch, M., Tann, C. J., & Ellis, M. E. (2019). Early Intervention for Children at High Risk of Developmental Disability in Low- and Middle-Income Countries: A Narrative Review. *International Journal of Environmental Research and Public Health*, *16*(22), Article 22. https://doi.org/10.3390/ijerph16224449

Lipkin, P. H., Macias, M. M., & council on children with disabilities, section on developmental and behavioral pediatrics. (2020). Promoting Optimal Development: Identifying Infants and Young Children With Developmental Disorders Through Developmental Surveillance and Screening. *Pediatrics*, *145*(1), e20193449. https://doi.org/10.1542/peds.2019-3449

Macy, M. (2012). The Evidence Behind Developmental Screening Instruments. *Infants & Young Children*, *25*(1), 19–61. https://doi.org/10.1097/IYC.0b013e31823d37dd

Maleka, B., van der Linde, J., Graham, M., & Swanepoel, D. W. (2021). Evaluating the PEDS:DM Developmental Screening Tool in Zulu and Northern Sotho. *Language Matters*, *52*(3), 72–93. https://doi.org/10.1080/10228195.2021.1969589

Munoz-Chereau, B., Ang, L., Dockrell, J., Outhwaite, L., & Heffernan, C. (2021). Measuring early child development across low and middle-income countries: A systematic review. *Journal of Early Childhood Research*, *19*(4), 443–470. https://doi.org/10.1177/1476718X211020031

Oluwatayo, J. A. (2012). Validity and Reliability Issues in Educational Research | Journal of Educational and Social Research. *Journal of Educational and Social Research*, *2*(2). https://www.richtmann.org/journal/index.php/jesr/article/view/11851

PEDS Tools In Other Languages. (n.d.). PEDStest.Com. Retrieved 12 June 2021, from http://pedstest.com

Rousseau, M., Dionne, C., Savard, R. T., Schonhaut, L., & Londono, M. (2021). Translation and Cultural Adaptation of the Ages and Stages Questionnaires (ASQ) Worldwide: A Scoping Review. *Journal of Developmental & Behavioral Pediatrics*, *42*(6), 490–501. https://doi.org/10.1097/DBP.0000000000000940

Schlebusch, G., & Thobedi, M. (2015). Outcomes-Based Education in the English Second Language Classroom in South Africa. *The Qualitative Report*. https://doi.org/10.46743/2160-3715/2004.1936

© University of Pretoria

Small, J. W., Hix-Small, H., Vargas-Baron, E., & Marks, K. P. (2019). Comparative use of the Ages and Stages Questionnaires in low- and middle-income countries. *Developmental Medicine & Child Neurology*, *61*(4), 431–443. https://doi.org/10.1111/dmcn.13938

Van der Merwe, M., Cilliers, M., Maré, C., Van der Linde, J., & Le Roux, M. (2017). Evaluation of a Zulu translation of the Parents' Evaluation of Developmental Status. *African Journal of Primary Health Care & Family Medicine*, *9*(1). https://doi.org/10.4102/phcfm.v9i1.1365

van der Merwe, M. N., Mosca, R., Swanepoel, D. W., Glascoe, F. P., & van der Linde, J. (2019). Early detection of developmental delays in vulnerable children by community care workers using an mHealth tool. *Early Child Development and Care*, *189*(5), 855–866. https://doi.org/10.1080/03004430.2018.1480481

World Health Organization. (2016). *Process of translation and adaptation of instruments*. http://www.who.int/substance_abuse/research_tools/translation/en/

© University of Pretoria

5.8 SUPPLEMENTARY TABLES

© University of Pretoria

Supplementary tables: Changes to the questions on the PEDS tools as indicated by the community

Describe/Elaborate

Form	Q	age	Area	Original Questions	Problematic word	Change	Community suggestions
D	6	8-10m	Socio	Does your baby like to play peek-a-boo?	Peek-a-boo	Describe the item	When you put a blanket on your face and pull it off, does your baby laugh?
E	1	11-13m	Fine	Can your baby make squeeze toy squeak – or try to?	Squeeze toy	Describe the item	Can your baby press a toy – or try to press a toy that a noise (like a squeak) comes out?
F	1	14m-16m	Fine	Can your child unwrap food or a toy that has been loosely wrapped?	Unwrap	Describe the item	Can your child open a sweet that is covered with plastic if you open it a little bit first?
D	5	8-10m	Gross	Can your baby get around on hands and knees or by scooting on his or her bottom?	Scooting on his bottom	Describe the item Change the item	Can your baby get around by **crawling** or **by crawling on his bum**?
E	6	11-13m	Socio	Does your baby look for new things to play with and try to figure out how they work – like busy boxes or squeaking toys?	Busy boxes; squeaking toys	Describe the item Leave out confusing part	Does your baby look for new things to play with and try to figure out how they work – like **toys your squeeze to make a sound**?
F	3	14m-16m	Recep	If you hold out your hand and ask your child to give you something, does he or she give you something even if it is not the right thing?		Elaborate the instruction	If you hold out your hand and ask your child to give you something **like a toy**, does he or she give you something **in your hand** even if it is not the **toy**?
N	4	3y3m-3y7m	Express	Ask your child "**What do we do with scissors**?" and then "**What are refrigerators for**?" Does he/she use words like cutting, and keeping food cold or making ice?	Refrigerators	Elaborate the instruction	Ask your child "What do we do with scissors?" Does he/she use words like cutting Now ask "What is a fridge for?" Does he/she use words keeping food cold or making ice?
R	7	4j6m-4j10m	Math	Ask your child to give you 2 of something (like toys, coins or books). Then ask for 1, 3, 5 and 4 of something. Does he or she give you the right number of things each time?	Coins	Elaborate the instruction change 1 word	Ask your child to give you 2 things (like toys, **rocks** or books). Then ask for 1 thing, **then ask fo**r 3 things, **then ask for** 5 things and **then ask for** 4 things. Does he or she give you the right number of things each time?

© University of Pretoria

P	8	3y8m-4y0m	Lit	Say to your child, “Listen, are these words the same or not the same?” Then say, “**bit-pit: are they the same or not the same?** Then say, “**set-set: are they the same or not the same**?” Then try these: **hide-glide, bat-mat**. How many did he or she answer correctly?	Bit, pit, set, glide, bat	Elaborate the instruction Change more than 2 words	Say to your child, “Listen, are these words the same or not the same?” Then say, “fun - run: are they the same or not the same? (Your child should say “not the same”)Then say, “sit-sit: are they the same or not the same?” (Your child should say “the same”)Then say: mop-hop (Your child should say “not the same”),Cat – mat (Your child should say “not the same”),How many did he or she answer correctly?
U	8	6y1m-6y11m	Lit	Point to the word, “Exit” and say, “What does this say?” then point to “Danger”, “caution”, and “Poison” and ask your child to read them. How many can he or she read?		Elaborate the instructions Change the pictures	Point to the word, “Exit” and say to your child, “What does this say?” then point to “Danger” and say to your child, “What does this say?”, Point to “Stop”, and say to your child, “What does this say?” and point to “Poison” and ask “What does this say?”. How many can he or she read?
V	8	7y1m-7y11m	Lit	Point to the sign for “Fire alarm,” and say to your child, “Please read this to me.” Try again with “Do not disturb “… and “Wait on the curb”. How many were right (sounding as if he or she knew what each one meant)?		Elaborate the instructions Change the pictures	Point to the sign for “Fire alarm ,” and say to your child, “Please read this to me.” Now point to “Caution, wet floor “, and say to your child, “Please read this to me. Now point to “No entry”, and say to your child, “Please read this to me. How many could your child read?

Change wording

Form	Q	age	area	Original Questions	Problematic word	change	Community suggestions
PEDS	1			Please list any concerns about your child’s learning, development, and behaviour:	Development	Change 1 word Change phrase	Please list any **worries** about your child’s learning, **how they are growing**, and behaviour:
PEDS	10			Please list any other concerns:	Concerns	Change 1 word	Please list any other **worries**
A	5	0-2m	Gross	Does your baby try to keep his or her head steady?	Steady	Change 1 word	Does your baby try to keep his or her head **still**?
A	2	0-2m	Self help	Does your baby open his mouth when he sees a bottle, breast, or pacifier?	Pacifier	Change 1 word	Does your baby open his mouth when he sees a bottle, breast, or **dummy**?
B	2	3-4m	Self help	Does your baby open his mouth when he sees a bottle, breast, or pacifier?	Pacifier	Change 1 word	Does your baby open his mouth when he sees a bottle, breast, or **dummy**?
L	2	2y5m-2y9m	Self help	Can your child take off loose clothes such as pull-down pants or a coat?	Coat	Change 1 word	Can your child take off loose clothes such as pull-down pants or a **jacket**?

© University of Pretoria

M	5	2y10m-3y2m	Gross	Can your child stand on each foot for a second?	Each	Change 1 word	Can your child stand on **one** foot for a second?
N	7	3y3m-3y7m	Math	If you showed your child a coin and asked, "**What's this**?", would he or she say coin?	Coin	Change 1 word	If you showed your child **money** and asked, "**What's this**?", would he or she say **money**?
P	2	3y8m-4y0m	Self help	Ask your child, "**What is your name…what is your whole name**?" What does he or she say? (the word last name is in the answer)	Last Name	Change 1 word	(the word **surname** is in the answer)
Q	6	4j1m-4j5m	Socio	When playing, does your child try not to hurt others? If playmates are hurt, does he or she seem concerned?	Concerned	Change 1 word	When playing, does your child try not to hurt others? If playmates are hurt, does he or she seem **sorry**?
T	2	5y6m-6y0m	Self help	Ask your child, "**What is your Mom's name**?" or "**What is your Dad's name**?" (Or other caretaker if needed). What does he or she say? (the word last name is in the answer)	Last name	Change 1 word	the word **surname** in the answer
U	4	6y1m-6y11m	Express	Point to the picture of the puppy and tell your child, "**Say what I say: 'Puppies make nice pets but need lots of love**'." If there were any mistakes, try again with this: "**Say what I say: 'The girl went swimming in the lake with friends**'." How did your child do?	Lake	Change 1 word	Point to the picture of the puppy and tell your child, "Say what I say: 'Puppies make nice pets but need lots of love'." If there were any mistakes, try again with this: "Say what I say: 'The girl went swimming in the pool with friends'." How did your child do?
H	6	20m-22m	Socio	Does your child watch people's faces for clues to how they are feeling? Can he or she tell if someone is mad, sad, or happy?	Clues	Change 1 word Change the phrase	Does your child look at people's faces to **see how they are feeling**? Can he or she **see** if someone is mad, sad, or happy?
S	7	4y11m-5y5m	Math	Point to the logs and then to the number 5. Say, "Show me this many." Do this again by pointing to the 6 and then to 7. How many did your child get right?	Logs	Change 1 word Elaborate the instruction	Point to the trees and then to the number 5. Say, "Show me this many." Could your child show 5 trees? Point to the trees again and then to the number65. Say, "Show me this many." Could your child show 6 trees? How many did your child get right? Point to the trees and then to the number 7. Say, "Show me this many." Could your child show 7 trees?
R	7	4j6m-4j10m	Math	Ask your child to give you 2 of something (like toys, coins or books). Then ask for 1, 3, 5 and 4 of something. Does he or she give you the right number of things each time?	Coins	Change 1 word Elaborate the instruction	Ask your child to give you 2 things (like toys, **rocks** or books). Then ask for 1 thing, **then ask fo**r 3 things, **then ask for** 5 things and **then ask for** 4 things. Does he or she give you the right number of things each time?
J	1	23m-25m	Fine	Does your child try to scribble with crayons or markers?	Scribble, Marker	Change 2 words	Can your child **draw** with a crayon or **pen**?

© University of Pretoria

K	1	2y2m-2y4m	Fine	Does your child try to scribble with crayons or markers?	Scribble, Marker	Change 2 words	Can your child **draw** with a crayon or **pen**?
L	1	2y5m-2y9m	Fine	Can your child scribble with a crayon or marker without going off the page much?	Scribble, Marker	Change 2 words	Can your child **draw** with a crayon or **pen** without going off the page much?
M	1	2y10m-3y2m	Fine	Can your child scribble with a crayon or marker without going off the page much?	Scribble, Marker	Change 2 words	Can your child **draw** with a crayon or **pen** without going off the page much?
R	4	4j6m-4j10m	Expre ss	Tell your child, "**Say what I say: Jane likes to throw and catch a ball**." If your child made mistakes, try again with this: "**Say what I say: Bob reads good books every time he can**." How did your child do?	Jane; Bod	Change 2 words	Tell your child, "Say what I say: **Tshego** likes to throw and catch a ball." If your child made mistakes, try again with this: "Say what I say: Sipho reads good books every time he can." How did your child do?
S	3	4y11m-5y5m	Recep	Tell your child, "**Put your hands above your head**," and then, "**Put your fingers below your eyes**." Now point to a page in a book and say, "**point to the center of this page**," and then, "**point to the corner**." How many did he or she get right?	Below; centre	Change 2 words Elaborate the instruction	Tell your child, **"Put your hands above your head,"** did your child do it right?**Now say: "Put your fingers under your eyes."** did your child do it right?**Now point to a page in a book and say, "point to the middle of this page," and then, "point to the corner."** did your child do it right?How many did he or she get right?
P	8	3y8m-4y0m	Lit	Say to your child, "Listen, are these words the same or not the same?" Then say, "**bit-pit: are they the same or not the same?** Then say, "**set-set: are they the same or not the same**?" Then try these: **hide-glide, bat-mat**. How many did he or she answer correctly?	Bit, pit, set, glide, bat	Change more than 2 words Elaborate the instruction	Say to your child, "Listen, are these words the same or not the same?" Then say, "fun - run: are they the same or not the same? (Your child should say "not the same") Then say, "sit-sit: are they the same or not the same?" (Your child should say "the same") Then say: mop-hop (Your child should say "not the same"), Cat – mat (Your child should say "not the same"), How many did he or she answer correctly?

Change item

Form	Q	age	area	Original Questions	Problematic word	change	Community suggestions
G	1	17m-19m	Fine	Can your child stack blocks?	Stack	Change the item	Can your child **build a tower with blocks**?
J	2	23m-25m	Self help	Does your child try to help when it is time to put things away?		Change the item	Does your child try to help when it is time **to pack things away or tidy up**?
K	2	2y2m-2y4m	Self help	Does your child try to help when it is time to put things away?		Change the item	Does your child try to help when it is time **to pack things away or tidy up?**

© University of Pretoria

D	5	8-10m	Gross	Can your baby get around on hands and knees or by scooting on his or her bottom?	Scooting on his bottom	Change the item Describe the item	Can your baby get around by **crawling** or **by crawling on his bum**?
S	6	4y11m-5y5m	Socio	Can your child play games with rules, like board or card games, kickball, or hopscotch?	Kickball; hopscotch	Change the item Leave out confusing part	Can your child play games with rules, like card games, games with balls like soccer?
R	1	4j6m-4j10m	Fine	Can your child write any letters of the alphabet?		Change the item	Can your child **draw a person or shapes**?
Q	8	4j1m-4j5m	Lit	Point to the letters and ask, "Where's the A?... Where's the X? … Where's the O?" Keep trying to see if he or she can point to two or three correctly. How did your child do?		Change the item	Point to the **shapes** and ask, "Where's the square?... Where's the circle? … Where's the rectangle?" Keep trying to see if he or she can point to two or three correctly. How did your child do?
R	8	4j6m-4j10m	Lit	Point to a letter of the alphabet and ask your child, "What's this?" Try again with other letters to see if your child can name at least one letter correctly. How did he or she do?		Change the item	Point to a letter of the **shapes** and ask your child, "What's this?" Try again with other **shapes** to see if your child can name at least, one **shapes** correctly. How did he or she do?
PEDS	1			Please list any concerns about your child's learning, development, and behaviour:	Concerns, development	Change 1 word Change phrase	Please list any **worries** about your child's learning, **how they are growing**, and behaviour:
PEDS	2 - 9			Do you have any concerns about how…	Concerns	Change phrase	Do you **sometimes worry about** how…
D	2	8-10m	Self help	Does your baby try to get to toys that are out of reach?		Change the phrase	Does your baby try to get to toys that are **too far to reach?**
D	4	8-10m	Express	How many different sounds such as "muh", "bah", "duh" or "guh" does your baby say?	Muh, bah, duh, guh	Change the phrase	How many different sounds such as **"ma", "ba", "da" or "ga"** does your baby say?
H	6	20m-22m	Socio	Does your child watch people's faces for clues to how they are feeling? Can he or she tell if someone is mad, sad, or happy?		Change the phrase Change 1 word	Does your child look at people's faces to **see how they are feeling**? Can he or she **see** if someone is mad, sad, or happy?
U	8	6y1m-6y11m	Lit	Point to the word, "Exit" and say, "What does this say?" then point to "Danger", "caution", and "Poison" and ask your child to read them. How many can he or she read?		Change the pictures Elaborate the instructions	Point to the word, "Exit" and say to your child, "What does this say?" then point to "Danger" and say to your child, "What does this say?", Point to "Stop", and say to your child, "What does this say?" and point to "Poison" and ask "What does this say?". How many can he or she read? ,

© University of Pretoria

V	8	7y1m-7y11m	Lit	Point to the sign for "Fire alarm," and say to your child, "Please read this to me." Try again with "Do not disturb "… and "Wait on the curb". How many were right (sounding as if he or she knew what each one meant)?		Change the pictures Elaborate the instructions	Point to the sign for "Fire alarm ," and say to your child, "Please read this to me." Now point to "Caution, wet floor ", and say to your child, "Please read this to me. Now point to "No entry", and say to your child, "Please read this to me. How many could your child read?

Add/Leave out

Form	Q	age	area	Original Questions	Problematic word	change	Community suggestions
D	1	8-10m	fine	Can your baby poke at things with just his or her first finger?	Poke	Add a picture Change 1 word	Can your baby **push** at things with just his or her first finger?
Q	5	4j1m-4j5m	Gross	Can your child walk three steps putting one foot in front of the other with heel touching toe?		Add a picture	Can your child walk three steps putting one foot in front of the other with heel touching toe?
E	6	11-13m	Socio	Does your baby look for new things to play with and try to figure out how they work – like busy boxes or squeaking toys?	Busy boxes; squeaking toys	Leave out confusing part Describe the item	Does your baby look for new things to play with and try to figure out how they work – like **toys your squeeze to make a sound**?
G	5	17m-19m	Gross	Does your child try to jump, even if both feet don't leave the ground?		Leave out confusing part	Does your child try to jump?
H	5	20m-22m	Gross	Does your child try to jump, even if both feet don't leave the ground?		Leave out confusing part	Does your child try to jump?

No input

Form	Q	age	area	Original Questions	Problematic word	change	Community suggestions
K	5	2y2m-2y4m	Gross	When your child tries to run, does each foot leave the ground a little, even if he or she falls often?		No input	

© University of Pretoria

Q	4	4j1m-4j5m	Expre ss	Does your child use words that tell about time like, morning, afternoon, night, yesterday, or tomorrow?			No input
U	3	6y1m-6y11m	Recep	Say to your child, "**Point to your hips**,… **wrist**,… **waist**." How many does he or she know?	Hips; waist	writs;	No input

© University of Pretoria

Supplementary tables: Highest ranked question after round 2 of Delphi Method

Q	Form	ages	area	Original questions	Highest ranked questions
PEDS					
1		All	General	Please list any concerns about your child's learning, development, and behaviour:	Please list any worries you have about your child's learning, how they are growing, and behaviour:
2		All	Express	Do you have any concerns about how your child talks and makes speech sounds?	Do you sometimes worry about how your child talks and makes speech sounds?
3		All	Recep	Do you have any concerns about how your child understands what you say?	Do you sometimes worry about how your child understands what you say?
4		All	Fine	Do you have any concerns about how your child uses his or her hands and fingers to do things?	Do you sometimes worry about how your child uses his or her hands and fingers to do things?
5		All	Gross	Do you have any concerns about how your child uses his or her arms and legs?	Do you sometimes worry about how your child uses his or her arms and legs?
6		All	Socio	Do you have any concerns about how your child behaves?	Do you sometimes worry about how your child behaves?
7		All	Socio	Do you have any concerns about how your child gets along with others?	Do you sometimes worry about how your child gets along with others
8		All	Self help	Do you have any concerns about how your child is learning to do things for himself/herself	Do you sometimes worry about how your child is learning to do things for himself/herself?
9		All	Pre lit/math	Do you have any concerns about how your child is learning preschool or school skills?	Do you sometimes worry about how your child is learning preschool or school skills?
10		All	General	Please list any other concerns:	Please list any other worries you have about your child:
PEDS: DM					
A	5	0-2m	gross	Does your baby try to keep his or her head steady?	Does your baby try to keep his or her head still and up?
D	5	8-10m	gross	Can your baby get around on hands and knees or by scooting on his or her bottom?	Can your baby get around by crawling or by moving on his bum?
D	6	8-10m	socio	Does your baby like to play peek-a-boo?	When you put a blanket over your face and pull it off, does your baby laugh?
E	1	11-13m	fine	Can your baby make squeeze toy squeak – or try to?	Can your baby squeeze a toy to make a sound?
F	1	14-16m	fine	Can your child unwrap food or a toy that has been loosely wrapped?	Can your child open a sweet that is covered with plastic or a packed of chips if you open it a little bit first?
J	1	23-25m	fine	Does your child try to scribble with crayons or markers?	Does your child try to draw or make marks with a crayon or pen?
H	6	20-22m	socio	Does your child watch people's faces for clues to how they are feeling? Can he or she tell if someone is mad, sad, or happy?	Does your child look at people's faces to see how they are feeling? Can he or she see if someone is angry, sad or happy

© University of Pretoria

K	5	2y2m-2y4m	gross	When your child tries to run, does each foot leave the ground a little, even if he or she falls often?	When your child tries to run, he or she still falls often?
K	1	2y2m-2y4m	fine	Does your child try to scribble with crayons or markers?	Does your child try to draw or make marks with a crayon or pen?
L	2	2y5m-2y9m	self help	Can your child take off loose clothes such as pull-down pants or a coat?	Can your child take off loose clothes such as pull-down pants or take off a jacket when not zipped/buttoned?
M	5	2y10m-3y2m	gross	Can your child stand on each foot for a second?	Can your child stand on their left foot and then their right foot for a second?
N	4	3y3m-3y7m	express	Ask your child "What do we do with scissors?" and then "What are refrigerators for?" Does he/she use words like cutting, and keeping food cold or making ice?	Ask your child "What do we do with scissors?" Now ask "What is a broom for?" Does he/she use words cleaning, sweeping?
P	2	3y8m-4y0m	self help	Ask your child, "What is your name…what is your whole name?" What does he or she say? (the word last name is in the answer)	Ask your child, "What is your name…what is your name and surname?" What does he or she say?
Q	4	4y1m-4y5m	express	Does your child use words that tell about time like, morning, afternoon, night, yesterday, or tomorrow?	Does your child use words that tell about time like, morning, afternoon, night, yesterday, or tomorrow?
Q	8	4y1m-4y5m	lit	Point to the letters and ask, "Where's the A?... Where's the X? … Where's the O?" Keep trying to see if he or she can point to two or three correctly. How did your child do?	Ask you child "Do these words sound the same at the end: cat-hat?" (yes). Now say: "Do these words sound the same at the end dog-ball?" (no). Try with these words tree-fish (no). Now try with pot-dot? (yes). How many did he/she get right?
R	1	4y6m-4y10m	fine	Can your child write any letters of the alphabet?	Can your child draw a circle, a square and a triangle?
R	8	4y6m-4y10m	lit	Point to a letter of the alphabet and ask your child, "What's this?" Try again with other letters to see if your child can name at least one letter correctly. How did he or she do?	Ask your child "Clap the word apple into parts" (ap-ple = 2 claps). "Now try to clap elephant into parts" (e-le-phant = 3 claps). Try with soccer (soc-cer = 2 claps), then storybook (sto-ry-book = 3 claps). How many did he/she get right?
S	6	4y11m-5y5m	socio	Can your child play games with rules, like board or card games, kickball, or hopscotch?	Can your child play games with rules, like card games, games with balls like soccer or netball?
T	2	5y6m-6y0m	self help	Ask your child, "What is your Mom's name?" or "What is your Dad's name?" (Or other caretakers if needed). What does he or she say? (the word last name is in the answer)	Ask your child, "What is your Mom's name and surname?" or "What is your Dad's name and surname?" (Or other caretakers if needed). What does he or she say?
U	8	6y1m-6y11m	lit	Point to the word, "Exit" and say, "What does this say?" then point to "Danger", "caution", and "Poison" and ask your child to read them. How many can he or she read? 	Point to the word, "Exit" and say, "What does this say?" then point to "stop", "checkers", and "Pick n Pay" and ask your child to read them. How many can he or she read? 

© University of Pretoria

Supplementary tables: All the adaptations on the PEDS tools to form the PEDS tolls-SA

Form	Q	age	area	Original Questions	Final Suggestion
PEDS	1			Please list any concerns about your child's learning, development, and behaviour:	Please list any worries about your child's learning, how they are growing, and behaviour:
PEDS	**2-9**			Do you have any concerns about how…	Do you sometimes worry about how your child …
PEDS	10			Please list any other concerns:	Please list any other worries you have about your child:
A	2	0-2m	Self help	Does your baby open his mouth when he sees a bottle, breast, or pacifier?	Does your baby open his mouth when he sees a bottle, breast, or dummy?
A	5	0-2m	Gross	Does your baby try to keep his or her head steady?	Does your baby try to keep his or her head still and up?
B	2	3-4m	Self help	Does your baby open his mouth when he sees a bottle, breast, or pacifier?	Does your baby open his mouth when he sees a bottle, breast, or dummy?
D	1	8-10m	fine	Can your baby poke at things with just his or her first finger?	Can your baby push at things with just his or her first finger? 
D	2	8-10m	Self help	Does your baby try to get to toys that are out of reach?	Does your baby try to get to toys that are too far to reach?
D	4	8-10m	Expre ss	How many different sounds such as "muh", "bah", "duh" or "guh" does your baby say?	How many different sounds such as "ma", "ba", "da" or "ga" does your baby say?
D	5	8-10m	Gross	Can your baby get around on hands and knees or by scooting on his or her bottom?	Can your baby get around by crawling or by moving on his bum?
D	6	8-10m	Socio	Does your baby like to play peek-a-boo?	When you put a blanket over your face and pull it off, does your baby laugh?
E	1	11-13m	Fine	Can your baby make squeeze toy squeak – or try to?	Can your baby squeeze a toy to make a sound?
E	6	11-13m	Socio	Does your baby look for new things to play with and try to figure out how they work – like busy boxes or squeaking toys?	Does your baby look for new things to play with and try to figure out how they work – like toys your squeeze to make a sound?
F	1	14m-16m	Fine	Can your child unwrap food or a toy that has been loosely wrapped?	Can your child open a sweet that is covered with plastic or a packed of chips if you open it a little bit first?

© University of Pretoria

F	3	14m-16m	Recep	If you hold out your hand and ask your child to give you something, does he or she give you something even if it is not the right thing?	If you hold out your hand and ask your child to give you something like a toy, does he or she give you something in your hand even if it is not the toy?
G	1	17m-19m	Fine	Can your child stack blocks?	Can your child build a tower with blocks?
G	5	17m-19m	Gross	Does your child try to jump, even if both feet don't leave the ground?	Does your child try to jump?
H	5	20m-22m	Gross	Does your child try to jump, even if both feet don't leave the ground?	Does your child try to jump?
H	6	20m-22m	Socio	Does your child watch people's faces for clues to how they are feeling? Can he or she tell if someone is mad, sad, or happy?	Does your child look at people's faces to see how they are feeling? Can he or she see if someone is angry, sad, or happy?
J	1	23m-25m	Fine	Does your child try to scribble with crayons or markers?	Does your child try to draw or make marks with a crayon or pen?
J	2	23m-25m	Self help	Does your child try to help when it is time to put things away?	Does your child try to help when it is time to pack things away or tidy up?
K	1	2y2m-2y4m	Fine	Does your child try to scribble with crayons or markers?	Does your child try to draw or make marks with a crayon or pen?
K	2	2y2m-2y4m	Self help	Does your child try to help when it is time to put things away?	Does your child try to help when it is time to pack things away or tidy up?
K	5	2y2m-2y4m	Gross	When your child tries to run, does each foot leave the ground a little, even if he or she falls often?	When your child tries to run, he or she still falls often?
L	1	2y5m-2y9m	Fine	Can your child scribble with a crayon or marker without going off the page much?	Can your child draw with a crayon or pen without going off the page much?
L	2	2y5m-2y9m	Self help	Can your child take off loose clothes such as pull-down pants or a coat?	Can your child take off loose clothes such as pull-down pants or take off a jacket when not zipped/buttoned?
M	1	2y10m-3y2m	Fine	Can your child scribble with a crayon or marker without going off the page much?	Can your child draw with a crayon or pen without going off the page much?
M	5	2y10m-3y2m	Gross	Can your child stand on each foot for a second?	Can your child stand on the right foot for a second, then on the left foot for a second?
N	4	3y3m-3y7m	Express	Ask your child "**What do we do with scissors**?" and then "**What are refrigerators for**?" Does he/she use words like cutting, and keeping food cold or making ice?	Ask your child "What do we do with scissors?" Does h/she use words like cutting? Now ask "What is a broom for?" Does he/she use words cleaning, sweeping?

© University of Pretoria

N	7	3y3m-3y7m	Math	If you showed your child a coin and asked, "**What's this**?", would he or she say coin?	If you showed your child money and asked, "What's this?", would he or she say money?
P	2	3y8m-4y0m	Self help	Ask your child, "**What is your name…what is your whole name**?" What does he or she say? (the word last name is in the answer)	(the word surname is in the answer)
P	8	3y8m-4y0m	Lit	Say to your child, "Listen, are these words the same or not the same?" Then say, "**bit-pit: are they the same or not the same?** Then say, "**set-set: are they the same or not the same**?" Then try these: **hide-glide, bat-mat**. How many did he or she answer correctly?	Say to your child, "Listen, are these words the same or not the same?" Then say, "fun - run: are they the same or not the same? (Your child should say "not the same") Then say, "sit-sit: are they the same or not the same?" (Your child should say "the same") Then say: mop-hop (Your child should say "not the same"), Cat – mat (Your child should say "not the same"). How many did he or she answer correctly?
Q	4	4j1m-4j5m	Express	Does your child use words that tell about time like, morning, afternoon, night, yesterday, or tomorrow?	Does your child use words that tell about time like, morning, afternoon, night, yesterday, or tomorrow?
Q	5	4j1m-4j5m	Gross	Can your child walk three steps putting one foot in front of the other with heel touching toe?	Can your child walk three steps putting one foot in front of the other with heel touching toe? 
Q	6	4j1m-4j5m	Socio	When playing, does your child try not to hurt others? If playmates are hurt, does he or she seem concerned?	When playing, does your child try not to hurt others? If playmates are hurt, does he or she seem sorry?
Q	8	4j1m-4j5m	Lit	Point to the letters and ask, "Where's the A?... Where's the X? … Where's the O?" Keep trying to see if he or she can point to two or three correctly. How did your child do?	Ask you child "Do these words sound the same at the end: cat-hat?" (yes). Now say: "Do these words sound the same at the end dog-ball?" (no). Try with these words tree-fish (no). Now try with pot-dot? (yes). How many did he/she get right?
R	1	4j6m-4j10m	Fine	Can your child write any letters of the alphabet?	Can your child draw a circle, a square and a triangle?
R	4	4j6m-4j10m	Express	Tell your child, "**Say what I say: Jane likes to throw and catch a ball**." If your child made mistakes, try again with this: "**Say what I say: Bob reads good books every time he can**." How did your child do?	Tell your child, "Say what I say: Tumi likes to throw and catch a ball." If your child made mistakes, try again with this: "Say what I say: Sipho reads good books every time he can." How did your child do?
R	7	4j6m-4j10m	Math	Ask your child to give you 2 of something (like toys, coins or books). Then ask for 1, 3, 5 and 4 of something. Does he or she give you the right number of things each time?	Ask your child to give you 2 things (like toys, rocks or books). Then ask for 1 thing, then ask for 3 things, then ask for 5 things and then ask for 4 things. Does he or she give you the right number of things each time?

© University of Pretoria

R	8	4j6m-4j10m	Lit	Point to a letter of the alphabet and ask your child, "What's this?" Try again with other letters to see if your child can name at least one letter correctly. How did he or she do?	Ask your child "Clap the word apple into parts" (ap-ple = 2 claps). "Now try to clap elephant into parts" (e-le-phant = 3 claps). Try with soccer (soc-cer = 2 claps), then storybook (sto-ry-book = 3 claps). How many did he/she get right?
S	3	4y11m-5y5m	Recep	Tell your child, "**Put your hands above your head**," and then, "**Put your fingers below your eyes**." Now point to a page in a book and say, "**point to the center of this page**," and then, "**point to the corner**." How many did he or she get right?	Tell your child, "Put your hands above your head," did your child do it right? Now say: "Put your fingers under your eyes." did your child do it right? Now point to a page in a book and say, "point to the middle of this page," and then, "point to the corner." did your child do it right? How many did he or she get right?
S	6	4y11m-5y5m	Socio	Can your child play games with rules, like board or card games, kickball, or hopscotch?	Can your child play games with rules, like card games, games with balls like soccer or netball?
S	7	4y11m-5y5m	Math	Point to the logs and then to the number 5. Say, "Show me this many." Do this again by pointing to the 6 and then to 7. How many did your child get right?	Point to the trees and then to the number 5. Say, "Show me this many." Could your child show 5 trees?Point to the trees again and then to the number65. Say, "Show me this many." Could your child show 6 trees?How many did your child get right?Point to the trees and then to the number 7. Say, "Show me this many." Could your child show 7 trees?
T	2	5y6m-6y0m	Self help	Ask your child, "**What is your Mom's name**?" or "**What is your Dad's name**?" (Or other caretaker if needed). What does he or she say? (the word last name is in the answer)	Ask your child, "What is your Mom's name and surname?" or "What is your Dad's name and surname?" (Or other caretakers if needed). What does he or she say?
U	3	6y1m-6y11m	Recep	Say to your child, "**Point to your hips**,… **wrist**,… **waist**." How many does he or she know?	Say to your child, "Point to your hips,… wrist,… waist." How many does he or she know?
U	4	6y1m-6y11m	Expre ss	Point to the picture of the puppy and tell your child, "**Say what I say: 'Puppies make nice pets but need lots of love**'." If there were any mistakes, try again with this: "**Say what I say: 'The girl went swimming in the lake with friends**'." How did your child do?	Point to the picture of the puppy and tell your child, "Say what I say: 'Puppies make nice pets but need lots of love'." If there were any mistakes, try again with this: "Say what I say: 'The girl went swimming in the pool with friends'." How did your child do?

© University of Pretoria

U	8	6y1m-6y11m	Lit	Point to the word, "Exit" and say, "What does this say?" then point to "Danger", "caution", and "Poison" and ask your child to read them. How many can he or she read? 	Point to the word, "Exit" and say to your child, "What does this say?" then point to "Checkers" and say to your child, "What does this say?", Point to "Stop", and say to your child, "What does this say?" and point to "Pick n Pay" and ask "What does this say?". How many can he or she read? 
V	8	7y1m-7y11m	Lit	Point to the sign for "Fire alarm," and say to your child, "Please read this to me." Try again with "Do not disturb "… and "Wait on the curb". How many were right (sounding as if he or she knew what each one meant)? 	Point to the sign for "Fire alarm," and say to your child, "Please read this to me." Now point to "Caution, wet floor ", and say to your child, "Please read this to me." Now point to "No entry", and say to your child, "Please read this to me. How many could your child read? 

© University of Pretoria

CHAPTER 6 SUMMARY OF RESEARCH, CLINICAL IMPLICATIONS AND CONCLUSION

© University of Pretoria

Chapter aim: This chapter provides a combined summary of the research findings of the overarching project. A framework for the cultural adaptation of a screening tool is discussed. The clinical implication, strengths and limitations of this study are presented. Recommendations for future research are also discussed.

6.1 SUMMARY OF RESEARCH FINDINGS

Measuring development and addressing developmental needs; evaluating the effectiveness of interventions, and capturing the impact of environmental and core challenges to development can be done with reliable and valid developmental screening tools (Munoz-Chereau et al., 2021). For a developmental screening tool to provide appropriate results, it must be used for the intended population (Munoz-Chereau et al., 2021). In LMICs, where children live in varying social contexts, speak different languages, and have access to diverse educational systems, developmental screening tools from high-income countries will not be appropriate (Munoz-Chereau et al., 2021).

This study, therefore, set out to culturally adapt the PEDS tools for a low-income community in South Africa through a thorough and systematic approach. This approach was initiated by including the perspectives and understanding of the caregivers within the community, giving voice to deep cultural concepts, local terminologies, family traditions, and amending notions unfamiliar to the child or family. A multi-phased mixed-method design that relied on the triangulation of data was used. To meet the main aim of the research project, three studies were conducted. The main aim of the research project was to culturally adapt the PEDS tools for a low-income community in South Africa informed by the perspectives of the caregivers.

The first study aimed to explain the views of caregivers on ECD, resources and available services in a low-income community in South Africa. This was achieved by a focus group discussion. Key findings from this study show that caregivers want to be involved in the development of their children, but often lack knowledge on early childhood development. Caregivers feel that developmental healthcare providers (HCPs) play an important role in identifying developmental delays and disabilities in children and educating caregivers about ECD. This creates an opportunity for developmental HCPs to train parents in developmental outcomes and using a screening tool to guide the training can increase the developmental literacy of caregivers (Jeyaseelan & Sawyer, 2017). This implies that a parent administered screening tool in low-income communities should rather be conducted as an interview to ensure communication between caregivers and the HCPs about their child's development (Partain et al., 2019). D'Aprano

© University of Pretoria

et al. (2016) engaged the caregivers of the Aboriginal community in Australia about the adaptation of the ASQ-3 and found that the community also preferred the screening tool administered by interview, as an interview would encourage a conversation about the child with the developmental HCPs.

A second finding of the study was that there is a lack of resources and even when available, they are often not optimally used in the community. As a result, even if a culturally appropriate screening tool is available, it may not be implemented due to lack of time and staff availability at public health care facilities (DSD, DWCPD and UNICEF., 2012; Milbrath et al., 2020; Scherzer et al., 2012). There is a need for resources that are efficient and do not require a lot of human resources to be implemented. One suggestion is to create an mHealth version of the culturally adapted PEDS tools-SA. Du Toit et al. (in press) found that developmental HCPs were optimistic about using and implementing the mHealth version of the PEDS tools within the community.

The second study explored the way the community understood the constructs within the PEDS tools. In this study, caregivers had to identify items on the PEDS tools that were culturally inappropriate. Caregivers indicated that all ten questions on the PEDS and 58 questions on the PEDS: DM were problematic. These challenging items were organised into three major categories. Firstly, 31 questions were too difficult to understand. Caregivers indicated that for some items, they could not understand the meaning of the questions. In such instances where caregivers did not understand the meaning of the questions, answers that caregivers gave on the items may not be reliable. Van der Merwe et al. (2017) mentioned that in the both the Zulu translation and original English version of the PEDS the comprehension of the questions be evaluated, as the caregivers' understanding of some of the questions was doubtful. Caregivers can only appropriately answer questions about their children if they understand the meaning of the question (Hirai et al., 2018;Vameghi et al., 2013).

The second category was where caregivers identified 41 questions with unfamiliar words. Usually, these unfamiliar words are identified by a linguist or experts in the field of the screening tool (International Test Commission., 2017). Some words in this study were easy to identify as culturally inappropriate, for example the word *pacifier* is not used in South Africa. This will be similar in identifying words such as *snow* in the ASQ or *inches* and *dollars* in the Mullen Scales

© University of Pretoria

of Early Learning (Bornman et al., 2010, 2018). Yet, an interesting finding in this study was the number of words that the community acknowledged as culturally inappropriate.

The third category included 9 items that were not age appropriate for the culture. Items in this category was mostly due to literacy development differences. In South Africa most children are only exposed to basic literacy in Gr R (the year that the child turns six); where a child is expected to identify alphabet letters (South Africa & Department of Basic Education, 2015). The child is only expected to read and write the letters in grade 1 (the year the child turns 7) (South Africa & Department of Basic Education, 2015). Therefore, for example, the question on the PEDS: DM for the age 4y6m-4y10m that states "*Can your child write any letters of the alphabet?*" was identified as culturally inappropriate.

In a study in South Africa, the Modified Checklist for Autism in Toddlers, Revised with Follow-Up (MCHAT-R/F) was adapted into a basic South African English version (and also translated into Northern Sotho). Experts in ECD (familiar with the culture of the community) identified four items on the checklist that were culturally adapted (Vorster et al., 2021). For example, the item "*Does your child look you in the eye*?" was identified as culturally inappropriate for the Northern Sotho culture, as eye contact is not culturally respectable (Vorster et al., 2021). Similarly, a linguist provided a plain English version of the ASQ-3 (that was also translated for the Australian Aboriginal community) where approximately four items were culturally adapted; for example, the item "*After your child watches you draw a line from the top of the paper to the bottom with a pencil, crayon, or pen, ask him to make a line like yours*" was identified as culturally inappropriate as paper and crayons are not easily accessible in that area of Australia (D'Aprano et al., 2011). Yet, in this study almost half of the items (46.8%) on the PEDS: DM and 100% of the items on the PEDS were identified by the community as difficult. One key difference in this study was that the *community* had an opportunity to identify items they felt were inappropriate, as opposed to experts or linguists. This study is one of the first to use the community in such a capacity. There might be a significant value in having the community identify difficult items on a tool first before experts or linguists modify the items; because it seems that community members identified even more items than experts or linguists usually identify. Community members are specialists in their own population and having their input from the initial steps in the adaptation process might render a more reliable and valid tool for the population.

© University of Pretoria

The third study continued with the systematic method to adapt the PEDS tools to create the culturally appropriate PEDS tool-SA for a low-income community in South Africa. The community was asked, through a focus group, to make suggestions on the items identified as inappropriate in the previous step. Of the 58 questions identified on the PEDS: DM, only 45 were included in the discussion, because 10% or more of the caregivers identified it as difficult. All 10 questions of the PEDS were included. The community suggested that for some items the instructions be elaborated, or the item be more descriptive; e.g., "*Does your baby like to play peek-a-boo?*" was changed to "*When you put a blanket on your face and pull it off, does your baby laugh?"* For other items unfamiliar words were altered, e.g., "*Does your baby try to keep his or her head steady?*" was amended to "*Does your baby try to keep his or her head still?*". The community also suggested that some items be changed, e.g., "*Can your child stack blocks?"* was changes to "*Can your child build a tower with blocks?"* For some items it was suggested to add pictures or leave out confusing parts, e.g., "*Does your child try to jump, even if both feet don't leave the ground?*" was altered to "*Does your child try to jump?".* Yet, for some items there were no suggestions.

The suggestions the community formed were similar to changes made by experts or linguists; for example, in the Aboriginal ASQ, pictures were added to all the items to make it more understandable to the community (D'Aprano et al., 2011). Similarly in India, when the ASQ-3 was adapted for the population, the item that asked if a *child can eat with a fork* was substituted with "Does your child take chapatti with dal (lentils)?" (Kvestad et al., 2013). However, in this study, each question received special attention from the community. Each question was individually changed using the community's own language and according to their needs, values, and traditions. This step, involving the community input, is similar to the step in the WHO translation guidelines (2016) of cognitive interviews where the goal is for participants to evaluate the questions on the tool and voice any difficulties. These difficulties can then be amended by incorporating the views and opinions of the participants (World Health Organization, 2016). However, in the WHO guidelines, the step of cognitive interviews is one of the last steps. In the current study, the community was deemed the decision-makers from the start and their input on the items in the tool was seen as one of the initial steps. Community involvement from the start ensured that all the items were evaluated to determine cultural, linguistic, and contextual relevance and where necessary, changes were made.

© University of Pretoria

Only after the community's suggestions, an expert panel, that consisted of 12 experts in the field of ECD, obtained a consensus on the suggestions made by the community. This was done through two rounds of a modified Delphi Method. In both, the WHO (2016) and ITC (2017) guidelines, experts play a significant role in the translation and adaptation process, and it is common for experts to be part of the process from the initial steps, as both sets of guidelines recommend. In this study, however, the experts were part of the final steps, and their role in the adaptation process was to partner with the community instead of making changes on behalf of the community. An interesting finding in this study was that experts, at times, tended to make suggestions on the problematic items that were too extensive – in essence, making the items culturally inappropriate again. For example, the word "*development*" on the PEDS was identified as difficult to understand; the community suggested using the term "*how they are growing";* yet the experts suggested "*whether they are doing things at the same time as other children their age".* Table 6.1 gives a few examples of the suggestions made by some experts.

Table 6. 1

Examples of an expert suggestion on a problematic item on the PEDS tools.

Original question	Community suggestion	An expert suggestion
Can your baby get around on hands and knees or by scooting on his or her bottom?	Can your baby get around by crawling or by crawling on his bum?	Can your baby get around by crawling using his/her knees and hands or by pushing his/her bum forward while sitting?
If you hold out your hand and ask your child to give you something, does he or she give you something even if it is not the right thing?	If you hold out your hand and ask your child to give you something like a toy, does he or she give you something in your hand even if it is not the toy?	If you hold out your hand and ask your child to give you something like a toy, does he or she give you something in your hand even if it is not the desired / requested toy?
Please list any concerns about your child's learning, development, and behaviour:	Please list any worries about your child's learning, how they are growing, and behaviour:	Please list any worries about your child's learning, whether they are doing things at the same time as other children their age and their behaviour:

The opposite was also true where experts made suggestions on items where the community suggestion was not workable, because the wording was incorrect; the suggestion was not descriptive enough or did not test the domain. Table 6.2 gives examples where the experts amended the community suggestion to make it appropriate for the tool.

© University of Pretoria

Table 6. 2

Examples of expert suggestions amending the community suggestion.

Age	Domain	Original item	Community suggestion	Expert suggestion
8-10m	Socio emotional development	Does your baby like to play peek-a-boo?	When you put a blanket **on** your face and pull it off, does your baby laugh?	When you put a blanket over your face and pull it off, does your baby laugh?
2y10m-3y2m	Gross motor development	Can your child stand on each foot for a second?	Can your child stand on **one** foot for a second?	Can your child stand on their left foot and then their right foot for a second?
3y3m-3y7m	Expressive language development	Ask your child "What do we do with scissors?" and then "What are refrigerators for?" Does he/she use words like cutting, and keeping food cold or making ice?	Ask your child "What do we do with scissors?" Does he/she use words like cutting Now ask "What is a fridge for?" Does he/she use words keeping food cold or making ice?	Ask your child "What do we do with scissors?" Now ask "What is a broom for?" Does he/she use words cleaning, sweeping?
4j6m-4j10m	Early literacy development	Point to a letter of the alphabet and ask your child, "What's this?" Try again with other letters to see if your child can name at least one letter correctly. How did he or she do?	Point to a shape and ask your child, "What's this?" Try again with other shapes to see if your child can name at least, one shape correctly. How did he or she do?	Ask your child "Clap the word apple into parts" (ap-ple = 2 claps). "Now try to clap elephant into parts" (e-le-phant = 3 claps). Try with soccer (soc-cer = 2 claps), then storybook (sto-ry-book = 3 claps). How many did he/she get right?

It can be deduced that both the experts and the community working together on problematic items can deliver the most appropriate suggestion for each item. This was done to ensure that each item received individual attention to guarantee the most effective suggestion for each challenging item.

Finally, verification from the authors of the PEDS tools were attained. Not all translations and adaptions of developmental screening tools include this step, and the result might be that errors are encountered in the process (Kiing et al., 2012). In this study, the authors requested that the quality of the pictures should be enhanced; but approved all changes.

6.2 CLINICAL AND THEORETICAL IMPLICATIONS OF THE FINDINGS

Through the systematic adaption of the PEDS tools a proposed framework for culturally adapting a screening tool is provided. This framework is suggested to ensure both process and content adaptation (Bernal & Domenech Rodríguez, 2012). Employing this framework will support the use of a more cultural, linguistic, and contextually relevant tool, where local language, caregiver

© University of Pretoria

understanding, family values and tradition are taken into account, while adapting unfamiliar terms and concepts.

Figure 6.1 shows the framework for the cultural adaptations of a screening tool and how the adaptation process can be implemented within the WHO (2016) and ITC (2017) translation and adaptation guidelines.

Figure 6. 1

A Framework for cultural adaptation of a screening tool within the WHO and ITC guidelines

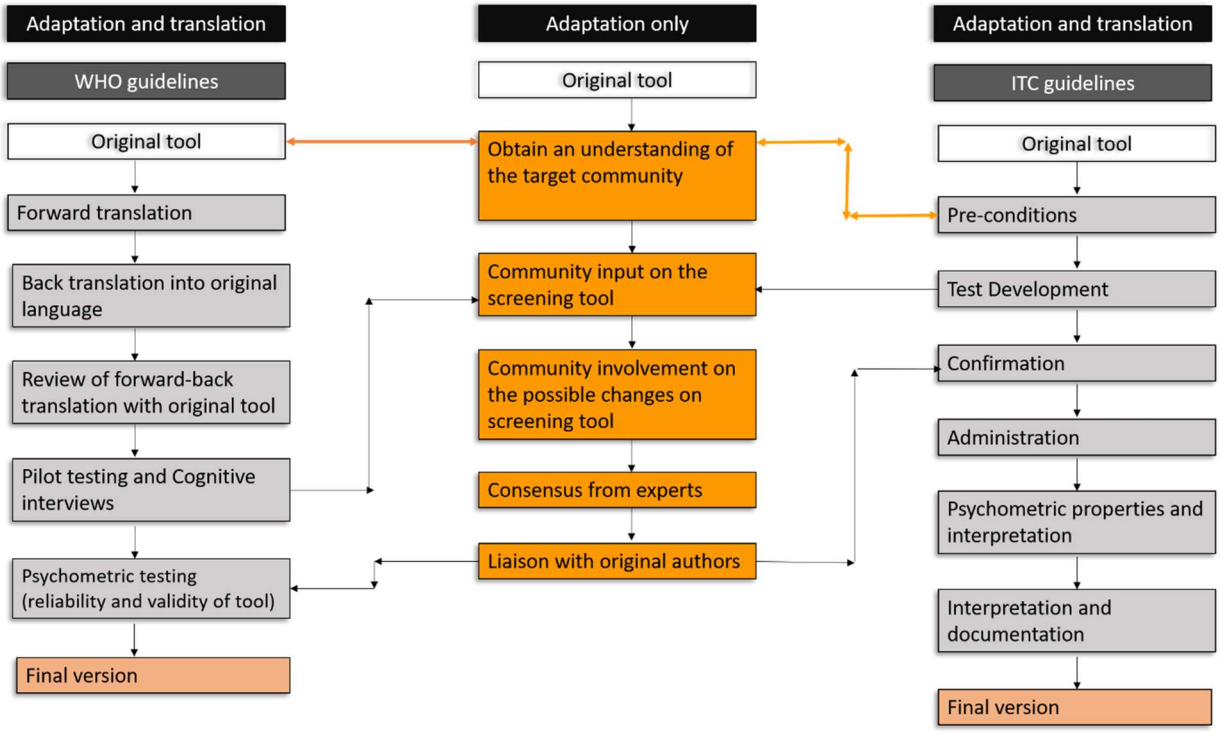
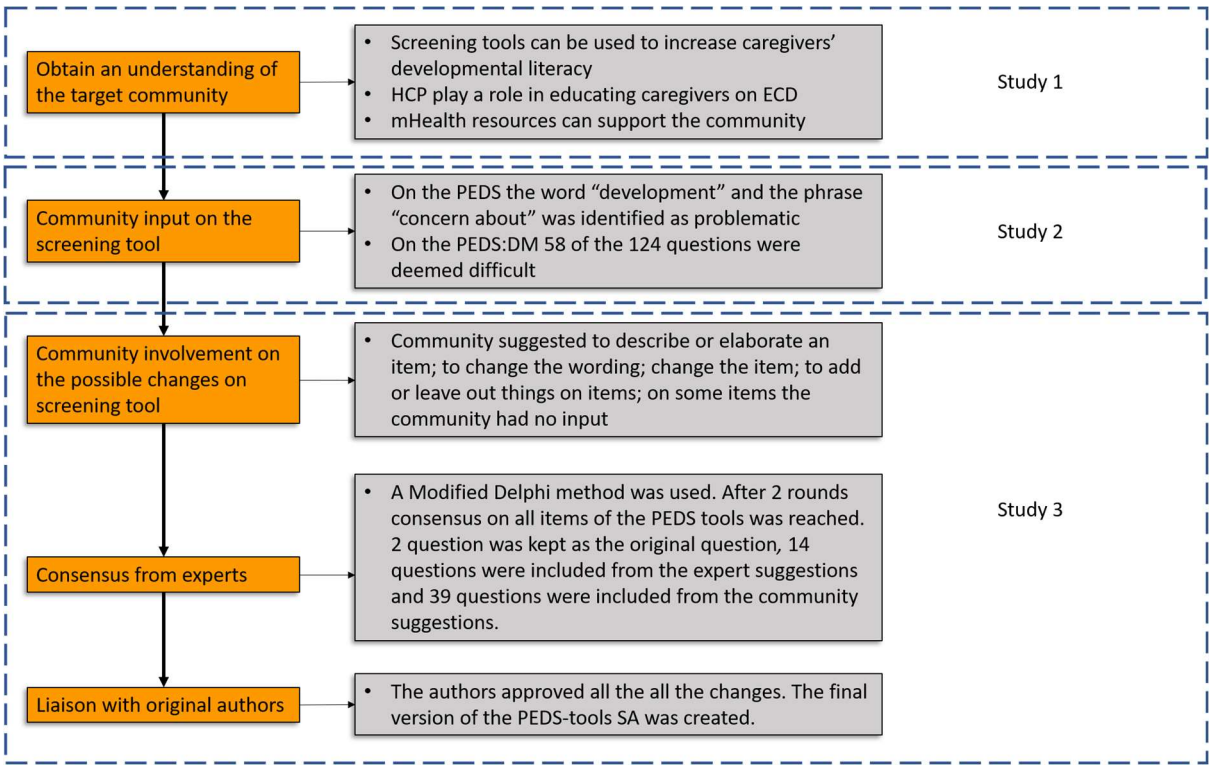


Figure 6.2 gives an overview of the research findings of this study within the adaptation framework.

© University of Pretoria

Figure 6. 2

Summary of research results within the cultural adaptation framework.



The steps and goals of the framework are outlined to clarify the process:

Step 1: Obtain an understanding of the target community

This step aims to obtain a clear awareness of the community in terms of their understanding of early childhood development, understanding of the resources within the community and an understanding of the services within the community. Another goal of this step is to understand the language the community uses and their cultural values and beliefs. The suggested method to use for this step is a focus group. The caregivers of the target population for the screening tools should form part of the focus group discussion.

Step 2: Community input on the screening tool

This step aims to gain feedback from the community regarding the applicability of the screening tool. The participants should be representative of the target population for which the tool is being adapted. For example, if a parent-administered developmental screening tool is adapted, caregivers in the community should partake in the study. The proposed method for this step is to use personal interviews or a self-developed utility questionnaire. The questionnaire or interview should obtain information on whether the community understands the wording of the questions, whether they understand the content, and what questions may be culturally inappropriate. The

© University of Pretoria

questions that the community identify as inappropriate should then be adapted. This step will enable problematic questions to be flagged and modifications suggested according to the community's needs, beliefs, language, and culture.

Step 3: Community involvement on the possible changes on the screening tool

Community members are experts of their own community, their beliefs, values, culture, and language. This step ultimately gives the community a voice in what changes should be made to make a tool culturally appropriate. The proposed method for this step is personal interviews or a focus group discussion with community caregivers of the target population of the screening tool. The aim of the discussions is to suggest changes to the questions, using the members' own wording, own examples, and own interpretation.

Step 4: Consensus from experts

Experts in the field of the screening tool should subsequently review and provide input on the changes to the questions suggested by the community. Not all suggested changes may be appropriate. A panel of experts must be tasked to reach consensus on suggested changes. Consensus can either be in favour of the community suggestions or choose to have an alternative to the community suggestion for problematic items. The proposed method for this step can be a focus group or a modified Delphi Method. However, experts should be careful not to suggest changes to items that may infringe on the cultural aspect as suggested by the community, in essence making the item culturally inappropriate again. An additional goal of this step is to ensure the tool's face validity and content validity. The face validity of a test indicates the degree to which it appears to measure the intended outcome, and the content validity of a test refers to how accurately the items on it reflect the domain it aims to measure (McMillan & Schumacher, 2010). A dichotomous scale that includes “yes” and “no” can be used to determine the face validity of each item using the following criteria a) appropriateness of grammar, b) clarity of item, c) correct spelling, d) correct sentence structure and e) appropriate font size (Oluwatayo, 2012). For content validity a dichotomous scale with “agree” and “disagree” options can be used. Agreement would indicate that the item covers the age and domain that is purports to cover (Oluwatayo, 2012).

Step 5: Liaison with the authors

When culturally adapting a tool, the integrity of the tool should be maintained. There should be a clear similarity between the original and the adapted tool. The aim of this step is to ensure that

© University of Pretoria

the authors of the original tool agree with the changes made and that the integrity of the original tool is evident. Virtual meetings and/or email communication are methods used to effectively communicate with the authors as many authors may reside in other countries.

6.3 STRENGTHS AND LIMITATIONS

6.3.1 Study strengths

This project is one of a few to systematically adapt a developmental screening tool to be culturally appropriate for a specific community. This rigorous adaptation process developed a new framework that can be used in future studies to culturally adapt instruments. This adaptation framework can also be used in current and future translations of screening tools to ensure that much needed cultural changes are made. As one of the first studies to test critical concepts and vocabulary in a community setting, this study ensured that interpretation, local culture, and background were taken into account to adapt the PEDS tools for the population. It demonstrated how important it is to involve the community as decision-makers in the adaptation process from the onset and recommended that an expert panel only seek consensus on the input from the community as a next step. In this project, the importance of caregivers playing a role in their children's developmental was highlighted. This study resulted in a culturally adapted PEDS tools-SA (see appendix P).

6.3.2 Study Limitations

Due to the Covid-19 pandemic and regulations regarding the different levels of lockdown, there was limited access to participants and data collection took longer than anticipated. A limitation of the current study was that it was carried out in a single setting, limiting the generalisation. The participants represent a small sample from a broader community. A larger sample size would ensure that the statistical result can be generalised to a larger population. While the participants display much of the community's diversity, the small sample size, and the English proficiency limited the generalisability of the results. Because of the method (which used convenience sampling), the data is subject to selection bias. However, all participants that attended the clinic on a specific day were asked to participate. Seeing as the researcher is from a different ethnic group, the bias, values, and context of the researcher might also have shaped the narrative considerably, however, measures were put in place to limit the influence. For example, detailed records were maintained during data collection, there was honesty in reporting the results; data was assessed and processed by more than one researcher; and limitations in the studies were

© University of Pretoria

noted. The topic of cultural adaptation of screening tools, without translation is a topic that has not received a lot of attention and prior research studies that are relevant to this research topic is limited. The final tool was also not validated in the setting, and future studies are proposed to validate the PEDS tools-SA in a low-income community in South Africa.

6.4 RECOMMENDATIONS FOR FUTURE RESEARCH

It is recommended that the validity and reliability of the adapted PEDS tools-SA be determined. Content validity, construct validity, and criterion-related validity using a gold standard screening tool should be determined (McMillan & Schumacher, 2010). The correlation coefficient between two measures should be measured. Internal consistency reliability, test-retest reliability and inter-rater reliability should be measured. Kappa statistics, correlation coefficients, and intra-class correlation coefficients are some of the commonly reported inter-rater reliability measures (McMillan & Schumacher, 2010). The validity and reliability of a mHealth version of the PEDS tools-SA can be considered in the future. PEDS tool-SA's sensitivity, specificity, and positive and negative predictive value should be assessed in a larger-scale study with confirmatory diagnostic information. Using this adaptation framework proposed by this study, other screening tools can be adapted for South Africa (without translation). Combining the proposed adaption framework with a translation of a screening tool, is also suggested. This adaptation framework can also be used in other countries to adapt screening tools for a specific population.

6.5 CONCLUSION

An early identification and intervention process that is culturally appropriate is essential to support optimal child development. Current developmental screening tools must be cross-culturally adapted for the population, especially in vulnerable, low-income communities. This study used an original method to culturally adapt PEDS tools for a low-income community in South Africa, creating the PEDS tools-SA. This method highlights the research gaps in the lack of guidelines for rigorous cultural adaptation of developmental screening tools. In this method community-stakeholders' views were incorporated from the beginning. Community perspectives on the cultural and linguistic appropriateness of developmental screening tools from high-income countries are essential for ensuring that tools are adapted to low-income communities, despite this process being intensive and time-consuming. Embracing a community's language, norms, values, beliefs, and customs while culturally adapting a tool demonstrates how community

© University of Pretoria

involvement can create linguistically, culturally, and contextually sound tools. Furthermore, substantial community participation and expert panel agreement were required to achieve these adaptations. Consequently, this resulted in a high-quality adaptation of the PEDS tools that is more likely to be accepted by the community in the future and might consequently better identify potential developmental delays and disabilities. This method can guide future research to ensure culturally appropriate adaptations by incorporating community perspectives.

© University of Pretoria

REFERENCES

© University of Pretoria

REFERENCES

Abdoola, S. (2015). Translating tools for better parent-based assessment: An exploratory study. *South African Journal of Communication Disorders*, *62*(1), 12 pages. https://doi.org/10.4102/sajcd.v62i1.73

Adams, E. J., & Sherar, L. B. (2018). Community perceptions of the implementation and impact of an intervention to improve the neighbourhood physical environment to promote walking for transport: A qualitative study. *BMC Public Health*, *18*(1), 714. https://doi.org/10.1186/s12889-018-5619-y

Bernal, G., & Domenech Rodríguez, M. M. (2012). *Cultural adaptations: Tools for evidence-based practice with diverse populations.* American Psychological Association.

Bornman, J., Sevcik, R. A., Romski, M., & Pae, H. K. (2010). Successfully Translating Language and Culture when Adapting Assessment Measures: Translating Assessment Measures. *Journal of Policy and Practice in Intellectual Disabilities*, *7*(2), 111–118. https://doi.org/10.1111/j.1741-1130.2010.00254.x

Bornman, J., Romski, M., Tonsing, K., Sevcik, R., White, R., Barton-Hulsey, A., & Morwane, R. (2018). Adapting and translating the Mullen Scales of Early Learning for the South African context. *South African Journal of Communication Disorders*, *65*(1), 1–9. https://doi.org/10.4102/sajcd.v65i1.571

Brothers, K.B., Glascoe, F.P., & Robertshaw, N.S. (2008). PEDS: Developmental Milestone – An accurate brief tool for surveillance and screening. *Clinical Pediatrics,* 47(3), 271-279.

D'Aprano, A. L., Carapetis, J. R., & Andrews, R. (2011). Trial of a developmental screening tool in remote Australian Aboriginal communities: A cautionary tale: Trial of a developmental screening tool. *Journal of Paediatrics and Child Health*, *47*(1–2), 12–17. https://doi.org/10.1111/j.1440-1754.2010.01883.x

D'Aprano, A., Silburn, S., Johnston, V., Bailie, R., Mensah, F., Oberklaid, F., & Robinson, G. (2016). Challenges in monitoring the development of young children in remote Aboriginal health services: Clinical audit findings and recommendations for improving practice. *Rural and Remote Health*. https://doi.org/10.22605/RRH3852

DSD, DWCPD and UNICEF. (2012). *Children with Disabilities in South Africa: A Situation Analysis: 2001-2011.* Pretoria: Department of Social Development/Department of Women, Children and People with Disabilities/UNICEF. https://www.unicef.org/southafrica/media/1336/file/ZAF-Children-with-disabilities-in%20South-Africa-2001-11-situation-analysis.pdf

DuBay, M., & Watson, L. R. (2019). Translation and cultural adaptation of parent-report developmental assessments: Improving rigor in methodology. *Research in Autism Spectrum Disorders*, *62*, 55–65. https://doi.org/10.1016/j.rasd.2019.02.005

Du Toit, M., van der Linde, J. & Swanepoel, D. (in press) Reliability and perceptions of community health workers on mHealth developmental screening for vulnerable children. *Early Years*

El-Behadli, A. F., Neger, E. N., Perrin, E. C., & Sheldrick, R. C. (2015). Translations of Developmental Screening Instruments: An Evidence Map of Available Research. *Behavioral Pediatrics*, *36*(6), 471–483.

Faruk, T., Link to external site, this link will open in a new window, King, C., Muhit, M., Islam, M. K., Jahan, I., Baset, K. ul, Badawi, N., & Khandaker, G. (2020). Screening tools for early

© University of Pretoria

identification of children with developmental delay in low- and middle-income countries: A systematic review. *BMJ Open*, *10*(11), e038182. https://doi.org/10.1136/bmjopen-2020-038182

Fyvie, L., Anderson, J., Kruger, C.-J., Le Roux, M., & Van der Linde, J. (2016). The outcome of a developmental screening tool (PEDS) in English and Northern Sotho: A comparative study. *Language Matters*, *47*(3), 415–426. https://doi.org/10.1080/10228195.2016.1196718

Gladstone, M. J., Lancaster, G. A., Jones, A. P., Maleta, K., Mtitimila, E., Ashorn, P., & Smyth, R. L. (2008). Can Western developmental screening tools be modified for use in a rural Malawian setting? *Archives of Disease in Childhood*, *93*(1), 23–29. https://doi.org/10.1136/adc.2006.095471

Glascoe, F.P. (1997). *Parents' evaluation of developmental status (PEDS).* Ellsworth & Vandermeer Press, Ltd.

Global Research on Developmental Disabilities Collaborators, (2018*).* Developmental disabilities among children younger than 5 years in 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet Glob Health,* 6(10), e1100–21.

Guralnick, M. J. (2017). Early Intervention for Children with Intellectual Disabilities: An Update. *Journal of Applied Research in Intellectual Disabilities*, *30*(2), 211–229. https://doi.org/10.1111/jar.12233

Hall, K., Sambu, W., Almeleh, C., Mabaso, K., Giese, S., & Proudlock, P. (2019). *South African Early Childhood Review*. http://elom.org.za/wp-content/uploads/2020/07/SA-ECR_2019.pdf

Halpern, R. (2000). Early childhood intervention for low-income children and families. In J. P. Shonkoff & S. J. Meisels (Eds.), *Handbook of Early Intervention* (2nd ed.). Cambridge University Press.

Hirai, A. H., Kogan, M. D., Kandasamy, V., Reuland, C., & Bethell, C. (2018). Prevalence and Variation of Developmental Screening and Surveillance in Early Childhood. *JAMA Pediatrics*, *172*(9), 857. https://doi.org/10.1001/jamapediatrics.2018.1524

Hsiao, C., Richter, L., Makusha, T., Matafwali, B., van Heerden, A., & Mabaso, M. (2017). Use of the ages and stages questionnaire adapted for South Africa and Zambia: Ages and stages questionnaire in southern Africa. *Child: Care, Health and Development*, *43*(1), 59–66. https://doi.org/10.1111/cch.12413

International Test Commission. (2017). *The ITC guidelines for translating and adapting tests (Second edn.)*. https://www.intestcom.org/files/guideline_test_adaptation_2ed.pdf

Jeyaseelan, D. C., & Sawyer, M. G. (2017). Developmental literacy: A universal intervention to help children with developmental disorders. *Journal of Paediatrics and Child Health*, *53*(2), 101–104. https://doi.org/10.1111/jpc.13456

Kiing, J.S.H., Low, P.S., Chan, Y.H., & Neihart, M. (2011). Interpreting parents' concerns about their children's development with the parents' evaluation of developmental status: culture matters. *Journal of Developmental and Behavioral Paediatrics*, 33(2),179-83. DOI: 10.1097/DBP.0b013e31823f686e ·

Kiing, J. S. H., Low, P. S., Chan, Y. H., & Neihart, M. (2012). Interpreting Parents' Concerns About Their Children's Development With the Parents Evaluation of Developmental Status: Culture Matters. *Behavioral Pediatrics*, *33*(2), 179 –183.

Kvestad, I., Taneja, S., Kumar, T., Bhandari, N., Strand, T. A., & Hysing, M. (2013). The assessment of developmental status using the Ages and Stages questionnaire-3 in nutritional

© University of Pretoria

research in north Indian young children. *Nutrition Journal*, *12*(1), 50. https://doi.org/10.1186/1475-2891-12-50

Lipkin, P. H., Macias, M. M., & council on children with disabilities, section on developmental and behavioral pediatrics. (2020). Promoting Optimal Development: Identifying Infants and Young Children With Developmental Disorders Through Developmental Surveillance and Screening. *Pediatrics*, *145*(1), e20193449. https://doi.org/10.1542/peds.2019-3449

Maleka, B., van der Linde, J., Graham, M., & Swanepoel, D. W. (2021). Evaluating the PEDS:DM Developmental Screening Tool in Zulu and Northern Sotho. *Language Matters*, *52*(3), 72–93. https://doi.org/10.1080/10228195.2021.1969589

McMillan, J. H., & Schumacher, S. (2010). *Research in Education* (7th ed.). Pearson.

Milbrath, G., Constance, C., Ogendi, A., & Plews-Ogan, J. (2020). Comparing Two Early Child Development Assessment Tools in Rural Limpopo, South Africa. *BMC Pediatrics*, *20*(1), 1–10. https://doi.org/10.1186/s12887-020-02101-0

Munoz-Chereau, B., Ang, L., Dockrell, J., Outhwaite, L., & Heffernan, C. (2021). Measuring early child development across low and middle-income countries: A systematic review. J*ournal of Early Childhood Research*, *19*(4), 443–470. https://doi.org/10.1177/1476718X211020031

Olusanya, B. O., Davis, A. C., Wertlieb, D., Boo, N.-Y., Nair, M. K. C., Halpern, R., Kuper, H., Breinbauer, C., de Vries, P. J., Gladstone, M., Halfon, N., Kancherla, V., Mulaudzi, M. C., Kakooza-Mwesige, A., Ogbo, F. A., Olusanya, J. O., Williams, A. N., Wright, S. M., Manguerra, H., … Kassebaum, N. J. (2018). Developmental disabilities among children younger than 5 years in 195 countries and territories, 1990–2016: A systematic analysis for the Global Burden of Disease Study 2016. *The Lancet Global Health,* 6(10), e1100–e1121. https://doi.org/10.1016/S2214-109X(18)30309-7

Ormrod, J. E., & Leedy, P. D. (2015). *Practical Research: Planning and Design* (11th ed.). Pearson Education Limited.

Partain, P. I., Kumbamu, A., Asiedu, G. B., Cristiani, V., Deling, M., Weis, C., & Lynch, B. (2019). Evaluation of Community Programs for Early Childhood Development: Parental Perspectives and Recommendations. *Maternal and Child Health Journal,* 23(1), 120–130. https://doi.org/10.1007/s10995-018-2601-3

Rousseau, M., Dionne, C., Savard, R. T., Schonhaut, L., & Londono, M. (2021). Translation and Cultural Adaptation of the Ages and Stages Questionnaires (ASQ) Worldwide: A Scoping Review. *Journal of Developmental & Behavioral Pediatrics*, *42*(6), 490–501. https://doi.org/10.1097/DBP.0000000000000940

Rydz, D., Shevell, M. I., Majnemer, A., & Oskoui, M. (2005). Topical Review: Developmental Screening. *Journal of Child Neurology*, *20*(1), 4–21. https://doi.org/10.1177/08830738050200010201

Scherzer, A., Chhagan, M., Kauchali, S., & Susser, E. (2012). Global perspective on early diagnosis and intervention for children with developmental delays and disabilities. *Developmental Medicine and Child Neurology*, 54(12), 10.1111/j.1469-8749.2012.04348.x. https://doi.org/10.1111/j.1469-8749.2012.04348.x

Slemming, W., & Bamford, L. (2018). The new Road to Health Booklet demands a paradigm shift. *South African Journal of Child Health*, *12*(3), 86-87..

© University of Pretoria

Small, J. W., Hix-Small, H., Vargas-Baron, E., & Marks, K. P. (2019). Comparative use of the Ages and Stages Questionnaires in low- and middle-income countries. *Developmental Medicine & Child Neurology*, *61*(4), 431–443. https://doi.org/10.1111/dmcn.13938

Steinberg, J. R., Bruce, J. S., Marin-Nevarez, P., Phan, K., Merrell, S. B., & Chamberlain, L. J. (2018). Early Childhood Learning and the Pediatrician: A Qualitative Study Among Diverse, Low-Income Caregivers. *Journal of Developmental & Behavioral Pediatrics*, *39*(5), 376–386. https://doi.org/10.1097/DBP.0000000000000564

South Africa & Department of Basic Education. (2015). *The South African National Curriculum framework for children from birth to four: Comprehensive version.*

Toh, T., Lim, B., Bujan, M.A.B., Haniff, J., Wong, S., & Abdullah, M.R. (2017). Mandarin parents' evaluation of developmental status in the detection of delays. *Pediatrics International,* 59, 861-868, doi: 10.1111/ped.13325.

Vameghi, R., Sajedi, F., Mojembari, A. K., Habiollahi, A., Lornezhad, H. R., & Delavar, B. (2013). Cross-Cultural Adaptation, Validation and Standardization of Ages and Stages Questionnaire (ASQ) in Iranian Children. *Iran Journal of Public Health*, 42 (5), 522-528.

Van der Linde, J., Swanepoel, D. W., Glascoe, F. P., Louw, E. M., Hugo, J. F. M., & Vinck, B. (2015). Risks associated with communication delays in infants from underserved South African communities. *African Journal of Primary Health Care & Family Medicine*, *7*(1). https://doi.org/10.4102/phcfm.v7i1.841

Van der Merwe, M., Cilliers, M., Maré, C., Van der Linde, J., & Le Roux, M. (2017). Evaluation of a Zulu translation of the Parents' Evaluation of Developmental Status. *African Journal of Primary Health Care & Family Medicine*, *9*(1). https://doi.org/10.4102/phcfm.v9i1.1365

Visser, M., Nel, M., Bronkhorst, C., Brown, L., Ezendam, Z., Mackenzie, K., van der Merwe, D., & Venter, M. (2016). Childhood disability population-based surveillance: Assessment of the Ages and Stages Questionnaire Third Edition and Washington Group on Disability Statistics/UNICEF module on child functioning in a rural setting in South Africa. *African Journal of Disability*, *5*(1), 265. https://doi.org/10.4102/ajod.v5i1.265

Vorster, C., Kritzinger, A., Coetser, L., van der Linde, J. (2021). Preliminary reliability of a South African adaptation and Northern Sotho translation of the M-CHAT-R/F™. *South African Journal of Communication Disorders*, *68*(1), 1–7. https://doi.org/10.4102/sajcd.v68i1.831

Western Cape Provincial Government. (2022). *New road to health booklet—Side by side on the road to health | Western Cape Government*. https://www.westerncape.gov.za/general-publication/new-road-health-booklet-side-side-road-health

Win, T., & Mlambo, M. G. (2020). Road-to-Health Booklet assessment and completion challenges by nurses in rural primary healthcare facilities in South Africa. *South African Journal of Child Health*, *14*(3), 124–128.

World Health Organization. (2016). *Process of translation and adaptation of instruments*. http://www.who.int/substance_abuse/research_tools/translation/en/

© University of Pretoria

APPENDICES

© University of Pretoria

APPENDIX A: INFORMED CONSENT FOR PHASE A

© University of Pretoria

STUDY TITLE: Early childhood development in low-income communities: parental perceptions and contextual adaptation of screening tools

Principal Investigator: Mignon Botes

Supervisor: Prof J. van der Linde and Prof. D. Swanepoel

Institution: The University of Pretoria, Department of Department of Communication Pathology

Daytime telephone number: 084 688 7909

DATE AND TIME OF INFORMED CONSENT DISCUSSION:

				:
Dd	**month**	**year**		**Time**

© University of Pretoria





Dear Prospective Research Participant

1) INTRODUCTION

You are invited to volunteer for a research study. I am doing this research of my doctorate degree in Speech-Language Pathology at the University of Pretoria. The information in this document is provided to help you to decide if you would like to participate. Before you agree to take part in this study, you should fully understand what is involved. If you have any questions, which are not fully explained in this document, do not hesitate to ask the researcher. You should not agree to take part unless you are completely happy with the kind of questions that will be asked.

2) THE NATURE AND PURPOSE OF THIS STUDY

The aim of this study is to adapt the PEDS tools (PEDS and PEDS:DM) for South Africa by understanding what parents want, their culture and language. This adapted tool can be used for developmental screening to identify children at risk of delays and disabilities.

3) EXPLANATION OF PROCEDURES AND WHAT WILL BE EXPECTED FROM PARTICIPANTS

This study involves partaking in a focus group discussion. This is where we sit together and talk about some topics about child development, early intervention and available resources.

The group aims to obtain a better understanding of parental perceptions on child development, early intervention and available resources. The discussion will take approximate 2 hours. The group discussion will be audio recorded. Lunch and drinks will be provided.

Place	Date	Time to start	Time to finish

The researcher will keep the audio recording in a safe place to make sure that only people working on the study will have access to it.

4) RISK AND BENEFITS

Your participation is important for us to better understand the parental views on development, and how to culturally adapt the PEDS tools. The information you give may help the researcher improve developmental screenings, and make early identification of developmental delays and disabilities effective.

There is no foreseeable physical discomfort or risk involved. If there are questions that are too sensitive for you to answer, you do not need to answer them. We do ask 2 hours of your time for the group discussion.

5) ETHICS APPROVAL

This Protocol was submitted to the Faculty of Health Sciences Research Ethics Committee, University of Pretoria, Medical Campus, Tswelopele Building, Level 4-59, Telephone numbers 012 356 3084 / 012 356 3085 and written approval has been granted by that committee. The study has been structured in accordance with the Declaration of Helsinki (last update: October 2013), which deals with the recommendations guiding doctors in biomedical research involving

© University of Pretoria

humans. A copy of the Declaration may be obtained from the investigator should you wish to review it.

6) CONFIDENTIALITY

All documents and records from this study will be regarded as private and confidential. All results will be published or presented in a way that it is not possible to identify you. Only the researcher will have access to the data. The audio recording will be stored electronically on an external memory device for 15 years at the Department of Speech-Language Pathology and Audiology, the University of Pretoria.

7) COMPENSATION

You will not be paid to take part in the study. There are no costs involved for you to be part of the study.

8) CONSENT TO PARTICIPATE IN THIS STUDY

- I confirm that the person requesting my consent to take part in this study has told me about the nature and process, any risks or discomforts, and the benefits of the study.
- I have also received, read and understood the above written information about the study.
- I have had adequate time to ask questions and I have no objections to participating in this study.
- I am aware that the information obtained in the study, including personal details, will be anonymously processed and presented in the reporting of results.
- I understand that I will not be penalised in any way should I wish to discontinue with the study and my withdrawal will not affect my employment or student status.
- I am participating willingly.
- I agree that the data may be used for future research.
- I have received a signed copy of this informed consent agreement.

Participant's name (Please print)	Date
Participant's signature	Date
Researcher's name (Please print)	Date
Researcher's signature	Date

© University of Pretoria

APPENDIX B: INFORMED CONSENT FOR PHASE B

© University of Pretoria

STUDY TITLE: Early childhood development in low-income communities: parental perceptions and contextual adaptation of screening tools

Principal Investigator: Mignon Botes

Supervisor: ProfDr. J. van der Linde and Prof. D. Swanepoel

Institution: The University of Pretoria, Department of Department of Communication Pathology

Daytime telephone number: 084 688 7909

DATE AND TIME OF INFORMED CONSENT DISCUSSION:

			:
Dd	**month**	**year**	**Time**

© University of Pretoria

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Humanities 100.
1919 - 2019
Department of Speech-Language Pathology & Audiology

Dear Prospective Research Participant

1) INTRODUCTION

You are invited to volunteer for a research study. I am doing this research of my doctorate degree in Speech-Language Pathology at the University of Pretoria. The information in this document is provided to help you to decide if you would like to participate. Before you agree to take part in this study, you should fully understand what is involved. If you have any questions, which are not fully explained in this document, do not hesitate to ask the researcher. You should not agree to take part unless you are completely happy with the kind of questions that will be asked.

2) THE NATURE AND PURPOSE OF THIS STUDY

The aim of this study is to adapt the PEDS tools (PEDS and PEDS:DM) for South Africa by understanding what parents want, their culture and language. This adapted tool can be used for developmental screening to identify children at risk of delays and disabilities.

3) EXPLANATION OF PROCEDURES AND WHAT WILL BE EXPECTED FROM PARTICIPANTS

This study involves answering some questions on a paper document. The first questions will be about your biographical information (not personal information) and your experiences in service delivery. Then you will fill in the PEDS and PEDS:DM assessment tool. This will give us an overview of your child's development. Lastly, you will fill in some questions about the PEDS tools, to see if you understood the questions and agreed with them. Here are the documents in a fgire:

Part	Document	Why?	Time it will take
1	Biographical information	To get an understanding of the community	3-5 minutes
2	PEDS and PEDS:DM	To give us an idea of your child's development.	7-10 minutes
3	Appropriateness of PEDS and PEDS:DM	To see if you understand the questions asked in the PEDS and PEDS:DM and see how we can change it.	7-15 minutes

It will take approximately 20-30 minutes to complete all the questionnaires. We will collect the questionnaire from you before you leave the clinic. We will be available to help you with the questionnaire. The researcher will keep the completed questionnaires in a safe place to make sure that only people working on the study will have access to it. Please do not write your name on the questionnaire. This will ensure that your answers are kept confidential (so nobody will know what you have answered).

4) RISK AND BENEFITS

Your participation is important for us to better understand the community's views on development, and how to culturally adapt the PEDS tools. The information you give may help the researcher improve developmental screenings, and make early identification of developmental delays and disabilities effective. Your child might be identified as at risk for developmental delays or disabilities. Should this be the care you will be provided with an appropriate referral to the correct professional who will be able to assist you further.

© University of Pretoria

There is no foreseeable physical discomfort or risk involved. If there are questions that are too sensitive for you to answer, you do not need to answer them.

5) ETHICS APPROVAL

This Protocol was submitted to the Faculty of Health Sciences Research Ethics Committee, University of Pretoria, Medical Campus, Tswelopele Building, Level 4-59, Telephone numbers 012 356 3084 / 012 356 3085 and written approval has been granted by that committee. The study has been structured in accordance with the Declaration of Helsinki (last update: October 2013), which deals with the recommendations guiding doctors in biomedical research involving humans. A copy of the Declaration may be obtained from the investigator should you wish to review it.

6) CONFIDENTIALITY

All documents and records from this study will be regarded as private and confidential. All results will be published or presented in a way that it is not possible to identify you. Only the researcher will have access to the data. Completed questionnaires will be stored for 15 years at the Department of Speech-Language Pathology and Audiology, the University of Pretoria.

COMPENSATION

You will not be paid to take part in the study. There are no costs involved for you to be part of the study.

8) CONSENT TO PARTICIPATE IN THIS STUDY

- I confirm that the person requesting my consent to take part in this study has told me about the nature and process, any risks or discomforts, and the benefits of the study.
- I have also received, read and understood the above written information about the study.
- I have had adequate time to ask questions and I have no objections to participating in this study.
- I am aware that the information obtained in the study, including personal details, will be anonymously processed and presented in the reporting of results.
- I understand that I will not be penalised in any way should I wish to discontinue with the study and my withdrawal will not affect my employment or student status.
- I am participating willingly.
- I agree that the data may be used for future research.
- I have received a signed copy of this informed consent agreement.

Participant's name (Please print)	Date
Participant's signature	Date
Researcher's name (Please print)	Date
Researcher's signature	Date

© University of Pretoria

APPENDIX C: INFORMED CONSENT FOR PHASE C

© University of Pretoria

STUDY TITLE: Early childhood development in low-income communities: parental perceptions and contextual adaptation of screening tools

Principal Investigator: Mignon Botes

Supervisor: Prof. J. van der Linde and Prof. D. Swanepoel

Institution: The University of Pretoria, Department of Department of Communication Pathology

Daytime telephone number: 084 688 7909

DATE AND TIME OF INFORMED CONSENT DISCUSSION:

				:
Dd	**month**	**year**		**Time**

© University of Pretoria





Dear Prospective Research Participant

1) INTRODUCTION

You are invited to volunteer for a research study. I am doing this research of my doctorate degree in Speech-Language Pathology at the University of Pretoria. The information in this document is provided to help you to decide if you would like to participate. Before you agree to take part in this study, you should fully understand what is involved. If you have any questions, which are not fully explained in this document, do not hesitate to ask the researcher. You should not agree to take part unless you are completely happy with the kind of questions that will be asked.

2) THE NATURE AND PURPOSE OF THIS STUDY

The aim of this study is to adapt the PEDS tools (PEDS and PEDS:DM) for South Africa by understanding what parents want, their culture and language. This adapted tool can be used for developmental screening to identify children at risk of delays and disabilities.

3) EXPLANATION OF PROCEDURES AND WHAT WILL BE EXPECTED FROM PARTICIPANTS

This study involves answering some questions on a paper document and then partaking in a focus group discussion. This is where we sit together and talk about the questionnaire. You will fill in some parts of the PEDS and PEDS:DM assessment tool. This will give you an overview of the questions to be discussed in the group.

It will take approximately 10 minutes to complete all the questionnaires. Then you will partake in a focus group discussion. The discussion will be about the questions you filled out. The group aims to discuss the questions that need to be changed to better suit the culture, language and understanding of the community. The discussion will take approximate 2 hours. The group discussion will be audio recorded. Lunch and drinks will be provided.

Place	Date	Time to start	Time to finish

We will be available to help you with the questionnaire. The researcher will keep the completed questionnaires and the audio recording in a safe place to make sure that only people working on the study will have access to it. Please do not write your name on the questionnaire. This will ensure that your answers are kept confidential (so nobody will know what you have answered). We will collect the questionnaire from you after the focus group discussion.

4) RISK AND BENEFITS

Your participation is important for us to better understand the community's views on development, and how to culturally adapt the PEDS tools. The information you give may help the researcher improve developmental screenings, and make early identification of developmental delays and disabilities effective. Your child might be identified as at risk for developmental delays or disabilities. Should this be the care you will be provided with an appropriate referral to the correct professional who will be able to assist you further.

© University of Pretoria

There is no foreseeable physical discomfort or risk involved. If there are questions that are too sensitive for you to answer, you do not need to answer them. We do ask 2 hours of your time for the group discussion.

5) ETHICS APPROVAL

This Protocol was submitted to the Faculty of Health Sciences Research Ethics Committee, University of Pretoria, Medical Campus, Tswelopele Building, Level 4-59, Telephone numbers 012 356 3084 / 012 356 3085 and written approval has been granted by that committee. The study has been structured in accordance with the Declaration of Helsinki (last update: October 2013), which deals with the recommendations guiding doctors in biomedical research involving humans. A copy of the Declaration may be obtained from the investigator should you wish to review it.

6) CONFIDENTIALITY

All documents and records from this study will be regarded as private and confidential. All results will be published or presented in a way that it is not possible to identify you. Only the researcher will have access to the data. Completed questionnaires will be stored for 15 years at the Department of Speech-Language Pathology and Audiology, the University of Pretoria.

7) COMPENSATION

You will not be paid to take part in the study. There are no costs involved for you to be part of the study.

8) CONSENT TO PARTICIPATE IN THIS STUDY

- I confirm that the person requesting my consent to take part in this study has told me about the nature and process, any risks or discomforts, and the benefits of the study.
- I have also received, read and understood the above-written information about the study.
- I have had adequate time to ask questions and I have no objections to participating in this study.
- I am aware that the information obtained in the study, including personal details, will be anonymously processed and presented in the reporting of results.
- I understand that I will not be penalised in any way should I wish to discontinue with the study and my withdrawal will not affect my employment or student status.
- I am participating willingly.
- I agree that the data may be used for future research.
- I have received a signed copy of this informed consent agreement.

_____	_____
Participant's name (Please print)	Date
_____	_____
Participant's signature	Date
_____	_____
Researcher's name (Please print)	Date
_____	_____
Researcher's signature	Date

© University of Pretoria

APPENDIX D: INFORMED CONSENT FOR PHASE D

© University of Pretoria

Faculty of Humanities
Fakulteit Geesteswetenskappe
Lefapha la Bomenotlo

Humanities 100
Since 1919

STUDY TITLE: Early childhood development in low-income communities: caregiver perceptions and contextual adaptation of screening tools

Principal Investigator: Mignon Botes

Supervisor: Prof. J. van der Linde and Prof. D. Swanepoel

Institution: The University of Pretoria, Department of Department of Communication Pathology

Daytime telephone number: 084 688 7909

E-mail: mignon.botes1@gmail.com

Communication Pathology Building
University of Pretoria, Private Bag X20
Hatfield 0028, South Africa
Tel +27 (0)12 420 2357 | Fax +27 (0)12 420 3517
www.up.ac.za/faculty-of-humanities

© University of Pretoria

Faculty of Humanities
Fakulteit Geesteswetenskappe
Lefapha la Bomotho

Humanities 100
Since 1919

Dear Expert

Invitation for an expert panel discussion on the adaptations of the PEDS tools for a low-income community in South Africa using the Delphi Method.

INTRODUCTION

I am doing this research of my doctorate degree in Speech-Language Pathology at the University of Pretoria. The information in this document is provided to help you to decide if you would like to participate. Before you agree to take part in this study, you should fully understand what is involved. If you have any questions, which are not fully explained in this document, do not hesitate to ask the researcher. You should not agree to take part unless you are completely happy with the kind of questions that will be asked.

THE NATURE AND PURPOSE OF THIS STUDY

The aim of this study is to adapt the PEDS tools (PEDS and PEDS:DM) for South Africa by understanding what parents want, their culture and language. This adapted tool can be used for developmental screening to identify children at risk of delays and disabilities.

EXPLANATION OF PROCEDURES AND WHAT WILL BE EXPECTED FROM YOU

The expert panel will look at items on the PEDS tools identified by the community as inappropriate. The consensus of the changes will be used to create the PEDS tools-SA. The Delphi Method will be used, that consist of 3 rounds of filling in prepared questionnaires. Experts will send their answer by completing the questionnaire using the link provided in an email. After each round, the answers of the experts will be summarised, a new questionnaire sent out and the process will repeat until a consensus has been reached. It will take about 90 minutes of your time spread over a few separate occasions.

QUESTIONNAIRE

You will need to complete an electronic questionnaire if you decide to join the study. The link to the questionnaire will be emailed to you. Please do not complete the section if you are unsure of the required information. We will not be available to help you with the questionnaire or to fill it in on your behalf.

ESSENTIAL INFORMATION

Answering the questions is completely voluntary and participants may leave out any questions that make them feel uncomfortable. This data will be used anonymously in our network and your privacy will be protected to the best of our ability.

Communication Pathology Building
University of Pretoria, Private Bag X20
Hatfield 0028, South Africa
Tel +27 (0)12 420 2357 | Fax +27 (0)12 420 3517
www.up.ac.za/faculty-of-humanities

© University of Pretoria

RISK AND BENEFITS

Your participation is important for us to make adequate changes on the PEDS tools that are culturally appropriate for a low-income South African population. The information you give may help the researcher improve developmental screenings, and make early identification of developmental delays and disabilities effective. There is no foreseeable physical discomfort or risk involved. We do ask 90 minutes of your time over 3 rounds of questionnaires.

ETHICS APPROVAL

IRB clearance (HUM027/0819) was obtained for this study.

CONFIDENTIALITY

All documents and records from this study will be regarded as private and confidential. All results will be published or presented in a way that it is not possible to identify you. Only the researcher will have access to the data. Relevant information will be stored for 15 years at the Department of Speech-Language Pathology and Audiology, the University of Pretoria.

CONSENT TO PARTICIPATE IN THIS STUDY

Informed consent, given freely, is required from all participants. Your participation in this study is voluntary. You can decline to participate or stop while completing the questionnaire without giving any reason. As no identifiable data is collected through the questionnaire, once the questionnaire has been submitted, you cannot recall your consent as we cannot trace your specific questionnaire. Once you have completed and submitted the questionnaire, we cannot remove your questionnaire from the study. You will not be identified as a participant in any publication that comes from the study.

Communication Pathology Building
University of Pretoria, Private Bag X20
Hatfield 0028, South Africa
Tel +27 (0)12 420 2357 | Fax +27 (0)12 420 3517
www.up.ac.za/faculty-of-humanities

© University of Pretoria

Faculty of Humanities
Fakulteit Geesteswetenskappe
Lefapha la Bomotho

Humanities 100
Since 1913

Please read the instructions carefully

PEDS tools:
The PEDS tools consist of the PEDS (Parents' evaluations of developmental status) and the PEDS: DM (developmental milestones). This developmental screening tool was designed to be parent-administered or administered by an interview. The PEDS consists of 10 questions about the general development of the infant or child. the PEDS: DM for ages 0-7years 11 months consists of 6 to 8 questions per age group about the child's development. The questions represent each developmental area, including fine and gross motor, receptive and expressive language, self-help skills, socio-emotional development, preliteracy and mathematic skills. The questions differ depending on the age of the child and are subdivided into forms with a total of 124 questions for forms A to V.

This Questionnaire:
The questionnaire starts with demographic information. Then there are 10 questions on the PEDS and 50 questions on the PEDS:DM in this questionnaire that needs your input. The questions are organized according to the age (from form A to form V). Some question might seem like they repeat, but please look carefully at the age for each question. Each question has a agree/disagree option.

Each question shows the age of the child and the developmental area, along with the adaption suggestion from the community. The original question is provided and then the adapted version based on the suggestions from the community. By choosing the "agree" option you agree that the adapted question is a) age- and developmentally appropriate b) culturally and linguistically appropriate.

If you disagree you can give a suggestion as to what you think the question should be.

Communication Pathology Building
University of Pretoria, Private Bag X20
Hatfield 0028, South Africa
Tel +27 (0)12 420 2357 | Fax +27 (0)12 420 3517
www.up.ac.za/faculty-of-humanities

© University of Pretoria

APPENDIX E: BIOGRAPHICAL INFORMATION QUESTIONNAIRE

© University of Pretoria

Participant and Family information

Please answer the questions by drawing a circle around the correct number or writing the answer in the box below the question.

1. **What is the date of birth of the infant/child (write on the grey)**

d d / m m / 2 0 Y Y

2. **What is the gender of the infant/child**

Male	1
Female	2

3. **What is your status?**

Mother of the infant	1
Father of the infant	2
Family memer of the infant	3
Non-family caregiver of the infant	4

4. **What is your age?**

5. **What is your home language?**

Setswana	1
Sepedi	2
Zulu	3
Shangaan	4
English	5
Afrikaans	6
Venda	7
Ndebele	8
Xhosa	9
Southern Sotho	10
SiSwati	11
Tsonha	12
Other:	

6. **What other languages can you speak?**

Setswana	1
Sepedi	2
Zulu	3
Shangaan	4
English	5
Afrikaans	6
Venda	7
Ndebele	8
Xhosa	9
Southern Sotho	10
SiSwati	11
Tsonha	12
Other:	

7. **How would you describe yourself in terms of a population group?**

Black	1
Coloured	2
White	3
Asian	4
Indian	5
Other:	

© University of Pretoria

8. **Who looks after the child/infant most of the time?**

Mother	1
Father	2
Both parents	3
Grandparents	4
Extended family members	5
Foster parents	6
Creche	7
Other:	

9. **What is the highest grade the mother passed in school?**

Grade	1
I do not know	2

10. **What is the highest grade the father passed in school?**

Grade	1
I do not know	2

11. **What is the highest qualification of the mother after school?**

Diploma	1
Degree	2
Postgraduate	3

12. **What is the highest qualification of the mother after school?**

Diploma	1
Degree	2
Postgraduate	3

12. **What is the age of the infant/child's mother?**

13. **How many children has the mother given birth to?**

14. **How many living children does the mother have?**

15. **What is the marital status of the mother of the infant/child?**

I do not know	1
Never married	2
Living together	3
Married	4
Widowed	5
Separated	6
Divorced	7

16. **What is the marital status of the father of the infant/child?**

I do not know	1
Never married	2
Living together	3
Married	4
Widowed	5
Separated	6
Divorced	7

© University of Pretoria

17. **What is your housing status?**

Own my house	1
Own my flat	2
I am renting	3
I stay with others	4
Rent free living	5

18. **Which best describes the dwelling?**

House or brick structure on a yard or stand	1
Traditional dwelling made from traditional material (hut)	2
Flat in a block flats	3
Flat in the backyard of a house	4
Informal dwelling (shack) in backyard	5
Servants quarters	6
Room in a flat/house	7
Other:	8

19. **How many people are living in the house?**

20. **Is the primary caregiver employed?**

Yes	1
No	2

21. **Do you make use of day-care for you infant/child?**

Yes	1
No	2

22. **How far is your nearest clinic?**

Between 0-10km	1
Between 10-15 km	2
Between 15-20km	3
More than 20km away	4

23. **How long do you travel to clinic appointments?**

Between 5-20minutes	1
Between 20-40 minutes	2
Between 40-60minutes	3
More than 1 hour	4
More than 2 hours	5

24. **Has your infant/child's hearing been screened?**

Yes	1
No	2
I do not know	3

25. **Has your infant/child's vision been screened?**

Yes	1
No	2
I do not know	3

26. **Have your infant/child ever undergone a developmental screening checklist?**

Yes	1
No	2
I do not know	3

© University of Pretoria

27. Has a health care provider ever spoken to you about your infant/child's development?

Yes	1
No	2
I do not know	3

For children 0-5 years?

28. Do you make use of daycare for your infant?

Yes	1
No	2

29 How far do you travel to daycare?

Between 0-10km	1
Between 10-15 km	2
Between 15-20km	3
More than 20km away	4

30. How do you travel to daycare?

Walk	1
School bus	2
Public transport (taxi/bus)	3
Car	4
Other:	5

For children 6-8 years

31. Does your child attend school?

Yes	1
No	2

32. In what grade is your child?

33. Had your child repeated a grade?

Yes	1
No	2
I don't know	3

34. How far do you travel to school?

Between 0-10km	1
Between 10-15 km	2
Between 15-20km	3
More than 20km away	4

35. How do you travel to school?

Walk	1
School bus	2
Public transport (taxi/bus)	3
Car	4
Other:	5

© University of Pretoria

APPENDIX F: SELF-DEVELOPED QUESTIONNAIRE FOR PEDS TOOLS

© University of Pretoria

PEDS
Child's age:_____

QUESTIONNAIRE READ AND ANSWER THE QUESTIONS ABOUT YOUR CHILD'S DEVELOPMENT:		READ AND ANSWER THE QUESTIONS ABOUT THE QUESTIONNAIRE
1. Please list any concerns about your child's learning, development, and behaviour:		I understand this question: yes no There are some words I do not understand: yes no These words: _____ Comments:_____
2. Do you have any concerns about how your child talks and makes speech sounds?	No A little Yes	I understand this question: yes no There are some words I do not understand: yes no These words: _____ Comments:_____
3. Do you have any concerns about how your child understands what you say?	No A little Yes	I understand this question: yes no There are some words I do not understand: yes no These words: _____ Comments:_____
4. Do you have any concerns about how your child uses his or her hands and fingers to do things?	No A little Yes	I understand this question: yes no There are some words I do not understand: yes no These words: _____ Comments:_____
5. Do you have any concerns about how your child uses his or her arms and legs?	No A little Yes	I understand this question: yes no There are some words I do not understand: yes no These words: _____ Comments:_____
6. Do you have any concerns about how your child behaves?	No A little Yes	I understand this question: yes no There are some words I do not understand: yes no These words: _____ Comments:_____

© University of Pretoria

7. Do you have any concerns about how your child gets along with others?	No A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comments: _____	yes yes	no no

8. Do you have any concerns about how your child is learning to do things for himself/herself?	No A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comments: _____	yes yes	no no

9. Do you have any concerns about how your child is learning preschool or school skills?	No A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comments: _____	yes yes	no no

10. Please list any other concerns:	Choose 1 option: The question should rather say:		
	Please list other **worries**	yes	no
	Please list other **problems**	yes	no

Choose 1 option: The questions should rather say:		
Do you **sometimes worry** about how your child understands what you say?	yes	no
Do you **sometimes have problems** about how your child understands what you say?	yes	no
Do you have **any concerns** about how your child understands what you say?	yes	no

© University of Pretoria

PEDS: DM
QUESTIONNAIRE 1: Form A-E
Age: 0m-13m

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM A: 0-2m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Does your baby look at his or her hands?	No A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
2. Does your baby open his mouth when he sees a bottle, breast, or pacifier?	No Sometimes Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. When you face your baby, does he or she look at you, even if only for a little while?	No A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. Does your baby make sounds other than crying?	No A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. Does your baby try to keep his or her head steady?	No A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. When you smile at your baby does he or she smile back?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM B: 3-4m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Are your baby's hands open most of the time, not in a fist?	No A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
2. Does your baby open his mouth when he sees a bottle, breast, or pacifier?	No Sometimes Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. Does your baby seem excited when seeing a bottle or breast?	No Sometimes Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. Does your baby make special sounds when he or she is happy?	No Sometimes Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. Does your baby roll from her back to her side?	No Sometimes Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. Does your baby smile or make speech sounds as a way to get your attention?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM C: 5-7m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. When your baby is holding a toy in each hand, does he or she look from one hand to the other?	No A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
2. If you try to give more food than your baby wants, does he keep his or her lips closed or turn away?	No A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. When you say things like, "come here", does your baby hold out his or her arms?	No Sometimes Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. Does your baby "talk" or make sounds when he or she holds a toy or sees a pet?	No Sometimes Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. If your baby is lying on her back can she pass a toy from one hand to the other?	No Sometimes Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. When you play gentle tickling games with your baby, does he or she enjoy this?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM D: 8-10m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Can your baby poke at things with just his or her first finger?	No A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
2. Does your baby try to get to toys that are out of reach?	No A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. When you say your baby's name, does he or she stop and look at you?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. How many different sounds such as "muh", "bah", "duh" or "guh" does your baby say?	none 1 2 or more	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. Can your baby get around on hands and knees or by scooting on his or her bottom?	No Sometimes Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. Does your baby like to play peek-a-boo?	No A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM E: 11-13m		READ **ALL** THE QUESTIONS IN THE LEFT COLOM AND ANSWER **ALL** THE QUESTIONS BELOW		
1. Can your baby make squeeze toy squeak – or try to?	No A little Yes	I understand this question: My baby has a squeaky toy There are some words I do not understand: Theres words: _____ Comment: _____	Yes Yes Yes	No No No
2. Can your baby drink (not suck) from a cup?	No/don't know A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. When you say things like, **"Where's your bottle?"** does your baby look around for his bottle?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. Does your baby put lots of sounds together that sound like talking?	No sometimes Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. If you hold only one of your baby's hands, can he or she take a few steps?	No A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. Does your baby look for new things to play with and try to figure out how they work – like busy boxes or squeaking toys?	No A little Yes	I understand this question: My baby has busy boxes There are some words I do not understand: Theres words: _____ Comment: _____	Yes Yes Yes	No No No

© University of Pretoria

PEDS: DM
QUESTIONNAIRE 2: Form F-J
Age: 14m-25m

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM F: 14m-16m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Can your child unwrap food or a toy that has been loosely wrapped?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
2. Can your child take off his or her own shoes if you undo the laces or buckles?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. If you hold out your hand and ask your child to give you something, does he or she give you something even if it is not the right thing?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. If you offer your child something she likes, does she nod or say "yes"?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. Can your child walk without falling much?	No Falls a lot Doesn't fall often	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. Does your child watch other children do things and then try to copy them?	No/don't know Not very often Often	There are some words I do not understand: These words: _____ Comment: _____	Yes	No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM G: 17m-19m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Can your child stack blocks?	None/don't have blocks 1-2 blocks 3 or more blocks	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
2. When you are dressing your child, does he or she help by holding out an arm or lifting a foot?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. How many of these body parts can your child point to if you say, Where are your eyes? Where is your nose? feet? hair? mouth? ears?	None 1 2 or more	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. Does your child try to get your attention by pointing to things?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. Does your child try to jump, even if both feet don't leave the ground?	No Feet stay on the ground One of both feet off the ground	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. When around other children, does your child try to do things with them, such as feeding or kissing them, or even pushing or taking toys?	No Not very often Yes	There are some words I do not understand: These words: _____ Comment: _____	Yes	No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM G: 17m-19m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Can your child stack blocks?	None/don't have blocks 1-2 blocks 3 or more blocks	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
2. When you are dressing your child, does he or she help by holding out an arm or lifting a foot?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. How many of these body parts can your child point to if you say, Where are your eyes? Where is your nose? feet? hair? mouth? ears?	None 1 2 or more	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. Does your child try to get your attention by pointing to things?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. Does your child try to jump, even if both feet don't leave the ground?	No Feet stay on the ground One of both feet off the ground	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. When around other children, does your child try to do things with them, such as feeding or kissing them, or even pushing or taking toys?	No Not very often Yes	There are some words I do not understand: These words: _____ Comment: _____	Yes	No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM H: 20m-22m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Does your child try to scribble with crayons or markers?	No/Never tried Sometimes Most of the time	I understand this question: My baby has crayons or markers at home There are some words I do not understand: Theres words: _____ Comment: _____	Yes Yes Yes	No No No
2. When you are dressing your child, does he or she try to put an arm through a sleeve or a leg into pants?	No A little Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. How many of these body parts can your child point to if you say, Where are your eyes? Where is your nose? feet? hair? mouth? ears?	None 1 2 or more	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. If you ask your child, "What's this?" and showed things like a spoon, cup, doll, truck, box, crayon, cookie, chair, or light, how many names for these or other things does he or she say?	None 1 2 or more	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. Does your child try to jump, even if both feet don't leave the ground?	No Feet stay on the ground One of both feet off the ground	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. Does your child watch people's faces for clues to how they are feeling? Can he or she tell if someone is mad, sad, or happy?	No Not often Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM J: 23m-25m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Does your child try to scribble with crayons or markers?	No/Never tried Sometimes Yes	I understand this question: My baby has crayons or markers at home There are some words I do not understand: Theres words: _____ Comment: _____	Yes Yes Yes	No No No
2. Does your child try to help when it is time to put things away?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. How many of these body parts can your child point to if you say, Where are your eyes? Where is your nose? feet? hair? mouth? ears?	None 1 to 2 3 or more	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. If you ask your child, "What's this?" and showed things like a spoon, cup, doll, truck, box, crayon, cookie, chair, or light, how many names for these or other things does he or she say?	None 1 to 2 3 to 4	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. How does your child get up a set of stairs?	Walks up on own needs one hand held Crawls or needs two hands held Not around stairs	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. Does your child use two toys together such as taking a doll for a ride in a toy car, having a truck carry things, or having a doll take a pet for a walk?	No Uses one toy at a time Yes used two toys together	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM K: 2y2m-2y4m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Does your child try to scribble with crayons or markers?	No/Never tried Sometimes Most of the time	I understand this question: My baby has crayons or markers at home There are some words I do not understand: These words: _____ Comment: _____	Yes Yes Yes	No No No
2. Does your child try to help when it is time to put things away?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. Show your child a book and say, **Point to the front**, or **Where's the front**. Try again with the **back**, **top**, and **bottom**. How many did your child know?	None Some All	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. If you ask your child, "**What's this?**" and showed things like a spoon, cup, doll, truck, box, crayon, cookie, chair, or light, how many names for these or other things does he or she say?	None 1 to 4 5 to 7	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. When your child tries to run, does each foot leave the ground a little, even if he or she falls often?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. Does your child try to join in when other children play?	No Sometimes Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

PEDS: DM
QUESTIONNAIRE 3: Form K-P
Age: 2y2m-4y0m

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM L: 2y5m-2y9m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Can your child scribble with a crayon or marker without going off the page much?	No Sometimes Yes	I understand this question: My baby has crayons or markers at home There are some words I do not understand: These words: _____ Comment: _____	Yes Yes Yes	No No No
2. Can your child take off loose clothes such as pull-down pants or a coat?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. How many of these body parts can your child point to if you say, **Where is your head? Where are your legs? arms? fingers? teeth? thumbs? toes?**	None 1 to 2 3 or more	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. When your child talks, how many words does he or she usually use at a time?	None 1 2 or more	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. Can your child walk backwards two steps?	No Yes, shuffles or stops Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. Does your child pretend to do grown-up things like taking care of a baby, sweeping, driving, or cooking?	No Not often Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM M: 2y10m-3y2m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. . Can your child scribble with a crayon or marker without going off the page much?	No Sometimes Yes	I understand this question: My baby has crayons or markers at home There are some words I do not understand: These words: _____ Comment: _____	Yes Yes Yes	No No No
2. Can your child slip his or her shoes on?	No Yes, mostly on the wrong foot Yes, mostly on the right foot	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3.Point to pictures of the cats and balls and say, **Show me something big. Now show me something small.** What does your child know?	Neither big nor small Knows big or little, not both Knows both	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. When your child talks to other people, how much do they understand of what he or she says?	None Not much About Half	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. Can your child stand on each foot for a second?	No Only one foot Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. Can your child play well with a group of children? If so, for how long?	No, or less than 5min 5 to 10 min 15 to 20 min	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM N: 3y3m-3y7m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Can your child draw a picture of a person with any of these parts: head, legs, arms, eyes?	No 1 part 1 or more parts	I understand this question: My child has crayons or paper at home There are some words I do not understand: Theres words: _____ Comment: _____	Yes Yes Yes	No No No
2. Does your child use the toilet without being told?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. If you ask your child to do two things, can he/she remember to do both? Try with these: **Stand up, and put the toy on the chair, or Give me the book, and put your hands on your head.**	No Does one Yes, does both	I understand this question: My child has books at home There are some words I do not understand: Theres words: _____ Comment: _____	Yes Yes Yes	No No No
4.Ask your child **"What do we do with scissors?"** and then **"What are refrigerators for?"** Does he/she use words like cutting, and keeping food cold or making ice?	No One correct Both correct	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. How does your child walk down stairs?	Not around stairs Scoots, crawls or needs hand held Puts both feet on step Puts one feet on each step	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. Does your child do favours for you or like to surprise you by helping out?	No Sometimes Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
7. If you showed your child a coin and asked, **"What's this?"**, would he or she say coin?	Says coin Calls it something else No	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM P: 3y8m-4y0m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Can your child draw a picture of a person with any of these parts: head, legs, arms, eyes, body, nose, ears, hands?	No 1-3parts 4 or more parts	I understand this question: My child has crayons or paper at home There are some words I do not understand: Theres words: _____ Comment: _____	Yes Yes Yes	No No No
2. Ask your child, **"What is your name...what is your whole name?"** What does he or she say?	Says first and last name Says first or last name, not both says nickname Says something else/nothing	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. If you asked your child to do three things, can he or she remember to do all three? You can try with these: **"Stand up, clap your hands, and sit back down,"** or **"Touch your nose, give me the book, and put the toy on top."**	No Does one Yes, does both	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4.Please show the story on the left to your child and say, **"Please point to the first word,"** and then, **"Please point to the last word."** What does your child know?	Doesn't know Know last OR first Know last AND first	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. How does your child walk down stairs?	Not around stairs Scoots, crawls or needs hand held Puts both feet on step Puts one feet on each step	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. Does your child seem to know what is good behaviour and what is not?	No Sometimes Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
7. -				
8. Say to your child, "Listen, are these words the same or not the same?" Then say, **"bit-pit: are they the same or not the same?** Then say, **"set-set: are they the same or not the same?"** Then try these: **hide-glide, bat-mat.** How many did he or she answer correctly?	None Some All	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

PEDS: DM
QUESTIONNAIRE 4: Form Q-V
Age: 4y1m-7y11m

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM Q: 4y1m-4y5m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Ask your child to draw a triangle. Can he or she draw one?	No Sort of Yes	I understand this question: We have paper or crayons at home There are some words I do not understand: These words: _____ Comment: _____	Yes Yes Yes	No No No
2. Can your child get dressed by himself or herself?	No A little Mostly Yes, and does all fasteners	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. Point to the coloured boxes and say to your child, "Show me something red." Now say, "Show me something blue." Also try with these: green, yellow, orange, purple, white, black, brown, pink, and grey? How many did he or she get right?	None A few Most All	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. Does your child use words that tell about time like, morning, afternoon, night, yesterday, or tomorrow?	No One Some All	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. Can your child walk three steps putting one foot in front of the other with heel touching toe?	No Yes, lots of arm waving Yes, not much arm waving	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
6. When playing, does your child try not to hurt others? If playmates are hurt, does he or she seem concerned?	No Not very often Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
7. Say to your child, "**I want you to count for me. Ready? ..One!**" (Don't say anything else.) How far can your child count?	Doesn't count yet 1 2 3 or more	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
8. Point to the letters and ask, "Where's the A?... Where's the X? ... Where's the O?" Keep trying to see if he or she can point to two or three correctly. How did your child do?	Points, but not correctly Points to 1 correctly Points to 2 or more correctly	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM R: 4y6m-4y10m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Can your child write any letters of the alphabet?	No 1 Letter 2 or more letters	I understand this question: There are some words I do not understand: We have paper and pen/pencils at home These words: _____ Comment: _____	Yes Yes Yes	No No No
2. Does your child work or play in a small group of children for at least 20 minutes?	No Sometimes Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. Say to your child, **"Point to your knees,"** or **"Where are your knees?"** Try again with **"chin"** and **"fingernails?"** How many did he or she get right?	None 1 2 or more	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. Tell your child, **"Say what I say: Jane likes to throw and catch a ball."** If your child made mistakes, try again with this: **"Say what I say: Bob reads good books every time he can."** How did your child do?	Lots of mistakes Some mistakes No mistakes on at least one sentence	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5 -				
6. Does your child obey rules when in a group?	No Sometimes Most of the time	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
7. Ask your child to give you 2 of something (like toys, coins or books). Then ask for 1, 3, 5 and 4 of something. Does he or she give you the right number of things each time?	No Sometimes Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
8. Point to a letter of the alphabet and ask your child, "What's this?" Try again with other letters to see if your child can name at least one letter correctly. How did he or she do?	Doesn't now letter names Names letters but not correctly Names 1 or more correctly	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM S: 4y11m-5y5m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. If you ask your child to write numbers (1,2,3,4, and so on), how many can he or she write?	None 1 numbers 2 numbers 3 or more	I understand this question: We have paper and pens/pencils at home There are some words I do not understand: These words: _____ Comment: _____	Yes Yes Yes	No No No
2. How long does your child play alone (without the TV or TV games on)?	Less than 5 min About 10 min 15 or more min	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. Tell your child, **"Put your hands above your head,"** and then, **"Put your fingers below your eyes."** Now point to a page in a book and say, **"point to the center of this page,"** and then, **"point to the corner."** How many did he or she get right?	None Some All	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. Point to the pictures of the mice, teeth, and feet. Ask your child, **"What are those?"** Does your child use the words most grown-up use?	No Some Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. -				
6. Can your child play games with rules, like board or card games, kickball, or hopscotch?	No Not very well Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
7. Point to the logs and then to the number 5. Say, "Show me this many." Do this again by pointing to the 6 and then to 7. How many did your child get right?	None Some All	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
8. Point to the letters of the alphabet and ask, "What's this?" How many can your child name?	None 1 to 7 8 or more	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM T: 5y6m-6y0m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Ask your child to write letters of the alphabet starting with "A". How many can he or she write in order?	No 1-2 Letters 3 or more letters	I understand this question: There are some words I do not understand: We have paper and pen/pencils at home These words: _____ Comment: _____	Yes Yes Yes	No No No
2. Ask your child, **"What is your Mom's name?"** or **"What is your Dad's name?"** (Or other caretaker if needed). What does he or she say?	Knows first and last name Knows first or last name, not both Knows nickname Doesn't know	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. Ask your child, **"Where are your heels?"** ... **"ankles?"** ... **"shoulders?"** ... and **"elbows?"** How many does he or she know?	None 1 2 3 or more	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. Say to your child, **"I want you to say the alphabet."** How many can he or she say or sing before making a mistake	None 1 to 8 9 to 15 16-25 All	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. -				
6. -				
7. Point to the 8 and ask your child, **"What's this?"** Then point to the 7, ... 9, ... and 10. How many does he or she name?	None 1 to 2 3 or more	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
8. Say to your child, **"I'm going to read you a story. When I'm finished, I want you to tell it back to me."** Then read the story (about the ducks) and say, **"Tell me the story you just heard."** What can your child tell you?	Nothing The beginning The middle The end All 3 parts	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM U: 6y1m-6y11m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Point to the Δ and say, **"Draw this"**. How did he or she do? 	Doesn't draw Some lines touch All lines touch but some have ears like this: All lines touch correctly	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
2. Ask your child **"What is your address?"** and **"What town or city do you live in?"** From what your child said, would someone else know how to get there?	No Maybe Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
3. Say to your child, **"Point to your hips,... wrist,... waist."** How many does he or she know?	None 1 2 or more	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. Point to the picture of the puppy and tell your child, **"Say what I say: 'Puppies make nice pets but need lots of love'."** If there were any mistakes, try again with this: **"Say what I say: 'The girl went swimming in the lake with friends'."** How did your child do?	Lots of mistakes Some mistakes No mistakes on at least one sentence	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
5. -				
6. -				
7. Say to your child, " Sue has 3 big fish. She has 5 little fish. How many fish does she have?" What did your child say?	8 Another number No number	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
8. Point to the word, "Exit" and say, "What does this say?" then point to "Danger", "caution", and "Poison" and ask your child to read them. How many can he or she read?	0 1 2 3 4	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

ONLY ANSWER THE GREY PART ABOUT YOUR CHILD'S DEVELOPMENT FORM V: 7y1m-7y11m		READ ALL THE QUESTIONS IN THE LEFT COLOM AND ANSWER ALL THE QUESTIONS BELOW		
1. Say to your child, "Please write these words" (make sure she can't see them while you are reading and give her time to write each one): "give…book…hope…use…add (as in I will add the numbers)." How many were spelled correctly?	0 1 2 to 3 4 to 5	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
2. -				
3. Say to your child, **"I'm going to say four words. One does not belong. Listen and then tell me the word that doesn't belong."** Chocolate Bathroom Brother Sugar Train Helper Chalk Kitchen Ladder Bread Bedroom Neighbour Did your child say say, "chalk", "train" and "ladder"?	No Some, but not all Yes	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
4. -				
5. -				
6. -				
7. Please point to the math problems and ask your child to do them. How many can he or she get right?	0 1 2 3 4	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No
8. Point to the sign for "Fire alarm," and say to your child, "Please read this to me." Try again with "Do not disturb" … and "Wait on curb". How many were right (sounding as if he or she knew what each one meant)?	0 1 2 3 4	I understand this question: There are some words I do not understand: These words: _____ Comment: _____	Yes Yes	No No

© University of Pretoria

APPENDIX G: REFERRAL LETTER FOR AT RISK CHILDREN

© University of Pretoria

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Humanities 100.
1919 - 2019
Department of Speech-Language Pathology & Audiology

REFERRAL LETTER

Dear Participant

Thank you for partaking in the research study by completing a developmental screening tool, the Parents' Evaluation Developmental Status (PEDS) and the Parents' Evaluation Developmental Status of Developmental Milestones (PEDS:DM).

Please ensure you report to reception first to open a file, or have you file with you.

From the results of the screening we would like to recommend that you take your child to see a:

Speech-language Therapist		Mahlogonol Molaba
Occupational Therapist		Menantau Pierneef
Physiotherapist		Lebogang Magagula
Audiologist		Faadihla Robbertse
IMCI clinic (0-4,7 years)		
Children and Youth Clinic (5-15years)		

For:

A full assessment in the field of the professional	
A screening in the field of the professional	
A parental counselling session and a general follow-up screening	
A general screening where the child's skills are elicited	

We value the development of your child and ask that you make an appointment as soon as possible.

Regrads
The research team

© University of Pretoria

APPENDIX H: MILESTONE INFORMATION BROCHURE

© University of Pretoria

Your Baby at 2 Months



Child's Name _____ Child's Age _____ Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by 2 months. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.

What Most Babies Do by this Age:

Social/Emotional

- ☐ Begins to smile at people
- ☐ Can briefly calm himself (may bring hands to mouth and suck on hand)
- ☐ Tries to look at parent

Language/Communication

- ☐ Coos, makes gurgling sounds
- ☐ Turns head toward sounds

Cognitive (learning, thinking, problem-solving)

- ☐ Pays attention to faces
- ☐ Begins to follow things with eyes and recognize people at a distance
- ☐ Begins to act bored (cries, fussy) if activity doesn't change

Movement/Physical Development

- ☐ Can hold head up and begins to push up when lying on tummy
- ☐ Makes smoother movements with arms and legs

You Know Your Child Best.

Act early if you have concerns about the way your child plays, learns, speaks, acts, or moves, or if your child:

- ☐ Is missing milestones
- ☐ Doesn't respond to loud sounds
- ☐ Doesn't watch things as they move
- ☐ Doesn't smile at people
- ☐ Doesn't bring hands to mouth
- ☐ Can't hold head up when pushing up when on tummy

Tell your child's doctor or nurse if you notice any of these signs of possible developmental delay and ask for a developmental screening.

If you or the doctor is still concerned

1. Ask for a referral to a specialist and,
2. Call your state or territory's early intervention program to find out if your child can get services to help. Learn more and find the number at **cdc.gov/FindEI**.

For more information, go to **cdc.gov/Concerned**.

DON'T WAIT.
Acting early can make a real difference!

www.cdc.gov/ActEarly
1-800-CDC-INFO (1-800-232-4636)

Download CDC's Milestone Tracker App

Learn the Signs. Act Early.

Help Your Baby Learn and Grow



You can help your baby learn and grow. Talk, read, sing, and play together every day. Below are some activities to enjoy with your 2-month-old baby today.

What You Can Do for Your 2-Month-Old:

- ☐ Cuddle, talk, and play with your baby during feeding, dressing, and bathing.
- ☐ Help your baby learn to calm herself. It's okay for her to suck on her fingers.
- ☐ Begin to help your baby get into a routine, such as sleeping at night more than in the day, and have regular schedules.
- ☐ Getting in tune with your baby's likes and dislikes can help you feel more comfortable and confident.
- ☐ Act excited and smile when your baby makes sounds.
- ☐ Copy your baby's sounds sometimes, but also use clear language.
- ☐ Pay attention to your baby's different cries so that you learn to know what he wants.
- ☐ Talk, read, and sing to your baby.
- ☐ Play peek-a-boo. Help your baby play peek-a-boo, too.
- ☐ Place a baby-safe mirror in your baby's crib so she can look at herself.
- ☐ Look at pictures with your baby and talk about them.
- ☐ Lay your baby on his tummy when he is awake and put toys near him.
- ☐ Encourage your baby to lift his head by holding toys at eye level in front of him.
- ☐ Hold a toy or rattle above your baby's head and encourage her to reach for it.
- ☐ Hold your baby upright with his feet on the floor. Sing or talk to your baby as he is upright.

Milestones adapted from CARING FOR YOUR BABY AND YOUNG CHILD: BIRTH TO AGE 5, Fifth Edition, edited by Steven Shelov and Tanya Remer Altmann © 1991, 1993, 1998, 2004, 2009 by the American Academy of Pediatrics and BRIGHT FUTURES: GUIDELINES FOR HEALTH SUPERVISION OF INFANTS, CHILDREN, AND ADOLESCENTS, Third Edition, edited by Joseph Hagan, Jr., Judith S. Shaw, and Paula M. Duncan, 2008, Elk Grove Village, IL: American Academy of Pediatrics.

This milestone checklist is not a substitute for a standardized, validated developmental screening tool.

www.cdc.gov/ActEarly | 1-800-CDC-INFO (1-800-232-4636)

Learn the Signs. Act Early.

© University of Pretoria

Your Baby at 4 Months



Child's Name _____ Child's Age _____ Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by 4 months. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.

What Most Babies Do by this Age:

Social/Emotional

- ☐ Smiles spontaneously, especially at people
- ☐ Likes to play with people and might cry when playing stops
- ☐ Copies some movements and facial expressions, like smiling or frowning

Language/Communication

- ☐ Begins to babble
- ☐ Babbles with expression and copies sounds he hears
- ☐ Cries in different ways to show hunger, pain, or being tired

Cognitive (learning, thinking, problem-solving)

- ☐ Lets you know if she is happy or sad
- ☐ Responds to affection
- ☐ Reaches for toy with one hand
- ☐ Uses hands and eyes together, such as seeing a toy and reaching for it
- ☐ Follows moving things with eyes from side to side
- ☐ Watches faces closely
- ☐ Recognizes familiar people and things at a distance

Movement/Physical Development

- ☐ Holds head steady, unsupported
- ☐ Pushes down on legs when feet are on a hard surface
- ☐ May be able to roll over from tummy to back
- ☐ Can hold a toy and shake it and swing at dangling toys
- ☐ Brings hands to mouth
- ☐ When lying on stomach, pushes up to elbows

You Know Your Child Best.

Act early if you have concerns about the way your child plays, learns, speaks, acts, or moves, or if your child:

- ☐ Is missing milestones
- ☐ Doesn't watch things as they move
- ☐ Doesn't smile at people
- ☐ Can't hold head steady
- ☐ Doesn't coo or make sounds
- ☐ Doesn't bring things to mouth
- ☐ Doesn't push down with legs when feet are placed on a hard surface
- ☐ Has trouble moving one or both eyes in all directions

Tell your child's doctor or nurse if you notice any of these signs of possible developmental delay and ask for a developmental screening.

If you or the doctor is still concerned

1. Ask for a referral to a specialist and,
2. Call your state or territory's early intervention program to find out if your child can get services to help. Learn more and find the number at **cdc.gov/FindEI**.

For more information, go to **cdc.gov/Concerned**.

DON'T WAIT.
Acting early can make a real difference!

www.cdc.gov/ActEarly
1-800-CDC-INFO (1-800-232-4636)

Download CDC's Milestone Tracker App

Learn the Signs. Act Early.

Help Your Baby Learn and Grow



You can help your baby learn and grow. Talk, read, sing, and play together every day. Below are some activities to enjoy with your 4-month-old baby today.

What You Can Do for Your 4-Month-Old:

- ☐ Hold and talk to your baby; smile and be cheerful while you do.
- ☐ Set steady routines for sleeping and feeding.
- ☐ Pay close attention to what your baby likes and doesn't like; you will know how best to meet his needs and what you can do to make your baby happy.
- ☐ Copy your baby's sounds.
- ☐ Act excited and smile when your baby makes sounds.
- ☐ Have quiet play times when you read or sing to your baby.
- ☐ Give age-appropriate toys to play with, such as rattles or colorful pictures.
- ☐ Play games such as peek-a-boo.
- ☐ Provide safe opportunities for your baby to reach for toys and explore his surroundings.
- ☐ Put toys near your baby so that she can reach for them or kick her feet.
- ☐ Put toys or rattles in your baby's hand and help him to hold them.
- ☐ Hold your baby upright with feet on the floor, and sing or talk to your baby as she "stands" with support.

Milestones adapted from CARING FOR YOUR BABY AND YOUNG CHILD: BIRTH TO AGE 5, Fifth Edition, edited by Steven Shelov and Tanya Remer Altmann © 1991, 1993, 1998, 2004, 2009 by the American Academy of Pediatrics and BRIGHT FUTURES: GUIDELINES FOR HEALTH SUPERVISION OF INFANTS, CHILDREN, AND ADOLESCENTS, Third Edition, edited by Joseph Hagan, Jr., Judith S. Shaw, and Paula M. Duncan, 2008, Elk Grove Village, IL: American Academy of Pediatrics.

This milestone checklist is not a substitute for a standardized, validated developmental screening tool.

www.cdc.gov/ActEarly | 1-800-CDC-INFO (1-800-232-4636)

Learn the Signs. Act Early.

© University of Pretoria

Your Baby at 6 Months



Child's Name _____ Child's Age _____ Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by 6 months. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.

What Most Babies Do by this Age:

Social/Emotional

- ☐ Knows familiar faces and begins to know if someone is a stranger
- ☐ Likes to play with others, especially parents
- ☐ Responds to other people's emotions and often seems happy
- ☐ Likes to look at self in a mirror

Language/Communication

- ☐ Responds to sounds by making sounds
- ☐ Strings vowels together when babbling ("ah," "eh," "oh") and likes taking turns with parent while making sounds
- ☐ Responds to own name
- ☐ Makes sounds to show joy and displeasure
- ☐ Begins to say consonant sounds (jabbering with "m," "b")

Cognitive (learning, thinking, problem-solving)

- ☐ Looks around at things nearby
- ☐ Brings things to mouth
- ☐ Shows curiosity about things and tries to get things that are out of reach
- ☐ Begins to pass things from one hand to the other

Movement/Physical Development

- ☐ Rolls over in both directions (front to back, back to front)
- ☐ Begins to sit without support
- ☐ When standing, supports weight on legs and might bounce
- ☐ Rocks back and forth, sometimes crawling backward before moving forward

You Know Your Child Best.

Act early if you have concerns about the way your child plays, learns, speaks, acts, or moves, or if your child:

- ☐ Is missing milestones
- ☐ Doesn't try to get things that are in reach
- ☐ Shows no affection for caregivers
- ☐ Doesn't respond to sounds around him
- ☐ Has difficulty getting things to mouth
- ☐ Doesn't make vowel sounds ("ah", "eh", "oh")
- ☐ Doesn't roll over in either direction
- ☐ Doesn't laugh or make squealing sounds
- ☐ Seems very stiff, with tight muscles
- ☐ Seems very floppy, like a rag doll

Tell your child's doctor or nurse if you notice any of these signs of possible developmental delay and ask for a developmental screening.

If you or the doctor is still concerned

1. Ask for a referral to a specialist and,
2. Call your state or territory's early intervention program to find out if your child can get services to help. Learn more and find the number at **cdc.gov/FindEI**.

For more information, go to **cdc.gov/Concerned**.

DON'T WAIT.
Acting early can make a real difference!

www.cdc.gov/ActEarly
1-800-CDC-INFO (1-800-232-4636)

Download CDC's Milestone Tracker App

Learn the Signs. Act Early.

Help Your Baby Learn and Grow



You can help your baby learn and grow. Talk, read, sing, and play together every day. Below are some activities to enjoy with your 6-month-old baby today.

What You Can Do for Your 6-Month-Old:

- ☐ Play on the floor with your baby every day.
- ☐ Learn to read your baby's moods. If he's happy, keep doing what you are doing. If he's upset, take a break and comfort your baby.
- ☐ Show your baby how to comfort herself when she's upset. She may suck on her fingers to self soothe.
- ☐ Use "reciprocal" play—when he smiles, you smile; when he makes sounds, you copy them.
- ☐ Repeat your child's sounds and say simple words with those sounds. For example, if your child says "bah," say "bottle" or "book."
- ☐ Read books to your child every day. Praise her when she babbles and "reads" too.
- ☐ When your baby looks at something, point to it and talk about it.
- ☐ When he drops a toy on the floor, pick it up and give it back. This game helps him learn cause and effect.
- ☐ Read colorful picture books to your baby.
- ☐ Point out new things to your baby and name them.
- ☐ Show your baby bright pictures in a magazine and name them.
- ☐ Hold your baby up while she sits or support her with pillows. Let her look around and give her toys to look at while she balances.
- ☐ Put your baby on his tummy or back and put toys just out of reach. Encourage him to roll over to reach the toys.

Milestones adapted from CARING FOR YOUR BABY AND YOUNG CHILD: BIRTH TO AGE 5, Fifth Edition, edited by Steven Shelov and Tanya Remer Altmann © 1991, 1993, 1998, 2004, 2009 by the American Academy of Pediatrics and BRIGHT FUTURES: GUIDELINES FOR HEALTH SUPERVISION OF INFANTS, CHILDREN, AND ADOLESCENTS, Third Edition, edited by Joseph Hagan, Jr., Judith S. Shaw, and Paula M. Duncan, 2008, Elk Grove Village, IL: American Academy of Pediatrics.

This milestone checklist is not a substitute for a standardized, validated developmental screening tool.

www.cdc.gov/ActEarly | 1-800-CDC-INFO (1-800-232-4636)

Learn the Signs. Act Early.

© University of Pretoria

Your Baby at 9 Months*



Child's Name _____ Child's Age _____ Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by 9 months. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.

What Most Babies Do by this Age:

Social/Emotional

- ☐ May be afraid of strangers
- ☐ May be clingy with familiar adults
- ☐ Has favorite toys

Language/Communication

- ☐ Understands "no"
- ☐ Makes a lot of different sounds like "mamamama" and "bababababa"
- ☐ Copies sounds and gestures of others
- ☐ Uses fingers to point at things

Cognitive (learning, thinking, problem-solving)

- ☐ Watches the path of something as it falls
- ☐ Looks for things he sees you hide
- ☐ Plays peek-a-boo
- ☐ Puts things in her mouth
- ☐ Moves things smoothly from one hand to the other
- ☐ Picks up things like cereal o's between thumb and index finger

Movement/Physical Development

- ☐ Stands, holding on
- ☐ Can get into sitting position
- ☐ Sits without support
- ☐ Pulls to stand
- ☐ Crawls

You Know Your Child Best.

Act early if you have concerns about the way your child plays, learns, speaks, acts, or moves, or if your child:

- ☐ Is missing milestones
- ☐ Doesn't bear weight on legs with support
- ☐ Doesn't sit with help
- ☐ Doesn't babble ("mama", "baba", "dada")
- ☐ Doesn't play any games involving back-and-forth play
- ☐ Doesn't respond to own name
- ☐ Doesn't seem to recognize familiar people
- ☐ Doesn't look where you point
- ☐ Doesn't transfer toys from one hand to the other

Tell your child's doctor or nurse if you notice any of these signs of possible developmental delay and ask for a developmental screening.

If you or the doctor is still concerned

1. Ask for a referral to a specialist and,
2. Call your state or territory's early intervention program to find out if your child can get services to help. Learn more and find the number at **cdc.gov/FindEI**.

For more information, go to **cdc.gov/Concerned**.

DON'T WAIT.
Acting early can make a real difference!

★ **It's time for developmental screening!**
At 9 months, your child is due for general developmental screening, as recommended for all children by the American Academy of Pediatrics. Ask the doctor about your child's developmental screening.

www.cdc.gov/ActEarly
1-800-CDC-INFO (1-800-232-4636)

Download CDC's Milestone Tracker App

Learn the Signs. Act Early.

Help Your Baby Learn and Grow



You can help your baby learn and grow. Talk, read, sing, and play together every day. Below are some activities to enjoy with your 9-month-old baby today.

What You Can Do for Your 9-Month-Old:

- ☐ Pay attention to the way he reacts to new situations and people; try to continue to do things that make your baby happy and comfortable.
- ☐ As she moves around more, stay close so she knows that you are near.
- ☐ Continue with routines; they are especially important now.
- ☐ Play games with "my turn, your turn."
- ☐ Say what you think your baby is feeling. For example, say, "You are so sad, let's see if we can make you feel better."
- ☐ Describe what your baby is looking at; for example, "red, round ball."
- ☐ Talk about what your baby wants when he points at something.
- ☐ Copy your baby's sounds and words.
- ☐ Ask for behaviors that you want. For example, instead of saying "don't stand," say "time to sit."
- ☐ Teach cause-and-effect by rolling balls back and forth, pushing toy cars and trucks, and putting blocks in and out of a container.
- ☐ Play peek-a-boo and hide-and-seek.
- ☐ Read and talk to your baby.
- ☐ Provide lots of room for your baby to move and explore in a safe area.
- ☐ Put your baby close to things that she can pull up on safely.

Milestones adapted from CARING FOR YOUR BABY AND YOUNG CHILD: BIRTH TO AGE 5, Fifth Edition, edited by Steven Shelov and Tanya Remer Altmann © 1991, 1993, 1998, 2004, 2009 by the American Academy of Pediatrics and BRIGHT FUTURES: GUIDELINES FOR HEALTH SUPERVISION OF INFANTS, CHILDREN, AND ADOLESCENTS, Third Edition, edited by Joseph Hagan, Jr., Judith S. Shaw, and Paula M. Duncan, 2008, Elk Grove Village, IL: American Academy of Pediatrics.

This milestone checklist is not a substitute for a standardized, validated developmental screening tool.

www.cdc.gov/ActEarly | 1-800-CDC-INFO (1-800-232-4636)

Learn the Signs. Act Early.

© University of Pretoria

Your Baby at 9 Months*



Child's Name _____ Child's Age _____ Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by 9 months. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.

What Most Babies Do by this Age:

Social/Emotional

- ☐ May be afraid of strangers
- ☐ May be clingy with familiar adults
- ☐ Has favorite toys

Language/Communication

- ☐ Understands "no"
- ☐ Makes a lot of different sounds like "mamamama" and "bababababa"
- ☐ Copies sounds and gestures of others
- ☐ Uses fingers to point at things

Cognitive (learning, thinking, problem-solving)

- ☐ Watches the path of something as it falls
- ☐ Looks for things he sees you hide
- ☐ Plays peek-a-boo
- ☐ Puts things in her mouth
- ☐ Moves things smoothly from one hand to the other
- ☐ Picks up things like cereal o's between thumb and index finger

Movement/Physical Development

- ☐ Stands, holding on
- ☐ Can get into sitting position
- ☐ Sits without support
- ☐ Pulls to stand
- ☐ Crawls

You Know Your Child Best.

Act early if you have concerns about the way your child plays, learns, speaks, acts, or moves, or if your child:

- ☐ Is missing milestones
- ☐ Doesn't bear weight on legs with support
- ☐ Doesn't sit with help
- ☐ Doesn't babble ("mama", "baba", "dada")
- ☐ Doesn't play any games involving back-and-forth play
- ☐ Doesn't respond to own name
- ☐ Doesn't seem to recognize familiar people
- ☐ Doesn't look where you point
- ☐ Doesn't transfer toys from one hand to the other

Tell your child's doctor or nurse if you notice any of these signs of possible developmental delay and ask for a developmental screening.

If you or the doctor is still concerned

1. Ask for a referral to a specialist and,
2. Call your state or territory's early intervention program to find out if your child can get services to help. Learn more and find the number at **cdc.gov/FindEI**.

For more information, go to **cdc.gov/Concerned**.

DON'T WAIT.
Acting early can make a real difference!

★ **It's time for developmental screening!**
At 9 months, your child is due for general developmental screening, as recommended for all children by the American Academy of Pediatrics. Ask the doctor about your child's developmental screening.

www.cdc.gov/ActEarly
1-800-CDC-INFO (1-800-232-4636)

Download CDC's Milestone Tracker App

Learn the Signs. Act Early.

Help Your Baby Learn and Grow



You can help your baby learn and grow. Talk, read, sing, and play together every day. Below are some activities to enjoy with your 9-month-old baby today.

What You Can Do for Your 9-Month-Old:

- ☐ Pay attention to the way he reacts to new situations and people; try to continue to do things that make your baby happy and comfortable.
- ☐ As she moves around more, stay close so she knows that you are near.
- ☐ Continue with routines; they are especially important now.
- ☐ Play games with "my turn, your turn."
- ☐ Say what you think your baby is feeling. For example, say, "You are so sad, let's see if we can make you feel better."
- ☐ Describe what your baby is looking at; for example, "red, round ball."
- ☐ Talk about what your baby wants when he points at something.
- ☐ Copy your baby's sounds and words.
- ☐ Ask for behaviors that you want. For example, instead of saying "don't stand," say "time to sit."
- ☐ Teach cause-and-effect by rolling balls back and forth, pushing toy cars and trucks, and putting blocks in and out of a container.
- ☐ Play peek-a-boo and hide-and-seek.
- ☐ Read and talk to your baby.
- ☐ Provide lots of room for your baby to move and explore in a safe area.
- ☐ Put your baby close to things that she can pull up on safely.

Milestones adapted from CARING FOR YOUR BABY AND YOUNG CHILD: BIRTH TO AGE 5, Fifth Edition, edited by Steven Shelov and Tanya Remer Altmann © 1991, 1993, 1998, 2004, 2009 by the American Academy of Pediatrics and BRIGHT FUTURES: GUIDELINES FOR HEALTH SUPERVISION OF INFANTS, CHILDREN, AND ADOLESCENTS, Third Edition, edited by Joseph Hagan, Jr., Judith S. Shaw, and Paula M. Duncan, 2008, Elk Grove Village, IL: American Academy of Pediatrics.

This milestone checklist is not a substitute for a standardized, validated developmental screening tool.

www.cdc.gov/ActEarly | 1-800-CDC-INFO (1-800-232-4636)

Learn the Signs. Act Early.

© University of Pretoria

Your Child at 1 Year



Child's Name _____ Child's Age _____ Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by age 1. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.

What Most Children Do by this Age:

Social/Emotional

- ☐ Is shy or nervous with strangers
- ☐ Cries when mom or dad leaves
- ☐ Has favorite things and people
- ☐ Shows fear in some situations
- ☐ Hands you a book when he wants to hear a story
- ☐ Repeats sounds or actions to get attention
- ☐ Puts out arm or leg to help with dressing
- ☐ Plays games such as "peek-a-boo" and "pat-a-cake"

Language/Communication

- ☐ Responds to simple spoken requests
- ☐ Uses simple gestures, like shaking head "no" or waving "bye-bye"
- ☐ Makes sounds with changes in tone (sounds more like speech)
- ☐ Says "mama" and "dada" and exclamations like "uh-oh!"
- ☐ Tries to say words you say

Cognitive (learning, thinking, problem-solving)

- ☐ Explores things in different ways, like shaking, banging, throwing
- ☐ Finds hidden things easily
- ☐ Looks at the right picture or thing when it's named
- ☐ Copies gestures
- ☐ Starts to use things correctly; for example, drinks from a cup, brushes hair
- ☐ Bangs two things together
- ☐ Puts things in a container, takes things out of a container
- ☐ Lets things go without help
- ☐ Pokes with index (pointer) finger
- ☐ Follows simple directions like "pick up the toy"

Movement/Physical Development

- ☐ Gets to a sitting position without help
- ☐ Pulls up to stand, walks holding on to furniture ("cruising")
- ☐ May take a few steps without holding on
- ☐ May stand alone

You Know Your Child Best.

Act early if you have concerns about the way your child plays, learns, speaks, acts, or moves, or if your child:

- ☐ Is missing milestones
- ☐ Doesn't crawl
- ☐ Can't stand when supported
- ☐ Doesn't search for things that she sees you hide.
- ☐ Doesn't say single words like "mama" or "dada"
- ☐ Doesn't learn gestures like waving or shaking head
- ☐ Doesn't point to things
- ☐ Loses skills he once had

Tell your child's doctor or nurse if you notice any of these signs of possible developmental delay and ask for a developmental screening.

If you or the doctor is still concerned

1. Ask for a referral to a specialist and,
2. Call your state or territory's early intervention program to find out if your child can get services to help. Learn more and find the number at **cdc.gov/FindEI**.

For more information, go to **cdc.gov/Concerned**.

DON'T WAIT.
Acting early can make a real difference!

www.cdc.gov/ActEarly
1-800-CDC-INFO (1-800-232-4636)

Download CDC's Milestone Tracker App

Learn the Signs. Act Early.

Help Your Child Learn and Grow



You can help your child learn and grow. Talk, read, sing, and play together every day. Below are some activities to enjoy with your 1-year-old child today.

What You Can Do for Your 1-Year-Old:

- ☐ Give your child time to get to know a new caregiver. Bring a favorite toy, stuffed animal, or blanket to help comfort your child.
- ☐ In response to unwanted behaviors, say "no" firmly. Do not yell, spank, or give long explanations. A time out for 30 seconds to 1 minute might help redirect your child.
- ☐ Give your child lots of hugs, kisses, and praise for good behavior.
- ☐ Spend a lot more time encouraging wanted behaviors than punishing unwanted behaviors (4 times as much encouragement for wanted behaviors as redirection for unwanted behaviors).
- ☐ Talk to your child about what you're doing. For example, "Mommy is washing your hands with a washcloth."
- ☐ Read with your child every day. Have your child turn the pages. Take turns labeling pictures with your child.
- ☐ Build on what your child says or tries to say, or what he points to. If he points to a truck and says "t" or "truck," say, "Yes, that's a big, blue truck."
- ☐ Give your child crayons and paper, and let your child draw freely. Show your child how to draw lines up and down and across the page. Praise your child when she tries to copy them.
- ☐ Play with blocks, shape sorters, and other toys that encourage your child to use his hands.
- ☐ Hide small toys and other things and have your child find them.
- ☐ Ask your child to label body parts or things you see while driving in the car.
- ☐ Sing songs with actions, like "The Itsy Bitsy Spider" and "Wheels on the Bus." Help your child do the actions with you.
- ☐ Give your child pots and pans or a small musical instrument like a drum or cymbals. Encourage your child to make noise.
- ☐ Provide lots of safe places for your toddler to explore. (Toddler-proof your home. Lock away products for cleaning, laundry, lawn care, and car care. Use a safety gate and lock doors to the outside and the basement.)
- ☐ Give your child push toys like a wagon or "kiddie push car."

Milestones adapted from CARING FOR YOUR BABY AND YOUNG CHILD: BIRTH TO AGE 5, Fifth Edition, edited by Steven Shelov and Tanya Remer Altmann © 1991, 1993, 1998, 2004, 2009 by the American Academy of Pediatrics and BRIGHT FUTURES GUIDELINES FOR HEALTH SUPERVISION OF INFANTS, CHILDREN, AND ADOLESCENTS, Third Edition, edited by Joseph Hagan, Jr., Judith S. Shaw, and Paula M. Duncan, 2008, Elk Grove Village, IL: American Academy of Pediatrics.

This milestone checklist is not a substitute for a standardized, validated developmental screening tool.

www.cdc.gov/ActEarly | 1-800-CDC-INFO (1-800-232-4636)

Learn the Signs. Act Early.

© University of Pretoria

Your Child at 18 Months (1½ Yrs)*



Child's Name _____ Child's Age _____ Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by 18 months. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.

What Most Children Do by this Age:

Social/Emotional

- ☐ Likes to hand things to others as play
- ☐ May have temper tantrums
- ☐ May be afraid of strangers
- ☐ Shows affection to familiar people
- ☐ Plays simple pretend, such as feeding a doll
- ☐ May cling to caregivers in new situations
- ☐ Points to show others something interesting
- ☐ Explores alone but with parent close by

Language/Communication

- ☐ Says several single words
- ☐ Says and shakes head "no"
- ☐ Points to show someone what he wants

Cognitive (learning, thinking, problem-solving)

- ☐ Knows what ordinary things are for; for example, telephone, brush, spoon
- ☐ Points to get the attention of others
- ☐ Shows interest in a doll or stuffed animal by pretending to feed
- ☐ Points to one body part
- ☐ Scribbles on his own
- ☐ Can follow 1-step verbal commands without any gestures; for example, sits when you say "sit down"

Movement/Physical Development

- ☐ Walks alone
- ☐ May walk up steps and run
- ☐ Pulls toys while walking
- ☐ Can help undress herself
- ☐ Drinks from a cup
- ☐ Eats with a spoon

You Know Your Child Best.

Act early if you have concerns about the way your child plays, learns, speaks, acts, or moves, or if your child:

- ☐ Is missing milestones
- ☐ Doesn't point to show things to others
- ☐ Can't walk
- ☐ Doesn't know what familiar things are for
- ☐ Doesn't copy others
- ☐ Doesn't gain new words
- ☐ Doesn't have at least 6 words
- ☐ Doesn't notice or mind when a caregiver leaves or returns
- ☐ Loses skills he once had

Tell your child's doctor or nurse if you notice any of these signs of possible developmental delay and ask for a developmental screening.

If you or the doctor is still concerned

1. Ask for a referral to a specialist and,
2. Call your state or territory's early intervention program to find out if your child can get services to help. Learn more and find the number at **cdc.gov/FindEI**.

For more information, go to **cdc.gov/Concerned**.

DON'T WAIT.
Acting early can make a real difference!

★ **It's time for developmental screening!**
At 18 months, your child is due for general developmental screening and an autism screening, as recommended for all children by the American Academy of Pediatrics. Ask the doctor about your child's developmental screening.

www.cdc.gov/ActEarly
1-800-CDC-INFO (1-800-232-4636)

Download CDC's Milestone Tracker App

Learn the Signs. Act Early.

Help Your Child Learn and Grow



You can help your child learn and grow. Talk, read, sing, and play together every day. Below are some activities to enjoy with your 18-month-old child today.

What You Can Do for Your 18-Month-Old:

- ☐ Provide a safe, loving environment. It's important to be consistent and predictable.
- ☐ Praise good behaviors more than you punish bad behaviors (use only very brief time outs).
- ☐ Describe her emotions. For example, say, "You are happy when we read this book."
- ☐ Encourage pretend play.
- ☐ Encourage empathy. For example, when he sees a child who is sad, encourage him to hug or pat the other child.
- ☐ Read books and talk about the pictures using simple words.
- ☐ Copy your child's words.
- ☐ Use words that describe feelings and emotions.
- ☐ Use simple, clear phrases.
- ☐ Ask simple questions.
- ☐ Hide things under blankets and pillows and encourage him to find them.
- ☐ Play with blocks, balls, puzzles, books, and toys that teach cause and effect and problem solving.
- ☐ Name pictures in books and body parts.
- ☐ Provide toys that encourage pretend play; for example, dolls, play telephones.
- ☐ Provide safe areas for your child to walk and move around in.
- ☐ Provide toys that she can push or pull safely.
- ☐ Provide balls for her to kick, roll, and throw.
- ☐ Encourage him to drink from his cup and use a spoon, no matter how messy.
- ☐ Blow bubbles and let your child pop them.

Milestones adapted from CARING FOR YOUR BABY AND YOUNG CHILD: BIRTH TO AGE 5, Fifth Edition, edited by Steven Shelov and Tanya Remer Altmann © 1991, 1993, 1998, 2004, 2009 by the American Academy of Pediatrics and BRIGHT FUTURES: GUIDELINES FOR HEALTH SUPERVISION OF INFANTS, CHILDREN, AND ADOLESCENTS, Third Edition, edited by Joseph Hagan, Jr., Judith S. Shaw, and Paula M. Duncan, 2008, Elk Grove Village, IL: American Academy of Pediatrics.

This milestone checklist is not a substitute for a standardized, validated developmental screening tool.

www.cdc.gov/ActEarly | 1-800-CDC-INFO (1-800-232-4636)

Learn the Signs. Act Early.

© University of Pretoria

Your Child at 2 Years*



Child's Name _____ Child's Age _____ Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by age 2. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.

What Most Children Do by this Age:

Social/Emotional

- ☐ Copies others, especially adults and older children
- ☐ Gets excited when with other children
- ☐ Shows more and more independence
- ☐ Shows defiant behavior (doing what he has been told not to)
- ☐ Plays mainly beside other children, but is beginning to include other children, such as in chase games

Language/Communication

- ☐ Points to things or pictures when they are named
- ☐ Knows names of familiar people and body parts
- ☐ Says sentences with 2 to 4 words
- ☐ Follows simple instructions
- ☐ Repeats words overheard in conversation
- ☐ Points to things in a book

Cognitive (learning, thinking, problem-solving)

- ☐ Finds things even when hidden under two or three covers
- ☐ Begins to sort shapes and colors
- ☐ Completes sentences and rhymes in familiar books
- ☐ Plays simple make-believe games
- ☐ Builds towers of 4 or more blocks
- ☐ Might use one hand more than the other
- ☐ Follows two-step instructions such as "Pick up your shoes and put them in the closet."
- ☐ Names items in a picture book such as a cat, bird, or dog

Movement/Physical Development

- ☐ Stands on tiptoe
- ☐ Kicks a ball
- ☐ Begins to run
- ☐ Climbs onto and down from furniture without help
- ☐ Walks up and down stairs holding on
- ☐ Throws ball overhand
- ☐ Makes or copies straight lines and circles

You Know Your Child Best.

Act early if you have concerns about the way your child plays, learns, speaks, acts, or moves, or if your child:

- ☐ Is missing milestones
- ☐ Doesn't use 2-word phrases (for example, "drink milk")
- ☐ Doesn't know what to do with common things, like a brush, phone, fork, spoon
- ☐ Doesn't copy actions and words
- ☐ Doesn't follow simple instructions
- ☐ Doesn't walk steadily
- ☐ Loses skills she once had

Tell your child's doctor or nurse if you notice any of these signs of possible developmental delay and ask for a developmental screening.

If you or the doctor is still concerned

1. Ask for a referral to a specialist and,
2. Call your state or territory's early intervention program to find out if your child can get services to help. Learn more and find the number at **cdc.gov/FindEI**.

For more information, go to **cdc.gov/Concerned**.

DON'T WAIT.
Acting early can make a real difference!

★ **It's time for developmental screening!**
At 2 years, your child is due for general developmental screening and an autism screening, as recommended for all children by the American Academy of Pediatrics. Ask the doctor about your child's developmental screening.

www.cdc.gov/ActEarly
1-800-CDC-INFO (1-800-232-4636)

Download CDC's Milestone Tracker App

Learn the Signs. Act Early.

Help Your Child Learn and Grow



You can help your child learn and grow. Talk, read, sing, and play together every day. Below are some activities to enjoy with your 2-year-old child today.

What You Can Do for Your 2-Year-Old:

- ☐ Encourage your child to help with simple chores at home, like sweeping and making dinner. Praise your child for being a good helper.
- ☐ At this age, children still play next to (not with) each other and don't share well. For play dates, give the children lots of toys to play with. Watch the children closely and step in if they fight or argue.
- ☐ Give your child attention and praise when he follows instructions. Limit attention for defiant behavior. Spend a lot more time praising good behaviors than punishing bad ones.
- ☐ Teach your child to identify and say body parts, animals, and other common things.
- ☐ Do not correct your child when he says words incorrectly. Rather, say it correctly. For example, "That is a ball."
- ☐ Encourage your child to say a word instead of pointing. If your child can't say the whole word ("milk"), give her the first sound ("m") to help. Over time, you can prompt your child to say the whole sentence — "I want milk."
- ☐ Hide your child's toys around the room and let him find them.
- ☐ Help your child do puzzles with shapes, colors, or farm animals. Name each piece when your child puts it in place.
- ☐ Encourage your child to play with blocks. Take turns building towers and knocking them down.
- ☐ Do art projects with your child using crayons, paint, and paper. Describe what your child makes and hang it on the wall or refrigerator.
- ☐ Ask your child to help you open doors and drawers and turn pages in a book or magazine.
- ☐ Once your child walks well, ask her to carry small things for you.
- ☐ Kick a ball back and forth with your child. When your child is good at that, encourage him to run and kick.
- ☐ Take your child to the park to run and climb on equipment or walk on nature trails. Watch your child closely.

Milestones adapted from CARING FOR YOUR BABY AND YOUNG CHILD: BIRTH TO AGE 5, Fifth Edition, edited by Steven Shelov and Tanya Remer Altmann © 1991, 1993, 1998, 2004, 2009 by the American Academy of Pediatrics and BRIGHT FUTURES: GUIDELINES FOR HEALTH SUPERVISION OF INFANTS, CHILDREN, AND ADOLESCENTS, Third Edition, edited by Joseph Hagan, Jr., Judith S. Shaw, and Paula M. Duncan, 2008, Elk Grove Village, IL: American Academy of Pediatrics.

This milestone checklist is not a substitute for a standardized, validated developmental screening tool.

www.cdc.gov/ActEarly | 1-800-CDC-INFO (1-800-232-4636)

Learn the Signs. Act Early.

© University of Pretoria

Your Child at 3 Years



Child's Name _____ Child's Age _____ Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by age 3. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.

What Most Children Do by this Age:

Social/Emotional

- ☐ Copies adults and friends
- ☐ Shows affection for friends without prompting
- ☐ Takes turns in games
- ☐ Shows concern for a crying friend
- ☐ Understands the idea of "mine" and "his" or "hers"
- ☐ Shows a wide range of emotions
- ☐ Separates easily from mom and dad
- ☐ May get upset with major changes in routine
- ☐ Dresses and undresses self

Language/Communication

- ☐ Follows instructions with 2 or 3 steps
- ☐ Can name most familiar things
- ☐ Understands words like "in," "on," and "under"
- ☐ Says first name, age, and sex
- ☐ Names a friend
- ☐ Says words like "I," "me," "we," and "you" and some plurals (cars, dogs, cats)
- ☐ Talks well enough for strangers to understand most of the time
- ☐ Carries on a conversation using 2 to 3 sentences

Cognitive (learning, thinking, problem-solving)

- ☐ Can work toys with buttons, levers, and moving parts
- ☐ Plays make-believe with dolls, animals, and people
- ☐ Does puzzles with 3 or 4 pieces
- ☐ Understands what "two" means
- ☐ Copies a circle with pencil or crayon
- ☐ Turns book pages one at a time
- ☐ Builds towers of more than 6 blocks
- ☐ Screws and unscrews jar lids or turns door handle

Movement/Physical Development

- ☐ Climbs well
- ☐ Runs easily
- ☐ Pedals a tricycle (3-wheel bike)
- ☐ Walks up and down stairs, one foot on each step

You Know Your Child Best.

Act early if you have concerns about the way your child plays, learns, speaks, acts, or moves, or if your child:

- ☐ Is missing milestones
- ☐ Falls down a lot or has trouble with stairs
- ☐ Drools or has very unclear speech
- ☐ Can't work simple toys (such as peg boards, simple puzzles, turning handle)
- ☐ Doesn't speak in sentences
- ☐ Doesn't understand simple instructions
- ☐ Doesn't play pretend or make-believe
- ☐ Doesn't want to play with other children or with toys
- ☐ Doesn't make eye contact
- ☐ Loses skills he once had

Tell your child's doctor or nurse if you notice any of these signs of possible developmental delay and ask for a developmental screening.

If you or the doctor is still concerned

1. Ask for a referral to a specialist and,
2. Call any local public elementary school for a free evaluation to find out if your child can get services to help.

For more information, go to **cdc.gov/Concerned**.

DON'T WAIT.
Acting early can make a real difference!

www.cdc.gov/ActEarly
1-800-CDC-INFO (1-800-232-4636)

Download CDC's Milestone Tracker App

Learn the Signs. Act Early.

Help Your Child Learn and Grow



You can help your child learn and grow. Talk, read, sing, and play together every day. Below are some activities to enjoy with your 3-year-old child today.

What You Can Do for Your 3-Year-Old:

- ☐ Go to play groups with your child or other places where there are other children, to encourage getting along with others.
- ☐ Work with your child to solve the problem when he is upset.
- ☐ Talk about your child's emotions. For example, say, "I can tell you feel mad because you threw the puzzle piece." Encourage your child to identify feelings in books.
- ☐ Set rules and limits for your child, and stick to them. If your child breaks a rule, give him a time out for 30 seconds to 1 minute in a chair or in his room. Praise your child for following the rules.
- ☐ Give your child instructions with 2 or 3 steps. For example, "Go to your room and get your shoes and coat."
- ☐ Read to your child every day. Ask your child to point to things in the pictures and repeat words after you.
- ☐ Give your child an "activity box" with paper, crayons, and coloring books. Color and draw lines and shapes with your child.
- ☐ Play matching games. Ask your child to find objects in books or around the house that are the same.
- ☐ Play counting games. Count body parts, stairs, and other things you use or see every day.
- ☐ Hold your child's hand going up and down stairs. When she can go up and down easily, encourage her to use the railing.
- ☐ Play outside with your child. Go to the park or hiking trail. Allow your child to play freely and without structured activities.

Milestones adapted from CARING FOR YOUR BABY AND YOUNG CHILD: BIRTH TO AGE 5, Fifth Edition, edited by Steven Shelov and Tanya Remer Altmann © 1991, 1993, 1998, 2004, 2009 by the American Academy of Pediatrics and BRIGHT FUTURES: GUIDELINES FOR HEALTH SUPERVISION OF INFANTS, CHILDREN, AND ADOLESCENTS, Third Edition, edited by Joseph Hagan, Jr., Judith S. Shaw, and Paula M. Duncan, 2008, Elk Grove Village, IL: American Academy of Pediatrics.

This milestone checklist is not a substitute for a standardized, validated developmental screening tool.

www.cdc.gov/ActEarly | 1-800-CDC-INFO (1-800-232-4636)

Learn the Signs. Act Early.

© University of Pretoria

Your Child at 4 Years



Child's Name _____ Child's Age _____ Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by age 4. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.

What Most Children Do by this Age:

Social/Emotional

- ☐ Enjoys doing new things
- ☐ Plays "Mom" and "Dad"
- ☐ Is more and more creative with make-believe play
- ☐ Would rather play with other children than by himself
- ☐ Cooperates with other children
- ☐ Often can't tell what's real and what's make-believe
- ☐ Talks about what she likes and what she is interested in

Language/Communication

- ☐ Knows some basic rules of grammar, such as correctly using "he" and "she"
- ☐ Sings a song or says a poem from memory such as the "Itsy Bitsy Spider" or the "Wheels on the Bus"
- ☐ Tells stories
- ☐ Can say first and last name

Cognitive (learning, thinking, problem-solving)

- ☐ Names some colors and some numbers
- ☐ Understands the idea of counting
- ☐ Starts to understand time
- ☐ Remembers parts of a story
- ☐ Understands the idea of "same" and "different"
- ☐ Draws a person with 2 to 4 body parts
- ☐ Uses scissors
- ☐ Starts to copy some capital letters
- ☐ Plays board or card games
- ☐ Tells you what he thinks is going to happen next in a book

Movement/Physical Development

- ☐ Hops and stands on one foot up to 2 seconds
- ☐ Catches a bounced ball most of the time
- ☐ Pours, cuts with supervision, and mashes own food

You Know Your Child Best.

Act early if you have concerns about the way your child plays, learns, speaks, acts, or moves, or if your child:

- ☐ Is missing milestones
- ☐ Can't jump in place
- ☐ Has trouble scribbling
- ☐ Shows no interest in interactive games or make-believe
- ☐ Ignores other children or doesn't respond to people outside the family
- ☐ Resists dressing, sleeping, and using the toilet
- ☐ Can't retell a favorite story
- ☐ Doesn't follow 3-part commands
- ☐ Doesn't understand "same" and "different"
- ☐ Doesn't use "me" and "you" correctly
- ☐ Speaks unclearly
- ☐ Loses skills he once had

Tell your child's doctor or nurse if you notice any of these signs of possible developmental delay and ask for a developmental screening.

If you or the doctor is still concerned

1. Ask for a referral to a specialist and,
2. Call any local public elementary school for a free evaluation to find out if your child can get services to help.

For more information, go to **cdc.gov/Concerned**.

DON'T WAIT.
Acting early can make a real difference!

www.cdc.gov/ActEarly
1-800-CDC-INFO (1-800-232-4636)

Download CDC's Milestone Tracker App

Learn the Signs. Act Early.

Help Your Child Learn and Grow



You can help your child learn and grow. Talk, read, sing, and play together every day. Below are some activities to enjoy with your 4-year-old child today.

What You Can Do for Your 4-Year-Old:

- ☐ Play make-believe with your child. Let her be the leader and copy what she is doing.
- ☐ Suggest your child pretend play an upcoming event that might make him nervous, like going to preschool or staying overnight at a grandparent's house.
- ☐ Give your child simple choices whenever you can. Let your child choose what to wear, play, or eat for a snack. Limit choices to 2 or 3.
- ☐ During play dates, let your child solve her own problems with friends, but be nearby to help out if needed.
- ☐ Encourage your child to use words, share toys, and take turns playing games of one another's choice.
- ☐ Give your child toys to build imagination, like dress-up clothes, kitchen sets, and blocks.
- ☐ Use good grammar when speaking to your child. Instead of "Mommy wants you to come here," say, "I want you to come here."
- ☐ Use words like "first," "second," and "finally" when talking about everyday activities. This will help your child learn about sequence of events.
- ☐ Take time to answer your child's "why" questions. If you don't know the answer, say "I don't know," or help your child find the answer in a book, on the Internet, or from another adult.
- ☐ When you read with your child, ask him to tell you what happened in the story as you go.
- ☐ Say colors in books, pictures, and things at home. Count common items, like the number of snack crackers, stairs, or toy trains.
- ☐ Teach your child to play outdoor games like tag, follow the leader, and duck, duck, goose.
- ☐ Play your child's favorite music and dance with your child. Take turns copying each other's moves.

Milestones adapted from CARING FOR YOUR BABY AND YOUNG CHILD: BIRTH TO AGE 5, Fifth Edition, edited by Steven Shelov and Tanya Remer Altmann © 1991, 1993, 1998, 2004, 2009 by the American Academy of Pediatrics and BRIGHT FUTURES: GUIDELINES FOR HEALTH SUPERVISION OF INFANTS, CHILDREN, AND ADOLESCENTS, Third Edition, edited by Joseph Hagan, Jr., Judith S. Shaw, and Paula M. Duncan, 2008, Elk Grove Village, IL: American Academy of Pediatrics.

This milestone checklist is not a substitute for a standardized, validated developmental screening tool.

www.cdc.gov/ActEarly | 1-800-CDC-INFO (1-800-232-4636)

Learn the Signs. Act Early.

© University of Pretoria

Your Child at 5 Years



Child's Name _____ Child's Age _____ Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by age 5. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.

What Most Children Do by this Age:

Social/Emotional

- ☐ Wants to please friends
- ☐ Wants to be like friends
- ☐ More likely to agree with rules
- ☐ Likes to sing, dance, and act
- ☐ Is aware of gender
- ☐ Can tell what's real and what's make-believe
- ☐ Shows more independence (for example, may visit a next-door neighbor by himself [adult supervision is still needed])
- ☐ Is sometimes demanding and sometimes very cooperative

Language/Communication

- ☐ Speaks very clearly
- ☐ Tells a simple story using full sentences
- ☐ Uses future tense; for example, "Grandma will be here."
- ☐ Says name and address

Cognitive (learning, thinking, problem-solving)

- ☐ Counts 10 or more things
- ☐ Can draw a person with at least 6 body parts
- ☐ Can print some letters or numbers
- ☐ Copies a triangle and other geometric shapes
- ☐ Knows about things used every day, like money and food

Movement/Physical Development

- ☐ Stands on one foot for 10 seconds or longer
- ☐ Hops; may be able to skip
- ☐ Can do a somersault
- ☐ Uses a fork and spoon and sometimes a table knife
- ☐ Can use the toilet on her own
- ☐ Swings and climbs

You Know Your Child Best.

Act early if you have concerns about the way your child plays, learns, speaks, acts, or moves, or if your child:

- ☐ Is missing milestones
- ☐ Doesn't show a wide range of emotions
- ☐ Shows extreme behavior (unusually fearful, aggressive, shy or sad)
- ☐ Unusually withdrawn and not active
- ☐ Is easily distracted, has trouble focusing on one activity for more than 5 minutes
- ☐ Doesn't respond to people, or responds only superficially
- ☐ Can't tell what's real and what's make-believe
- ☐ Doesn't play a variety of games and activities
- ☐ Can't give first and last name
- ☐ Doesn't use plurals or past tense properly
- ☐ Doesn't talk about daily activities or experiences
- ☐ Doesn't draw pictures
- ☐ Can't brush teeth, wash and dry hands, or get undressed without help
- ☐ Loses skills he once had

Tell your child's doctor or nurse if you notice any of these signs of possible developmental delay and ask for a developmental screening.

If you or the doctor is still concerned

1. Ask for a referral to a specialist and,
2. Call any local public elementary school for a free evaluation to find out if your child can get services to help.

For more information, go to **cdc.gov/Concerned**.

DON'T WAIT.
Acting early can make a real difference!

www.cdc.gov/ActEarly
1-800-CDC-INFO (1-800-232-4636)

Download CDC's Milestone Tracker App

Learn the Signs. Act Early.

Help Your Child Learn and Grow



You can help your child learn and grow. Talk, read, sing, and play together every day. Below are some activities to enjoy with your 5-year-old child today.

What You Can Do for Your 5-Year-Old:

- ☐ Continue to arrange play dates, trips to the park, or play groups. Give your child more freedom to choose activities to play with friends, and let your child work out problems on her own.
- ☐ Your child might start to talk back or use profanity (swear words) as a way to feel independent. Do not give a lot of attention to this talk, other than a brief time out. Instead, praise your child when he asks for things nicely and calmly takes "no" for an answer.
- ☐ This is a good time to talk to your child about safe touch. No one should touch "private parts" except doctors or nurses during an exam or parents when they are trying to keep the child clean.
- ☐ Teach your child her address and phone number.
- ☐ When reading to your child, ask him to predict what will happen next in the story.
- ☐ Encourage your child to "read" by looking at the pictures and telling the story.
- ☐ Teach your child time concepts like morning, afternoon, evening, today, tomorrow, and yesterday. Start teaching the days of the week.
- ☐ Explore your child's interests in your community. For example, if your child loves animals, visit the zoo or petting farm. Go to the library or look on the Internet to learn about these topics.
- ☐ Keep a handy box of crayons, paper, paint, child scissors, and paste. Encourage your child to draw and make art projects with different supplies.
- ☐ Play with toys that encourage your child to put things together.
- ☐ Teach your child how to pump her legs back and forth on a swing.
- ☐ Help your child climb on the monkey bars.
- ☐ Go on walks with your child, do a scavenger hunt in your neighborhood or park, help him ride a bike with training wheels (wearing a helmet).

Milestones adapted from CARING FOR YOUR BABY AND YOUNG CHILD: BIRTH TO AGE 5, Fifth Edition, edited by Steven Shelov and Tanya Remer Altmann © 1991, 1993, 1998, 2004, 2009 by the American Academy of Pediatrics and BRIGHT FUTURES GUIDELINES FOR HEALTH SUPERVISION OF INFANTS, CHILDREN, AND ADOLESCENTS, Third Edition, edited by Joseph Hagan, Jr., Judith S. Shaw, and Paula M. Duncan, 2008, Elk Grove Village, IL: American Academy of Pediatrics.

This milestone checklist is not a substitute for a standardized, validated developmental screening tool.

www.cdc.gov/ActEarly | 1-800-CDC-INFO (1-800-232-4636)

Learn the Signs. Act Early.

© University of Pretoria

APPENDIX I: FOCUS GROUP DISCUSSION GUIDE FOR PHASE A

© University of Pretoria





Focus Group Discussion Guide for Phase A:

Welcoming

Good morning. Thank you for taking the time to join us to talk about this topic today. My name is Mignon Botes, and I am a postgraduate student at the University of Pretoria. I will be moderating today's discussion.

Overview of the topic and expectation:

The reason for this discussion is to seek your understanding on early childhood development and resouces in the community.

In front of you will see a few things:

- A packet of paper. We are going to go through the documents together
- A pen that has been sanitised
- A cold drink that you can enjoy at your pleasure

Today's session will be about 45 minutes and it will be recorded.

Let's look at the documents:

1. The first document is the consent. You will be asked to sign the consent and participate in the discussion. No names will be used during this discussion or on any forms. Therefore you may be assured of complete confidentiality. Do you have any questions? If you understand and agree, please sign the consent form.

Ground rules and guidelines

I want to highlight some guidelines and ground rules for the discussion today.

- The focus group will last between 45-60 minutes.
- Everyone should participate. However only one person should talk at a time. It is important for us to hear all participant's perspectives and opinions.
- There are no right or wrong answers to questions – just ideas, experiences, perceptions, and opinions, which are all valuable. Please feel free to share your point of view even if it differs from what others have said.

Let's start with the first question:

© University of Pretoria

What do you understand about childhood development?

Whose role is it to ensure your child is developing typically?

How can children's developmental functioning be assessed?

What do you do at home to help your child develop?

Do you think it is important to do things at home to help your child develop?

What or who is in your area to help you with your child's development?

Does the nurse/community care worker teach you how to help your child with development or with school work?

If you think there is a problem with your child's development – where/whom do you go to?

Do you know what and what the role of the following is?
Doctor
Occupational therapist
Speech therapist
Physiotherapists
Audiologist

Do you know if any of these professionals are in your community?

Has a health care worker spoken to you about your child's development?

Has your healthcare worker ever done a developmental screening checklist?

Do you know what a developmental screening checklist is used for?

Do you think developmental screenings are important?

Do you think you should fill them out by yourself, or should it be like an interview between you and your health care provider?

In what language do you speak to your healthcare provider?

What language should a developmental screening tool be in and why?

Have you ever heard of early intervention service?
If yes - What are they?
If no – what do you think they are?

© University of Pretoria

APPENDIX J: FOCUS GROUP DISCUSSION GUIDE FOR PHASE D

© University of Pretoria

Focus group interview guide.

Welcoming

Good morning. Thank you for taking the time to join us to talk about this topic today. My name is Mignon Botes, and I am a postgraduate student at the University of Pretoria. I will be moderating today's discussion.

Overview of the topic and expectation:

The reason for this discussion is to seek your input on a developmental screening tool. A developmental screening tool is used to see how a child is growing. And if the child is growing as he should. This screening tool will help us to identify children who are not growing as they should, and we can help them quickly.
Today we want to change the screening tool that this community can understand better. We want to change words and sentences with your help.

In front of you will see a few things:

- A packet of paper. We are going to go through the documents together
- A pen that has been sanitised
- A cold drink that you can enjoy at your pleasure

Today's session will be about 45 minutes and it will be recorded.

Let's look at the documents:

2. The first document is the consent. The aim of today's study is to get your input to change some words or concepts that the community can better understand the developmental tool. You will be asked to sign the consent, fill in a background questionnaire, and participate in the discussion. No names will be used during this discussion or on any forms. Therefore you may be assured of complete confidentiality. Do you have any questions? If you understand and agree, please sign the consent form.
3. The second document is the background questionnaire that we will go through together in a moment.
4. The third document is the questions that we need to change and adapt.

Background questionnaire:
(moderator will go through each question and help the participants to fill it in correctly)

© University of Pretoria

Ground rules and guidelines

I want to highlight some guidelines and ground rules for the discussion today.

- The focus group will last between 45-60 minutes.
- Everyone should participate. However only one person should talk at a time. It is important for us to hear all participant's perspectives and opinions.
- There are no right or wrong answers to questions – just ideas, experiences, perceptions, and opinions, which are all valuable. Please feel free to share your point of view even if it differs from what others have said.

Questions

Other members of the community had a problem with the following questions. I would like to hear another suggestion for the question:

The original question said: _____
The community could not understand the following (either the question or some words – highlight this): _____
How can we change this?
How would you say it?
Can you give an example?
(follow the suggestion or probe)

Form		Questions	Suggestion/Probe	comments
D	6	Does your baby like to play peek-a-boo?	What games do you play with your children?	
M	1	Can your child scribble with a crayon or marker without going off the page much?	What word can be used other than scribble? Can your child **draw** with a crayon or **pen** without going off the page much?	
A	5	Does your baby try to keep his or her head steady?	What other word can be used other than steady? Do you understand the question - Does your baby try to keep his or her head still?	
G	1	Can your child stack blocks?	How can we say stack blocks in a different way?	

© University of Pretoria

			Can you child build a tower with a block?	
K	1	Does your child try to scribble with crayons or markers?	What word can be used other than scribble? Can your child **draw** with a crayon or **pen** without going off the page much?	
L	1	Can your child scribble with a crayon or marker without going off the page much?	What word can be used other than scribble? Can your child **draw** with a crayon or **pen** without going off the page much?	
J	1	Does your child try to scribble with crayons or markers?	What word can be used other than scribble? Can your child **draw** with a crayon or **pen** without going off the page much?	
H	1	Does your child try to scribble with crayons or markers?	What word can be used other than scribble? Can your child **draw** with a crayon or **pen** without going off the page much?	
P	8	Say to your child, "Listen, are these words the same or not the same?" Then say, "**bit-pit: are they the same or not the same?** Then say, "**set-set: are they the same or not the same**?" Then try these: **hide-glide, bat-mat**. How many did he or she answer correctly?	What other words can we use for Bit-pit, hide-glide, bat-mat? "**bad-pad: are they the same or not the same?** Then say, "**sit-sit: are they the same or not the same**?" Then try these: **hide-ride, rat-mat**. How many did he or she answer correctly?	
E	1	Can your baby make squeeze toy squeak – or try to?	What other toys do your children play with that they push? What do you call the toys you squeeze, and a sound comes out?	
F	1	Can your child unwrap food or a toy that has been loosely wrapped?	How can we say to unwrap the food that is not tight?	
M	5	Can your child stand on each foot for a second?	Is there another word for saying "stand on each foot." Can your child stand on one foot for a second?	
D	1	Can your baby poke at things with just his or her first finger?	How can you say this better? (poke with your finger)	

© University of Pretoria

D	2	Does your baby try to get to toys that are out of reach?	How can we better explain toys that are out of reach? Does your baby try to get to toys that are too far to reach?	
Q	5	Can your child walk three steps putting one foot in front of the other with heel touching toe?	How can you say this better? (show one foot in front of the other with heel touching toe)	
F	3	If you hold out your hand and ask your child to give you something, does he or she give you something even if it is not the right thing?	How can we say this better that all can understand?	
J	2	Does your child try to help when it is time to put things away?	What word is better than saying put things away? Does your child try to help when it is time to pack things away or tidy up?	
H	5	Does your child try to jump, even if both feet don't leave the ground?	How can you better say this? (show jump with feet not leaving the ground?)	
V	8	Point to the sign for "Fire alarm," and say to your child, "Please read this to me." Try again with "Do not disturb "… and "Wait on the curb". How many were right (sounding as if he or she knew what each one meant)?	What signs do you think will work better for children from 6years to read? (show attached page and take a vote)	
K	2	Does your child try to help when it is time to put things away?	What word is better than saying put things away? Does your child try to help when it is time to pack things away or tidy up?	
K	5	When your child tries to run, does each foot leave the ground a little, even if he or she falls often?	How can be better say this better?	
G	5	Does your child try to jump, even if both feet don't leave the ground?	How can you better say this? (show jump with feet not leaving the ground?)	

© University of Pretoria

H	6	Does your child watch people's faces for clues to how they are feeling? Can he or she tell if someone is mad, sad, or happy?	How would you say this better?	
R	7	Ask your child to give you 2 of something (like toys, coins or books). Then ask for 1, 3, 5 and 4 of something. Does he or she give you the right number of things each time?	How can we change this that it makes more sense to the community?	
U	8	Point to the word, "Exit" and say, "What does this say?" then point to "Danger", "caution", and "Poison" and ask your child to read them. How many can he or she read?	What signs do you think will work better for children from 6years to read? (show attached page and take a vote)	

			word	**Suggestion/Probe**	comment
A	2	Does your baby open his mouth when he sees a bottle, breast, or pacifier?	Pacifier	What word will you use for a pacifier?	
D	5	Can your baby get around on hands and knees or by scooting on his or her bottom?	Scooting on his bottom	How would you say this? (show a child scooting on bottom)	
E	6	Does your baby look for new things to play with and try to figure out how they work – like busy boxes or squeaking toys?	Busy boxes; squeaking toys	What other toys do your children play with that they push? What do you call the toys, then you squeeze, and a sound comes out?	
H	1	Does your child try to scribble with crayons or markers?	Scribble	What word can be used other than scribble?	

© University of Pretoria

				Can your child **draw** with a crayon or **pen** without going off the page much?	
J	1	Does your child try to scribble with crayons or markers?	Scribble	What word can be used other than scribble? Can your child **draw** with a crayon or **pen** without going off the page much?	
B	2	Does your baby open his mouth when he sees a bottle, breast, or pacifier?	Pacifier	What word can be used other than scribble? Can your child **draw** with a crayon or **pen** without going off the page much?	
N	4	Ask your child "**What do we do with scissors**?" and then "**What are refrigerators for**?" Does he/she use words like cutting, and keeping food cold or making ice?	Refrigerators	How would you rather say refrigerator?	
U	4	Point to the picture of the puppy and tell your child, "**Say what I say: 'Puppies make nice pets but need lots of love**'." If there were any mistakes, try again with this: "**Say what I say: 'The girl went swimming in the lake with friends**'." How did your child do?	Lake	How can we change the word lake?	
S	6	Can your child play games with rules, like board or card games, kickball, or hopscotch?	Kickball; hopscotch	What games do your children play with rules? Soccer?	
D	4	How many different sounds such as "muh", "bah", "duh" or "guh" does your baby say?	Muh, bah, duh, guh	If you read this – how do you think we should rather spell the words?	

© University of Pretoria

D	6	Does your baby like to play peek-a-boo?	Peek-a-boo	What games do you play with your children?	
R	7	Ask your child to give you 2 of something (like toys, coins or books). Then ask for 1, 3, 5 and 4 of something. Does he or she give you the right number of things each time?	Coin	What other word can you use other than coin?	
U	8	Point to the word, "Exit" and say, "What does this say?" then point to "Danger", "caution", and "Poison" and ask your child to read them. How many can he or she read?	Caution, Poison, danger	What signs do you think will work better for children from 6years to read? (show attached page and take a vote)	
V	8	Point to the sign for "Fire alarm," and say to your child, "Please read this to me." Try again with "Do not disturb "… and "Wait on curb". How many were right (sounding as if he or she knew what each one meant)?	Do not disturb, wait on the curb, fire alarm	What signs do you think will work better for children from 6years to read? (show attached page and take a vote)	
K	1	Does your child try to scribble with crayons or markers?	Scribble	What word can be used other than scribble? Can your child **draw** with a crayon or **pen** without going off the page much?	
L	1	Can your child scribble with a crayon or marker without going off the page much?	Scribble	What word can be used other than scribble? Can your child **draw** with a crayon or **pen** without going off the page much?	
M	1	Can your child scribble with a crayon or marker without going off the page much?	Scribble	What word can be used other than scribble?	

© University of Pretoria

				Can your child **draw** with a crayon or **pen** without going off the page much?	
N	7	If you showed your child a coin and asked, "**What's this**?", would he or she say coin?	Coin	What other word can you use other than coin?	
P	8	Say to your child, "Listen, are these words the same or not the same?" Then say, "**bit-pit: are they the same or not the same?** Then say, "**set-set: are they the same or not the same**?" Then try these: **hide-glide, bat-mat**. How many did he or she answer correctly?	Bit; pit; set; glide; bat; mat	How can we change these words? Bad – pad Sit sit Ride Rat - mat	
L	2	Can your child take off loose clothes such as pull-down pants or a coat?	Coat	What word would we instead use than coat?	
P	2	Ask your child, "**What is your name…what is your whole name**?" What does he or she say? (the word last name is in the answer)	Last Name	What other word can we use rather than last name?	
A	5	Does your baby try to keep his or her head steady?	Steady	What other word can we use rather than steady?	
G	1	Can your child stack blocks?	Stack	How can we say stack blocks?	
E	1	Can your baby make squeeze toy squeak – or try to?	Squeeze toy	What other toys do your children play with that they push? What do you call the toys you squeeze, and a sound comes out?	
M	5	Can your child stand on each foot for a second?	Each foot	How can we better say this? (show standing on one foot)	

© University of Pretoria

Q	6	When playing, does your child try not to hurt others? If playmates are hurt, does he or she seem concerned?	Concerned	How can we say that he seems concerned?	
T	2	Ask your child, "**What is your Mom's name**?" or "**What is your Dad's name**?" (Or other caretaker if needed). What does he or she say? (the word last name is in the answer)	Last name	What other word can we use rather than last name	
Q	5	Can your child walk three steps putting one foot in front of the other with heel touching toe?	Heel touching toe	How can you say this better? (show one foot in front of the other with heel touching toe)	
F	1	Can your child unwrap food or a toy that has been loosely wrapped?	Unwrap; loosely wrapped	How can we say to unwrap the food that is not tight?	
S	7	Point to the logs and then to the number 5. Say, "Show me this many." Do this again by pointing to the 6 and then to 7. How many did your child get right?	Logs	If you look at this picture, what do you call this? (point to the logs)	
R	4	Tell your child, "**Say what I say: Jane likes to throw and catch a ball**." If your child made mistakes, try again with this: "**Say what I say: Bob reads good books every time he can**." How did your child do?	Jane; Bod	What names are easy to use on these forms?	
S	3	Tell your child, "**Put your hands above your head**," and then, "**Put your fingers below your eyes**." Now point to a page in a book and say, "**point to the center of this page**," and then, "**point to the corner**." How many did he or she get right?	Below; centre	What is a better way to say below and centre?	

© University of Pretoria

D	1	Can your baby poke at things with just his or her first finger?	Poke	How can you say this better? (poke with your finger)	
D	2	Does your baby try to get to toys that are out of reach?	Out of reach	How can we better explain toys that are out of reach? Does your baby try to get to toys that are too far to reach?	
U	3	Say to your child, "**Point to your hips**,… **wrist**,… **waist**." How many does he or she know?	Hips; writs;waist		
J	2	Does your child try to help when it is time to put things away?	Put	What word is better than saying put things away? Does your child try to help when it is time to pack things away or tidy up?	
K	2	Does your child try to help when it is time to put things away?	Put	What word is better than saying put things away? Does your child try to help when it is time to pack things away or tidy up?	

Form			**Questions**	**Suggestions**	**Comments**
R	1	4j6m-4j10m	Can your child write any letters of the alphabet?	What do you think your child can write at this age?	
Q	4	4j1m-4j5m	Does your child use words that tell about time like, morning, afternoon, night, yesterday, or tomorrow?	What words do you use to talk about time at this age?	
Q	8	4j1m-4j5m	Point to the letters and ask, "Where's the A?... Where's the X? … Where's the O?" Keep trying to see if he or	What else can your child do at this age if they cannot point to letters?	

© University of Pretoria

			she can point to two or three correctly. How did your child do?		
R	8	4j6m-4j10m	Point to a letter of the alphabet and ask your child, "What's this?" Try again with other letters to see if your child can name at least one letter correctly. How did he or she do?	What else can your child do at this age if they cannot point to letters?	

Free probes:
'What else?'

© University of Pretoria

APPENDIX K: MODIFIED DELPHI METHOD QUESTIONNAIRE 1

© University of Pretoria

Default Question Block

Dear Expert

Invitation for an expert panel discussion on the adaptations of the PEDS tools for a low-income community in South Africa using the Delphi Method.

STUDY TITLE: Early childhood development in low-income communities: caregiver perceptions and contextual adaptation of screening tools

Principal Investigator: Mignon Botes
Supervisor: Prof. J. van der Linde and Prof. D. Swanepoel
Institution: The University of Pretoria, Department of **Department of Communication Pathology**
Daytime telephone number: 084 688 7909
E-mail: mignon.botes1@gmail.com

INTRODUCTION

I am doing this research for my doctorate degree in Speech-Language Pathology at the University of Pretoria. The information in this document is provided to help you to decide if you would like to participate. Before you agree to take part in this study, you should fully understand what is involved. If you have any questions, which are not fully explained in this document, do not hesitate to ask the researcher. You should not agree to take part unless you are completely happy with the kind of questions that will be asked.

THE NATURE AND PURPOSE OF THIS STUDY

The aim of this study is to adapt the PEDS tools (PEDS and PEDS:DM) for South Africa by understanding what parents want, their culture and language. This adapted tool can be used for developmental screening to identify children at risk of delays and disabilities.

EXPLANATION OF PROCEDURES AND WHAT WILL BE EXPECTED FROM YOU

The expert panel will look at items on the PEDS tools identified by the community as inappropriate. The consensus of the changes will be used to create the PEDS tools-SA. The Delphi Method will be used, that consist of 3 rounds of filling in prepared questionnaires. Experts will send their answer by completing the questionnaire using the link provided in an email. After each round, the answers of the experts will be summarised, a new questionnaire sent out and the process will repeat until a consensus has been reached. It will take about 90 minutes of your time spread over a few separate occasions.

QUESTIONNAIRE

You will need to complete an electronic questionnaire if you decide to join the study. The link to the questionnaire will be emailed to you. Please do not complete the section if you are unsure of the required information. We will not be available to help you with the questionnaire or to fill it in on your behalf.

ESSENTIAL INFORMATION

Answering the questions is completely voluntary and participants may leave out any questions that make them feel uncomfortable. This data will be used anonymously in our network and your privacy will be protected to the best of our ability.

RISK AND BENEFITS

Your participation is important for us to make adequate changes on the PEDS tools that are culturally appropriate for a low-income South African population. The information you give may help the researcher improve developmental screenings, and make early identification of developmental delays and disabilities effective. There is no foreseeable physical discomfort or risk involved. We do ask 90 minutes of your time over 3 rounds of questionnaires.

ETHICS APPROVAL

IRB clearance (HUM027/0819) was obtained for this study.

CONFIDENTIALITY

All documents and records from this study will be regarded as private and confidential. All results will be published or presented in a way that it is not possible to identify you. Only the researcher will have access to the data. Relevant information will be stored for 15 years at the Department of Speech-Language Pathology and Audiology, the University of Pretoria.

© University of Pretoria

CONSENT TO PARTICIPATE IN THIS STUDY

Informed consent, given freely, is required from all participants. Your participation in this study is voluntary. You can decline to participate or stop while completing the questionnaire without giving any reason. As no identifiable data is collected through the questionnaire, once the questionnaire has been submitted, you cannot recall your consent as we cannot trace your specific questionnaire. Once you have completed and submitted the questionnaire, we cannot remove your questionnaire from the study. You will not be identified as a participant in any publication that comes from the study.

By agreeing to participate you are indicating that you have read and comprehended the informed consent

- ◯ Yes, I have read this informed consent

Please read the instructions carefully

PEDS tools:

The PEDS tools consist of the PEDS (Parents' evaluations of developmental status) and the PEDS: DM (developmental milestones). This developmental screening tool was designed to be parent-administered or administered by an interview. The PEDS consists of 10 questions about the general development of the infant or child. the PEDS: DM for ages 0-7years 11 months consists of 6 to 8 questions per age group about the child's development. The questions represent each developmental area, including fine and gross motor, receptive and expressive language, self-help skills, socio-emotional development, preliteracy and mathematic skills. The questions differ depending on the age of the child and are subdivided into forms with a total of 124 questions for forms A to V.

This Questionnaire:

The questionnaire starts with demographic information. Then there are 10 questions on the PEDS and 50 questions on the PEDS:DM in this questionnaire that needs your input. The questions are organised according to the age (from form A to form V). Some question might seem like they repeat, but please look carefully at the age for each question. Each question has a agree/disagree option.

Each question shows the age of the child and the developmental area, along with the adaption suggestion from the community. The original question is provided and then the adapted version based on the suggestions from the community. By choosing the "agree" option you agree that the **adapted** question is a) age- and developmentally appropriate b) culturally and linguistically appropriate.

If you disagree you can give a suggestion as to what you think the question should be.

Please note:

Express = Expressive language

Recep = Receptive language

Gross = Gross Motor

Fine = Fine Motor

Socio = Socio-Emotional

Self help = Self Help Skills

Lit = Literacy

Math = Mathematic

You are indicating that you have read and comprehended the intructions

- ◯ Yes, I have read the instructions

What is your profession?

- ◯ Speech Therapist
- ◯ Occupational Therapist
- ◯ Physiotherapist
- ◯ Psychologist
- ◯ Pediatrician
- ◯ Health Care Worker
- ◯ Nurse
- ◯ Remedial Teacher
- ◯ _____ Other

What is your age?

- ◯ < 25
- ◯ 25-35

© University of Pretoria

- ○ 36-45
- ○ 46-55
- ○ 56-65
- ○ 65>

How many years experience do you have in your field?

- ○ < 5 years
- ○ 5 - 10 years
- ○ 10 > years

How would you classify yourself?

- ○ Black
- ○ White
- ○ Indian
- ○ Coloured
- ○ Asian
- ○ _____ Other

Q1: PEDS

Form	Q	Age	Area	Original Questions	Change suggested by the community
PEDS	1	All	All	Please list any concerns about your child's learning, development, and behaviour:	Change 1 word Change phrase

Please indicate if you agree or disagree with this suggested change:

Please list any worries about your child's learning, how they are growing, and behaviour:

- ☐ Agree
- ☐ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

Q2: PEDS

Form	Q	Age	Area	Original Questions	Change suggested by the community
PEDS	2	All	Express	Do you have any concerns about how your child talks and makes speech sounds?	Change 1 word

Please indicate if you agree or disagree with this suggested change:

Do you sometimes worry about how your child talks and makes speech sounds?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

Q3: PEDS

Form	Q	Age	Area	Original Questions	Change suggested by

© University of Pretoria

					the community
PEDS	3	All	Recep	Do you have any concerns about how your child understands what you say?	Change 1 word

Please indicate if you agree or disagree with this suggested change:

Do you sometimes worry about how your child understands what you say?

- ◯ Agree
- ◯ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

Q4: PEDS

Form	Q	Age	Area	Original Questions	Change suggested by the community
PEDS	4	All	Fine	Do you have any concerns about how your child uses his or her hands and fingers to do things?	Change 1 word

Please indicate if you agree or disagree with this suggested change:

Do you sometimes worry about how your child uses his or her hands and fingers to do things?

- ◯ Agree
- ◯ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

Q5: PEDS

Form	Q	Age	Area	Original Questions	Change suggested by the community
PEDS	5	All	Gross	Do you have any concerns about how your child uses his or her arms and legs?	Change 1 word

Please indicate if you agree or disagree with this suggested change:

Do you sometimes worry about how your child uses his or her arms and legs?

- ◯ Agree
- ◯ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

Q6: PEDS

When running does both feet leave the ground a little even if he or she often fall

© University of Pretoria

Form	Q	Age	Area	Original Questions	Change suggested by the community
PEDS	6	All	Socio		Change 1 word

Please indicate if you agree or disagree with this suggested change:

Do you sometimes worry about how your child behaves?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

Q7: PEDS

Form	Q	Age	Area	Original Questions	Change suggested by the community
PEDS	7	All	Socio	Do you have any concerns about how your child gets along with others?	Change 1 word

Please indicate if you agree or disagree with this suggested change:

Do you sometimes worry about how your child gets along with others?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

Q8: PEDS

Form	Q	Age	Area	Original Questions	Change suggested by the community
PEDS	8	All	Self Help	Do you have any concerns about how your child is learning to d othings for himself/herself?	Change 1 word

Please indicate if you agree or disagree with this suggested change:

Do you sometimes worry about how your child is learning to do things for himself/herself?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

Q9: PEDS

Form	Q	Age	Area	Original Questions	Change suggested by the community

© University of Pretoria

PEDS	9	All	Lit Math	Do you have any concerns about how your child is learning preschool or school skills?	Change 1 word

Please indicate if you agree or disagree with this suggested change:

Do you sometimes worry about how your child is learning preschool or school skills?

- ◯ Agree
- ◯ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

Q10: PEDS

Form	Q	Age	Area	Original Questions	Change suggested by the community
PEDS	10	All	All	Please list any other concerns:	Change 1 word

Please indicate if you agree or disagree with this suggested change:

Please list any other worries:

- ◯ Agree
- ◯ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDG:DM

Form	Q	Age	Area	Original Questions	Change suggested
A	2	0-2m	Self help	Does your baby open his mouth when he sees a bottle, breast, or pacifier?	Change 1 word

Please indicate if you agree or disagree with this suggested change:

Does your baby open his mouth when he sees a bottle, breast, or dummy?

- ◯ Agree
- ◯ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDG:DM

Form	Q	Age	Area	Original Questions	Change suggested
A	5	0-2m	Gross	Does your baby try to keep his or her head steady?	Change 1 word

Please indicate if you agree or disagree with this suggested change:

Does your baby try to keep his or her head still?

© University of Pretoria

○ Agree
○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDG:DM

Form	Q	Age	Area	Original Questions	Change suggested
B	2	3-4m	Self-help	Does your baby open his mouth when he sees a bottle, breast, or pacifier?	Change 1 word

Please indicate if you agree or disagree with this suggested change:

Does your baby open his mouth when he sees a bottle, breast, or **dummy**?

○ Agree
○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDG:DM

Form	Q	Age	Area	Original Questions	Change suggested
D	1	8-10m	Fine	Can your baby poke at things with just his or her first finger?	Add a picture Change 1 word

Please indicate if you agree or disagree with this suggested change:

Can your baby **push** at things with just his or her first finger?



○ Agree
○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDG:DM

Form	Q	Age	Area	Original Questions	Change suggested
D	2	8-10m	Self-help	Does your baby try to get to toys that are out of reach?	Change phrase

Please indicate if you agree or disagree with this suggested change:

© University of Pretoria

Does your baby try to get to toys that are too far to reach?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
D	4	8-10m	Express	How many different sounds such as "muh", "bah", "duh" or "guh" does your baby say?	Change the item/phrase

Please indicate if you agree or disagree with this suggested change:

How many different sounds such as "ma", "ba", "da" or "ga" does your baby say?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
D	5	8-10m	Gross	Can your baby get around on hands and knees or by scooting on his or her bottom?	Describe the item

Please indicate if you agree or disagree with this suggested change:

Can your baby get around by crawling or by crawling on his bum?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
D	6	8-10m	Socio	Does your baby like to play peek-a-boo?	Describe the item

Please indicate if you agree or disagree with this suggested change:

When you put a blanket on your face and pull it off, does your baby laugh?

© University of Pretoria

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
E	1	11-13m	Fine	Can your baby make squeeze toy squeak – or try to?	Describe the item

Please indicate if you agree or disagree with this suggested change:

Can your baby **press a toy** – or try to press a toy that a noise (like a squeak) comes out?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
E	6	11-13m	Socio	Does your baby look for new things to play with and try to figure out how they work – like busy boxes or squeaking toys?	Describe the item

Please indicate if you agree or disagree with this suggested change:

Does your baby look for new things to play with and try to figure out how they work – like **toys you squeeze to make a sound?**

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
F	1	14m-16m	Fine	Can your child unwrap food or a toy that has been loosely wrapped?	Describe the item

Please indicate if you agree or disagree with this suggested change:

© University of Pretoria

Can your child open a sweet that is covered with plastic if you open it a little bit first?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
F	3	14m-16m	Recep	If you hold out your hand and ask your child to give you something, does he or she give you something even if it is not the right thing?	Describe/change the instruction

Please indicate if you agree or disagree with this suggested change:

If you hold out your hand and ask your child to give you something **like a toy**, does he or she give you something in your hand **even if it is not the toy**?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
G	1	17m-19m	Fine	Can your child stack blocks?	Change the item/phrase

Please indicate if you agree or disagree with this suggested change:

Can your child **build a tower with blocks**?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
G	5	17m-19m	Gross	Does your child try to jump, even if both feet don't leave the ground?	Leave out the part that is confusing

© University of Pretoria

Please indicate if you agree or disagree with this suggested change:

Does your child try to jump?

- Agree
- Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
H	1	20m-22m	Fine	Does your child try to scribble with crayons or markers?	Change 2 words

Please indicate if you agree or disagree with this suggested change:

Can your child **draw** with a crayon or **pen**?

- Agree
- Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
H	6	20m-22m	Socio	Does your child watch people's faces for clues to how they are feeling? Can he or she tell if someone is mad, sad, or happy?	Change the item/phrase

Please indicate if you agree or disagree with this suggested change:

Does your child look at people's faces to see how they are feeling? Can he or she see if someone is mad, sad, or happy?

- Agree
- Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
J	1	23m-25m	Fine	Does your child try to scribble with crayons	Change 2 words

© University of Pretoria

				or markers?	

Please indicate if you agree or disagree with this suggested change:

Can your child **draw** with a crayon or **pen**?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
J	2	23m-25m	Self-help	Does your child try to help when it is time to put things away?	Change the item/phrase

Please indicate if you agree or disagree with this suggested change:

Does your child try to help when it is time to **pack** things away or **tidy up**?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
K	1	2y2m-2y4m	Fine	Does your child try to scribble with crayons or markers?	Change 2 words

Please indicate if you agree or disagree with this suggested change:

Can your child **draw** with a crayon or **pen**?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
K	2	2y2m-2y4m	Self help	Does your child try to help when it is time to put things away?	Change the item/phrase

© University of Pretoria

Please indicate if you agree or disagree with this suggested change:

Does your child try to help when it is time to **pack** things away or **tidy up**?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDG:DM

Form	Q	Age	Area	Original Questions	Change suggested
K	5	2y2m-2y4m	Gross	When your child tries to run, does each foot leave the ground a little, even if he or she falls often?	No input

Please indicate if you agree or disagree with this suggested change:

Participants had a problem understanding the question, but had not alternative suggestion

- ○ Agree (keep original question)
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDG:DM

Form	Q	Age	Area	Original Questions	Change suggested
L	1	2y5m-2y9m	Fine	Can your child scribble with a crayon or marker without going off the page much?	Change 2 words

Please indicate if you agree or disagree with this suggested change:

Can your child **draw** with a crayon or **pen** without going off the page much?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDG:DM

Form	Q	Age	Area	Original Questions	Change suggested

© University of Pretoria

L	2	2y5m-2y9m	Self help	Can your child take off loose clothes such as pull-down pants or a coat?	Change 1 word

Please indicate if you agree or disagree with this suggested change:

Can your child take off loose clothes such as pull-down pants or a jacket?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
M	1	2y10m-3y2m	Fine	Can your child scribble with a crayon or marker without going off the page much?	Change 2 words

Please indicate if you agree or disagree with this suggested change:

Can your child draw with a crayon or pen without going off the page much?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
M	5	2y10m-3y2m	Gross	Can your child stand on each foot for a second?	Change 1 word

Please indicate if you agree or disagree with this suggested change:

Can your child stand on one foot for a second?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDS:DM

Form	Q	Age	Area	Original Questions	Change suggested
N	4	3y3m-3y7m	Express	Ask your child "What do we do with scissors?" and then "What are refrigerators for?" Does	Change 1 word Elaborate the

© University of Pretoria

touching toe?



- Agree
- Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDG:DM

Form	Q	Age	Area	Original Questions	Change suggested
Q	6	4j1m-4j5m	Socio	When playing, does your child try not to hurt others? If playmates are hurt, does he or she seem concerned?	Change 1 word

Please indicate if you agree or disagree with this suggested change:

When playing, does your child try not to hurt others? If playmates are hurt, does he or she seem sorry?

- Agree
- Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDG:DM

Form	Q	Age	Area	Original Questions	Change suggested
Q	8	4j1m-4j5m	Lit	Point to the letters and ask, "Where's the A?... Where's the X? ... Where's the O?" Keep trying to see if he or she can point to two or three correctly. How did your child do?	Change the item

Please indicate if you agree or disagree with this suggested change:

Point to the shapes and ask, "Where's the square?... Where's the circle? ... Where's the rectangle?" Keep trying to see if he or she can point to two or three correctly. How did your child do? (add shapes like triangle, oval, star to pictures)

- Agree
- Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

© University of Pretoria

Form	Q	Age	Area	Original Questions	Change suggested
R	1	4j6m-4j10m	Fine	Can your child write any letters of the alphabet?	Change the item

Please indicate if you agree or disagree with this suggested change:

Can your child draw a person or shapes?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDG:DM

Form	Q	Age	Area	Original Questions	Change suggested
R	4	4j6m-4j10m	Express	Tell your child, "Say what I say: Jane likes to throw and catch a ball." If your child made mistakes, try again with this: "Say what I say: Bob reads good books every time he can." How did your child do?	Change 2 words

Please indicate if you agree or disagree with this suggested change:

Tell your child, "Say what I say: **Tshego** likes to throw and catch a ball." If your child made mistakes, try again with this: "Say what I say: **Sipho** reads good books every time he can." How did your child do?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDG:DM

Form	Q	Age	Area	Original Questions	Change suggested
R	7	4j6m-4j10m	Math	Ask your child to give you 2 of something (like toys, coins or books). Then ask for 1, 3, 5 and 4 of something. Does he or she give you the right number of things each time?	Elaborate the instruction

Please indicate if you agree or disagree with this suggested change:

Ask your child to give you 2 things (like toys, **rocks** or books). Then ask for 1 thing, then ask for 3 things, then ask for 5 things and then ask for 4 things. Does he or she give you the right number of things each time?

- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

© University of Pretoria

U	8	6y1m- 6y11m	Lit	Point to the word, "Exit" and say, "What does this say?" then point to "Danger", "caution", and "Poison" and ask your child to read them. How many can he or she read? 	Change the picture Elaborate the instructions

Please indicate if you agree or disagree with this suggested change:

Point to the word, "Exit" and say to your child, "What does this say?" then point to "Danger" and say to your child, "What does this say?", Point to "**Stop**", and say to your child, "What does this say?" and point to "Poison" and ask "What does this say?". How many can he or she read?



- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

PEDG:DM

Form	Q	Age	Area	Original Questions	Change

					suggested
V	8	7y1m- 7y11m	Lit	Point to the sign for "Fire alarm," and say to your child, "Please read this to me." Try again with "Do not disturb "... and "Wait on the curb". How many were right (sounding as if he or she knew what each one meant)? 	Change the picture Elaborate the instructions

Please indicate if you agree or disagree with this suggested change:

Point to the sign for "Fire alarm," and say to your child, "Please read this to me." Now point to "**Caution, wet floor** ", and say to your child, "Please read this to me." Now point to "**No entry**", and say to your child, "Please read this to me. How many could your child read?



- ○ Agree
- ○ Disagree

If you choose disagree, why do you disagree?

If you choose disagree, please give a suggested test item

© University of Pretoria

APPENDIX L: MODIFIED DELPHI METHOD QUESTIONNAIRE 2

© University of Pretoria

CONSENT TO PARTICIPATE IN THIS STUDY

Informed consent, given freely, is required from all participants. Your participation in this study is voluntary. You can decline to participate or stop while completing the questionnaire without giving any reason. As no identifiable data is collected through the questionnaire, once the questionnaire has been submitted, you cannot recall your consent as we cannot trace your specific questionnaire. Once you have completed and submitted the questionnaire, we cannot remove your questionnaire from the study. You will not be identified as a participant in any publication that comes from the study.

By agreeing to participate you are indicating that you have read and comprehended the informed consent

◯ Yes I agree

Feedback on Round 1:

12 experts participated in round 1

Here is a breakdown of the answered questions:

The total question in round 1: 55	
Nr of questions where all experts agreed: 5	Nr of questions where one or more experts disagreed: 50

Nr of experts disagreed	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Nr of questions where experts disagreed	8	12	10	9	2	5	4

The total nr of suggestions on all the questions: 166

Each question/suggestion was carefully read by the authors of the paper and suggestions were elliminated by the following criteria

1. No suggestions were given with a disagree option
2. Suggestions contradicted the original feedback from the community
3. Authors of the paper agreed that the suggestion could not be used because it changed the integrity of the age or domain being tested

Nr of suggestions taken into consideration: 103

Total nr of question that needs input for round 2: 31

This Questionnaire:

The questionnaire starts with demographic information. Then there are 10 questions on the PEDS and 21 questions on the PEDS:DM in this questionnaire that needs your input. The questions are organised according to age (from form A to form V). Some questions might seem like they repeat, but please look carefully at the age for each question. Each question has a agree/disagree option.

Each question shows the age of the child and the developmental area, along with the adaption suggestion from the community. The original question is provided.

Each question will have 2 or more alternatives for each question. Please rank the question by dragging and dropping the questions from the most preferred (1) to the least preferred (3) option.

Please note:

Express = Expressive language
Recep = Receptive language
Gross = Gross Motor
Fine = Fine Motor
Socio = Socio-Emotional
Self-help = Self Help Skills
Lit = Literacy
Math = Mathematic

I have read and understood the instructions

◯ Yes, I have

What is your profession?

© University of Pretoria

- ◯ Speech Therapist
- ◯ Occupational Therapist
- ◯ Physiotherapist
- ◯ Psychologist
- ◯ Pediatrician
- ◯ Health Care Worker
- ◯ Nurse
- ◯ Remedial teacher
- ◯ Pediatric Neurologist
- ◯ _____ Other

What is your age?

- ◯ < 25
- ◯ 25-35
- ◯ 36-45
- ◯ 45-55
- ◯ 56-65
- ◯ 65 >

How would you classify yourself?

- ◯ Black/African
- ◯ White
- ◯ Coloured
- ◯ Indian
- ◯ _____ Other

Age: All Area: All

Original Questions: Please list any concerns about your child's learning, development, and behaviour:

Please rank the questions from most preferred (1) to least preferred (3) option

and behaviour:

Please list any worries you have about your child's learning, ability to do things for example, speak, run etc and their behaviour

Please list any worries you have about your child's learning, whether they are doing things at the same time as other children their age and their behaviour

Age: All Area: Express

Original Questions: Do you have any concerns about how your child talks and makes speech sounds?

Please rank the questions from most preferred (1) to least preferred (3) option

Do you ever worry about how your child talks and makes speech sounds?

Do you sometimes worry about how your child talks and makes speech sounds?

Do you worry about how your child talks and makes speech sounds?

Age: All Area: Recep

Original Question: Do you have any concerns about how your child understands what you say?

Please rank the questions from most preferred (1) to least preferred (3) option

Do you sometimes worry about how your child understands what you say?

Do you ever worry about how your child understands what you say?

Do you worry about how your child understands what you say?

Age: All Area: Fine

Original Question: Do you have any concerns about how your child uses his or her hands and fingers to do things?

Please rank the questions from most preferred (1) to least preferred (3) option

© University of Pretoria

Do you worry about how your child uses his or her hands and fingers to do things?

Do you ever worry about how your child uses his or her hands and fingers to do things?

Do you sometimes worry about how your child uses his or her hands and fingers to do things?

Age: All Area: Gross

Original Question: Do you have any concerns about how your child uses his or her arms and legs?

Please rank the questions from most preferred (1) to least preferred (3) option

Do you sometimes worry about how your child uses his or her arms and legs?

Do you worry about how your child uses his or her arms and legs?

Do you ever worry about how your child uses his or her arms and legs?

Age: All Area: Socio

Original Question: Do you have any concerns about how your child behaves?

Please rank the questions from most preferred (1) to least preferred (3) option

Do you worry about how your child behaves?

Do you ever worry about how your child behaves?

Do you sometimes worry about how your child behaves?

Age: All Area: Socio

Original Question: Do you have any concerns about how your child gets along with others?

Please rank the questions from most preferred (1) to least preferred (3) option

Do you worry about how your child gets along with others

Do you sometimes worry about how your child gets along with others

Do you ever worry about how your child gets along with others

Age: All Area: Self-help

Original Question: Do you have any concerns about how your child is learning to do things for himself/herself?

Please rank the questions from most preferred (1) to least preferred (3) option

Do you sometimes worry about how your child is learning to do things for himself/herself?

Do you ever worry about how your child is learning to do things for himself/herself?

Do you worry about how your child is learning to do things for himself/herself?

Age: All Area: Pre-Lit/Math

Original Question: Do you have any concerns about how your child is learning preschool or school skills?

Please rank the questions from most preferred (1) to least preferred (3) option

Do you worry about how your child is learning preschool or school skills?

Do you sometimes worry about how your child is learning preschool or school skills?

Do you ever worry about how your child is learning preschool or school skills?

Age: All Area: All

Original Question: Please list any other concerns:

Please rank the questions from most preferred (1) to least preferred (3) option

Please list any other aspects of your child's development that you are worried about:

© University of Pretoria

Please list any other worries:

Please list any other worries you have about your child:

Age: 0-2 months Area: Gross

Original Question: Does your baby try to keep his or her head steady?

Please rank the questions from most preferred (1) to least preferred (4) option

Does your baby try to keep his or her head up?

Does your baby try to keep his or her head still?

Does your baby try to keep his or her head still and up?

Does your baby try to keep his or her head straight?

Age: 8-10m Area: Gross

Original Question: Can your baby get around on hands and knees or by scooting on his or her bottom?

Please rank the questions from most preferred (1) to least preferred (3) option

Can your baby get around by crawling using his/her knees and hands or by pushing his/her bum forward while sitted

Can your baby get around by crawling or by moving on his bum?

Can your baby get around by crawling or by crawling on his bum?

Age: 8-10m Area: Socio

Original Question: Does your baby like to play peek-a-boo?

Please rank the questions from most preferred (1) to least preferred (4) option

When you put a blanket on your face and pull it off, does your baby laugh?

When you put a blanket over your face and pull it off, does your baby laugh?

When you pretend to hide behind a blanket and pull it off to surprise the baby, does your baby laugh?

If you hide your face and then peep out at your baby, does your baby laugh?

Age: 11-13m Area: Fine

Original Question: Can your baby make squeeze toy squeak – or try to?

Please rank the questions from most preferred (1) to least preferred (3) option

Can your baby squeeze a toy to make a sound?

Can your baby press a toy – or try to press a toy that a noise (like a squeak) comes out?

Can your baby press a toy that makes a noise (like a squeak) or try to?

Age: 14-16m Area: Fine

Original Question: Can your child unwrap food or a toy that has been loosely wrapped?

Please rank the questions from most preferred (1) to least preferred (4) option

Can your child open a sweet that is covered with plastic if you open it a little bit first?

Can your child open a sweet that is covered with plastic if you first open it a little bit first?

Can your child open a sweet that is covered with plastic or a packed of chips if you open it a little bit first?

Can your child open an object (like a sweet or packet of cjips) that is covered with paper/ plastic if you open it a little bit first?

Age: 20-22m Area: Fine

Original Question: Does your child try to scribble with crayons or markers?

© University of Pretoria

Please rank the questions from most preferred (1) to least preferred (3) option

Does your child try to draw with a crayon or pen?

Can your child draw with a crayon or pen?

Does your child try to draw or make marks with a crayon or pen?

Age: 20-22m Area: Socio

Original Question: Does your child watch people's faces for clues to how they are feeling? Can he or she tell if someone is mad, sad, or happy?

Please rank the questions from most preferred (1) to least preferred (2) option

Does your child ook at people's faces to see hou they are feeling? Can he or she see if someone is angry, sad or happy

Does your child look at people's faces to see how they are feeling? Can he or she see if someone is mad, sad, or happy?

Age: 2y2m-2y4m Area: Gross

Original Question: When your child tries to run, does each foot leave the ground a little, even if he or she falls often?

Please rank the questions from most preferred (1) to least preferred (5) option

When your child tries to run, he or she still falls often?

When your child tries to run, does each foot leave the ground a little, even if he or she falls often?

Can your child run, even if he/she sometimes fall?

Does your child run by lifting his or her feet of the ground?

When running does both feet leave the ground a little even if he or she often fall?

Age: 2y2m-2y4m Area: Fine

Original Question: Does your child try to scribble with crayons or markers?

Please rank the questions from most preferred (1) to least preferred (3) option

Does your child try to draw with a crayon or pen?

Can your child draw with a crayon or pen

Does your child try to draw or make marks with a crayon or pen?

Age: 2y5m-2y9m Area: Self help

Original Question: Can your child take off loose clothes such as pull-down pants or a coat?

Please rank the questions from most preferred (1) to least preferred (4) option

Can your child take off loose clothes such as pull-down pants or take off a jacket when not zipped/buttoned?

Can your child take off loose clothes such as a jacket or pull-down pants?

Can your child take off loose clothes such as pull-down pants or a jacket?

Can your child take off loose clothes such as pull-down pants or a loose top?

Age:2y10m-3y2m Area: Gross

Original Question: Can your child stand on each foot for a second?

Please rank the questions from most preferred (1) to least preferred (4) option

Can your child stand on one foot for a second?

Can your child stand on their left foot and then their right foot for a second?

Can your child stand on the right foot for a second, then on the left foot for a second?

Can your child stand on the left leg and the right leg for one second?

© University of Pretoria

Age:3y3m-3y7m Area: Express

Original Question: Ask your child "What do we do with scissors?" and then "What are refrigerators for?" Does he/she use words like cutting, and keeping food cold or making ice?

Please rank the questions from most preferred (1) to least preferred (4) option

Now ask "What is a fridge for?" Does he/she use words like keeping food cold or making ice?

Now ask "What is a fridge for?" Does he/she use words likekeeping food/drinks or for ice cream/making ice?

Now ask "What is a broom for?" Does he/she use words cleaning, sweeping?

Now ask "What is a cup for?" Does he/she use words like drinking, coffee or tea?

Age:3y8m-4y0m Area: Self help

Original Question: Ask your child, "What is your name...what is your whole name?" What does he or she say? (the word last name is in the answer)

Please rank the questions from most preferred (1) to least preferred (2) option

Ask your child, "What is your name...what is your whole name?" What does he or she say?

Ask your child, "What is your name...what is your name and surname?" What does he or she say?

Age:4y1m-4y5m Area: Express

Original Question: Does your child use words that tell about time like, morning, afternoon, night, yesterday, or tomorrow?

Please rank the questions from most preferred (1) to least preferred (2) option

Does your child use words that tell about time like, morning, afternoon, night, yesterday, or tomorrow?

Age:4y1m-4y5m Area: Lit

Original Question: Point to the letters and ask, "Where's the A?... Where's the X? ... Where's the O?" Keep trying to see if he or she can point to two or three correctly. How did your child do?

Please rank the questions from most preferred (1) to least preferred (4) option

Ask you child "Do these words sound the same at the end: cat-hat?" (yes). Now say: "Do these words sound the same at the end dog-ball?" (no). Try with these words tree-fish (no). Now try with pot-dot? (yes). How many did he/she get right?

Point to the letters and ask, "Where's the A?... Where's the X? ... Where's the O?" Keep trying to see if he or she can point to two or three correctly. How did your child do?

Can your child look at the pictures of a book and tell a story without reading the words?

None of the questions

If you choose "none of the questions", please give a suggested question to test Literacy for ages 4y1m-4y5m:

Age:4y6m-4y10m Area: Fine

Original Question: Can your child write any letters of the alphabet?

Please rank the questions from most preferred (1) to least preferred (3) option

Can your child draw a circle, a square and a triangle?

Can your child draw a person or shapes?

Can your child draw a person or draw a circle, square and triangle?

© University of Pretoria

Age:4y6m-4yj10m Area: Lit

Original Question: Point to a letter of the alphabet and ask your child, "What's this?" Try again with other letters to see if your child can name at least one letter correctly. How did he or she do?

Please rank the questions from most preferred (1) to least preferred (4) option

Point to a letter of the alphabet and ask your child, "What's this?" Try again with other letters to see if your child can name at least one letter correctly. How did he or she do?

Ask your child "Clap the word apple into parts" (ap-ple = 2 claps). "Now try to clap elephant into parts" (e-le-phant = 3 claps). Try with soccer (soc-cer = 2 claps), then storybook (sto-ry-book = 3 claps). How many did he/she get right?

Ask you child "Does the word cat and car start with the same sound?" (yes). Now say "does the word fish and dog start with the same sound?" (no). Try with the words sun and soup (yes). Then try with bath and bag (yes). How many did he/she get right?

None of the questions

If you choose "none of the questions", please give a suggested question to test Literacy for ages 4y6m-4y10m:

Age:4y1m-5y5m Area: Socio

Original Question: Can your child play games with rules, like board or card games, kickball, or hopscotch?

Please rank the questions from most preferred (1) to least preferred (2) option

Can your child play games with rules, like card games, games with balls like soccer or netball?

Can your child play games with rules, like card games, games with balls like soccer?

Age:5y6m-6y0m Area: Self help

Original Question: Ask your child, "What is your Mom's name?" or "What is your Dad's name?" (Or other caretakers if needed). What does he or she say? (the word last name is in the answer)

Please rank the questions from most preferred (1) to least preferred (2) option

Ask your child, "What is your Mom's name and surname?" or "What is your Dad's name and surname?" (Or other caretakers if needed). What does he or she say?

Ask your child, "What is your Mom's name?" or "What is your Dad's name?" (Or other caretakers if needed). What does he or she say?

Age:6y1m-6y11m Area: Lit

Original Question: Point to the word, "Exit" and say, "What does this say?" then point to "Danger", "caution", and "Poison" and ask your child to read them. How many can he or she read?



Please choose 4 signs for children to read

	Include	Exclued
Danger	○	○
Stop	○	○
Poison	○	○
Exit	○	○
Checker	○	○
Pick n Pay	○	○

© University of Pretoria

	Include	Exclued
KFC 	○	○

I have successfully complete the questionnaire

○ Yes I have

© University of Pretoria

APPENDIX M: CLINIC PERMISSION FOR RESEARCH

© University of Pretoria

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Humanities 100.
1919 - 2019
Department of Speech-Language Pathology & Audiology

Permission to conduct a research study at the Stanza Bopape Community Health Clinic

To: Chief Executive Officer/Information Officer
Stanza Bopape Community Health Clinic

Dr. Sammy Otsheleng

From: The Investigator
Mignon Botes
PhD Student, University of Pretoria, Faculty of Humanities, Department of Communication Pathology

Re: **Permission to do research at Stanza Bopape Community Health Clinic**

Dear Dr Sammy Otsheleng

I am a PhD student at the University of Pretoria, conducting a research study titled: Early childhood development in low-income communities: parental perceptions and contextual adaptation of screening tools

Rationale for study:
In South Africa it is estimated that to up to 35% of children under the age of 5 are at risk for developmental delays or disabilities (Slemming & Bamford, 2018). The high prevalence of developmental delays in South Africa might be due to risk factors such as malnutrition, HIV infection, alcohol and drug exposure (Samuels, Stemming & Balton, 2012), to name but a few. It is expected that children with developmental delays and disabilities are unsuccessful in school, have an increased risk of leaving school without graduating, and are at much bigger risk of never attending school (Engle & Black, 2008). The significance of this is that these children then generate a low income, have high fertility statistics, providing inadequate care for their children and therefore continuing the circle of poverty (Grantham-McGregor et al., 2007). However, this does not need to be the case, as children at risk of developmental delays can be detected from an early age. Through developmental surveillance, the continuous monitoring of a child's developmental and behavioural status (Rydz et al., 2005), these delays or disabilities can be identified. Using a development screening tool can increase the likelihood of a child being identified in a timely fashion, and early identification services being introduced at an early age. However, research is needed to culturally adapt a tool for use in the South African population. This study is aimed at culturally adapting the PEDS tools (PEDS and PEDS:DM) for the South African low-income population, by incorporating the language and parental understanding of the community; and modifying ambiguous terms, for the use in developmental screening in order to identify children at risk for developing delays or disabilities.

Risks and benefits to participants:
The participation in the research study is important for us as researchers to better understand the community's views on development, and how to culturally adapt the PEDS tools. The information they give may help the researcher improve developmental screenings, and make early identification of developmental delays and disabilities effective.

© University of Pretoria

Children of participants might be identified as at risk for developmental delays or disabilities. Should this be the case they will be provided with an appropriate referral to the correct professional who will be able to assist them further. There is no foreseeable physical discomfort or risk involved for the participants. If there are questions that are too sensitive to answer, they may decline to answer them.

The researcher requests access to the following:
Access to the patients at the clinic during scheduled dates and times for three separate data collection phases. We require participants to be English proficient and a parent or caregiver of a child between the ages of 0-8years. The data collection will not interfere with the day to day functioning of the clinic, nor will it interfere with the participant's access to the medical help required.

The expectation of the participants:
Participants will be asked to fill out a confidential questionnaire based on the PEDS tools. This questionnaire will take between 20-30minutes to complete. We intend to protect the personal identity of the patients by assigning each patient a random code number.

From the initial data collection with the questionnaire, we will invite 5-10 parents willing to participate in a single focus group discussion during a scheduled time and date. We require participants to be English proficient and a parent or caregiver of a child between the ages of 0-8years. Participants of the focus group will be asked to share their ideas and opinions regarding the PEDS tools. This focus group will take approximately 2 hours. Participants will be supplied with lunch and beverages. We intend to protect the personal identity of the patients by assigning each patient a random code number.

Other:
Completed questionnaires will be stored for 15 years at the Department of Speech-Language Pathology and Audiology, the University of Pretoria in room 2-6. Data might be used for future studies. We intend to publish the findings of the study in a professional journal. We undertake not to proceed with the study until we have received approval from the Faculty of Health Sciences Research Ethics Committee, University of Pretoria.

We hope you can see the value in this research study. I forward to your favourable response and thank you in advance for your time and consideration.

Yours sincerely



Signature of the Principle Investigator: Mignon Bolas

© University of Pretoria

Permission to conduct a research study at the Stanza Bopape Community Health Clinic

Chief Executive Officer
Stanza Bopape Community Health Clinic

Dr Sammy Otsheleng



Signature of the CEO

Hospital Official Stamp

© University of Pretoria

APPENDIX N: GAUTENG PERMISSION FOR RESEARCH

© University of Pretoria

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Annexure 1

Declaration of intent from the clinic manager or hospital CEO

I give preliminary permission Mignon Botes (name of researcher) to do his or her

research on : Early childhood development in low-income communities: parental perceptions and contextual adaptation of screening tools (topic)

Stanza Bopape Community Clinic (name of clinic)

I know that the final approval will be from the Tshwane/Metsweding Regional Research Ethics Committee and that this is only to indicate that the clinic/hospital is willing to assist.

Other comments or conditions prescribed by the clinic or CHC manager or hospital CEO:

Signature
Clinic Manager/CHC Manager/CEO

20. 08. 2019
Date

© University of Pretoria

APPENDIX O: UNIVERSITY OF PRETORIA PERMISSION FOR RESEARCH

© University of Pretoria

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Humanities 100.
1919 - 2019

Research Ethics Committee

4 October 2019

Dear Ms Botes

Project:	**Early childhood development in low-income communities: Parental perceptions and contextual adaptation of screening tools**
Researcher:	**M Botes**
Supervisors:	**Prof J van der Linde and Prof DCDW Swanepoel**
Department:	**Speech-Language Pathology and Audiology**
Reference Number:	**24047989 (HUM027/0819)**

Thank you for the application that was submitted for ethical consideration.

The application was ***conditionally*** **approved** by the **Research Ethics Committee** on 3 October 2019 due to the following:

- Permission is required from Tshwane/ Medsweding Regional Research Ethics Committee.
- The permission letter from the clinic must either be on a letterhead or bear a dated stamp.
- The letter of informed consent is too technical and needs to be simplified to make it more accessible to the target audience.

Please note that **data collection may not commence**. Once the outstanding documentation and sufficient clarification is submitted, full ethical clearance will be granted. To facilitate the administrative process, please respond directly to PGHumanities@up.ac.za or Room 7-27 Humanities Building, at your earliest possible convenience.

Sincerely

Prof Maxi Schoeman
Deputy Dean: Postgraduate Research and Ethics
Faculty of Humanities
UNIVERSITY OF PRETORIA
e-mail:PGHumanities@up.ac.za

cc: Prof J van der Linde (Supervisor and HoD) Prof DCDW Swanepoel (Co-Supervisor)

Faculty of Humanities
Fakulteit Geesteswetenskappe
Lefapha la Bomotho

Research Ethics Committee Members: Prof MME Schoeman (Deputy Dean); Prof KL Harris; Mr A Bizos; Dr L Blokland; Dr K Booyens; Dr A-M de Beer; Ms A dos Santos; Dr R Fasselt; Ms KT Govinder Andrew; Dr E Johnson; Dr W Kelleher; Mr A Mohamed; Dr C Puttergill; Dr D Reyburn; Dr M Soer; Prof E Taljard; Prof V Thebe; Ms B Tsebe; Ms D Mokalapa

© University of Pretoria

APPENDIX P: PEDS TOOLS-SA

© University of Pretoria

PEDS

1. Please list any worries about your child's learning, how they are growing, and behaviour:

2. Do you sometimes worry about how your child talks and makes speech sounds?	No A little Yes
3. Do you sometimes worry about how your child understands what you say?	No A little Yes
4. Do you sometimes worry about how your child uses his or her hands and fingers to do things?	No A little Yes
5. Do you sometimes worry about how your child uses his or her arms and legs?	No A little Yes
6. Do you sometimes worry about how your child behaves?	No A little Yes

© University of Pretoria

7. Do you sometimes worry about how your child gets along with others?	No A little Yes
8. Do you sometimes worry about how your child is learning to do things for himself/herself?	No A little Yes
9. Do you sometimes worry about how your child is learning preschool or school skills?	No A little Yes
10. Please list any other worries you have about your child:	

© University of Pretoria

FORM B: 3-4m	
1. Are your baby's hands open most of the time, not in a fist?	No A little Yes
2. Does your baby open his mouth when he sees a bottle, breast, or dummy?	No Sometimes Yes
3. Does your baby seem excited when seeing a bottle or breast?	No Sometimes Yes
4. Does your baby make special sounds when he or she is happy?	No Sometimes Yes
5. Does your baby roll from her back to her side?	No Sometimes Yes
6. Does your baby smile or make speech sounds as a way to get your attention?	No Sometimes Most of the time

© University of Pretoria

FORM C: 5-7m	
1. When your baby is holding a toy in each hand, does he or she look from one hand to the other?	No A little Yes
2. If you try to give more food than your baby wants, does he keep his or her lips closed or turn away?	No A little Yes
3. When you say things like, "come here", does your baby hold out his or her arms?	No Sometimes Yes
4. Does your baby "talk" or make sounds when he or she holds a toy or sees a pet?	No Sometimes Yes
5. If your baby is lying on her back can she pass a toy from one hand to the other?	No Sometimes Yes
6. When you play gentle tickling games with your baby, does he or she enjoy this?	No Sometimes Most of the time

© University of Pretoria

FORM D: 8-10m	
1. Can your baby push at things with just his or her first finger? 	No A little Yes
2.Does your baby try to get to toys that are too far to reach?	No A little Yes
3. When you say your baby's name, does he or she stop and look at you?	No Sometimes Most of the time
4. How many different sounds such as "ma", "ba", "da" or "ga" does your baby say?	none 1 2 or more
5. Can your baby get around by crawling or by moving on his bum?	No Sometimes Yes
6. When you put a blanket over your face and pull it off, does your baby laugh?	No A little Yes

© University of Pretoria

FORM E: 11-13m	
1. Can your baby squeeze a toy to make a sound?	No A little Yes
2. Can your baby drink (not suck) from a cup?	No/don't know A little Yes
3. When you say things like, "**Where's your bottle?**" does your baby look around for his bottle?	No Sometimes Most of the time
4. Does your baby put lots of sounds together that sound like talking?	No sometimes Yes
5. If you hold only one of your baby's hands, can he or she take a few steps?	No A little Yes
6. Does your baby look for new things to play with and try to figure out how they work – like toys your squeeze to make a sound?	No A little Yes

© University of Pretoria

FORM G: 17m-19m	
1. Can your child build a tower with blocks?	None/don't have blocks 1-2 blocks 3 or more blocks
2. When you are dressing your child, does he or she help by holding out an arm or lifting a foot?	No Sometimes Most of the time
3. How many of these body parts can your child point to if you say, Where are your eyes? Where is your nose? feet? hair? mouth? ears?	None 1 2 or more
4. Does your child try to get your attention by pointing to things?	No Sometimes Most of the time
5. Does your child try to jump?	No Feet stay on the ground One of both feet off the ground
6. When around other children, does your child try to do things with them, such as feeding or kissing them, or even pushing or taking toys?	No Not very often Yes

© University of Pretoria

FORM H: 20m-22m	
1. Does your child try to draw or make marks with a crayon or pen?	No/Never tried Sometimes Most of the time
2. When you are dressing your child, does he or she try to put an arm through a sleeve or a leg into pants?	No A little Yes
3. How many of these body parts can your child point to if you say, Where are your eyes? Where is your nose? feet? hair? mouth? ears?	None 1 2 or more
4. If you ask your child, "What's this?" and showed things like a spoon, cup, doll, truck, box, crayon, cookie, chair, or light, how many names for these or other things does he or she say?	None 1 2 or more
5. Does your child try to jump?	No Feet stay on the ground One of both feet off the ground
6. Does your child look at people's faces to see how they are feeling? Can he or she see if someone is angry, sad, or happy?	No Not often Yes

© University of Pretoria

FORM K: 2y2m-2y4m	
1. Does your child try to draw or make marks with a crayon or pen?	No/Never tried Sometimes Most of the time
2. Does your child try to help when it is time to pack things away or tidy up?	No Sometimes Most of the time
3. Show your child a book and say, **Point to the front**, or **Where's the front**. Try again with the **back**, **top**, and **bottom**. How many did your child know?	None Some All
4. If you ask your child, "**What's this?**" and showed things like a spoon, cup, doll, truck, box, crayon, cookie, chair, or light, how many names for these or other things does he or she say?	None 1 to 4 5 to 7
5. When your child tries to run, he or she still falls often?	No Sometimes Most of the time
6. Does your child try to join in when other children play?	No Sometimes Yes

© University of Pretoria

FORM N: 3y3m-3y7m	
1. Can your child draw a picture of a person with any of these parts: head, legs, arms, eyes?	No 1 part 1 or more parts
2. Does your child use the toilet without being told?	No Sometimes Most of the time
3. If you ask your child to do two things, can he/she remember to do both? Try with these: **Stand up, and put the toy on the chair, or Give me the book, and put your hands on your head.**	No Does one Yes, does both
4. Ask your child "What do we do with scissors?" Does h/she use words like cutting? Now ask "What is a broom for?" Does he/she use words cleaning, sweeping?	No One correct Both correct
5. How does your child walk down stairs?	Not around stairs Scoots, crawls or needs hand held Puts both feet on step Puts one feet on each step
6. Does your child do favours for you or like to surprise you by helping out?	No Sometimes Yes
7. If you showed your child money and asked, "What's this?", would he or she say money?	Says coin Calls it something else No

© University of Pretoria

FORM P: 3y8m-4y0m	
1. Can your child draw a picture of a person with any of these parts: head, legs, arms, eyes, body, nose, ears, hands?	No 1-3parts 4 or more parts
2. Ask your child, "**What is your name...what is your whole name?**" What does he or she say?	Says first name and surname Says first name or surname, not both says nickname Says something else/nothing
3. If you asked your child to do three things, can he or she remember to do all three? You can try with these: "**Stand up, clap your hands, and sit back down,**" or "**Touch your nose, give me the book, and put the toy on top.**"	No Does one Yes, does both
4.Please show the story on the left to your child and say, "**Please point to the first word,**" and then, "**Please point to the last word.**" What does your child know?	Doesn't know Know last OR first Know last AND first
5. How does your child walk down stairs?	Not around stairs Scoots, crawls or needs hand held Puts both feet on step Puts one feet on each step
6. Does your child seem to know what is good behaviour and what is not?	No Sometimes Yes
7. -	
8. Say to your child, "Listen, are these words the same or not the same?" Then say, "fun - run: are they the same or not the same? (Your child should say "not the same")Then say, "sit-sit: are they the same or not the same?" (Your child should say "the same")Then say: mop-hop (Your child should say "not the same"),Cat – mat (Your child should say "not the same"),How many did he or she answer correctly?	None Some All

© University of Pretoria

FORM Q: 4y1m-4y5m	
1. Ask your child to draw a triangle. Can he or she draw one?	No Sort of Yes
2. Can your child get dressed by himself or herself?	No A little Mostly Yes, and does all fasteners
3. Point to the coloured boxes and say to your child, "Show me something red." Now say, "Show me something blue." Also try with these: green, yellow, orange, purple, white, black, brown, pink, and grey? How many did he or she get right?	None A few Most All
4. Does your child use words that tell about time like, morning, afternoon, night, yesterday, or tomorrow?	No One Some All
5. Can your child walk three steps putting one foot in front of the other with heel touching toe? 	No Yes, lots of arm waving Yes, not much arm waving
6. When playing, does your child try not to hurt others? If playmates are hurt, does he or she seem sorry?	No Not very often Yes
7. Say to your child, "I want you to count for me. Ready? ..One!" (Don't say anything else.) How far can your child count?	Doesn't count yet 1 2 3 or more
8. Ask you child "Do these words sound the same at the end: cat-hat?" (yes). Now say: "Do these words sound the same at the end dog-ball?" (no). Try with these words tree-fish (no). Now try with pot-dot? (yes). How many did he/she get right?	Gets non right Gets 1 right Gets 2 or more right

© University of Pretoria

FORM R: 4y6m-4y10m	
1. Can your child draw a circle, a square and a triangle?	No 1 shape 2 or more shapes
2. Does your child work or play in a small group of children for at least 20 minutes?	No Sometimes Yes
3. Say to your child, "Point to your knees," or "Where are your knees?" Try again with "chin" and "fingernails?" How many did he or she get right?	None 1 2 or more
4. Tell your child, "Say what I say: Tumi likes to throw and catch a ball." If your child made mistakes, try again with this: "Say what I say: Sipho reads good books every time he can." How did your child do?	Lots of mistakes Some mistakes No mistakes on at least one sentence
5 -	
6. Does your child obey rules when in a group?	No Sometimes Most of the time
7. Ask your child to give you 2 things (like toys, rocks or books). Then ask for 1 thing, then ask for 3 things, then ask for 5 things and then ask for 4 things. Does he or she give you the right number of things each time?	No Sometimes Yes
8. Ask your child "Clap the word apple into parts" (ap-ple = 2 claps). "Now try to clap elephant into parts" (e-le-phant = 3 claps). Try with soccer (soc-cer = 2 claps), then storybook (sto-ry-book = 3 claps). How many did he/she get right?	Cannot clap any parts Gets one right Gets 2 or more right

© University of Pretoria

FORM S: 4y11m-5y5m	
1. If you ask your child to write numbers (1,2,3,4, and so on), how many can he or she write?	None 1 numbers 2 numbers 3 or more
2. How long does your child play alone (without the TV or TV games on)?	Less than 5 min About 10 min 15 or more min
3.Tell your child, "Put your hands above your head," did your child do it right? Now say: "Put your fingers under your eyes." did your child do it right? Now point to a page in a book and say, "point to the middle of this page," and then, "point to the corner." did your child do it right? How many did he or she get right?	None Some All
4. Point to the pictures of the mice, teeth, and feet. Ask your child, "What are those?" Does your child use the words most grown-up use?	No Some Yes
5. -	
6. Can your child play games with rules, like card games, games with balls like soccer or netball?	No Not very well Yes
7. Point to the trees and then to the number 5. Say, "Show me this many." Could your child show 5 trees?Point to the trees again and then to the number65. Say, "Show me this many." Could your child show 6 trees?How many did your child get right?Point to the trees and then to the number 7. Say, "Show me this many." Could your child show 7 trees?	None Some All
8. Point to the letters of the alphabet and ask, "What's this?" How many can your child name?	None 1 to 7 8 or more

© University of Pretoria

FORM T: 5y6m-6y0m	
1. Ask your child to write letters of the alphabet starting with "A". How many can he or she write in order?	No 1-2 Letters 3 or more letters
2. Ask your child, "What is your Mom's name and surname?" or "What is your Dad's name and surname?" (Or other caretakers if needed). What does he or she say?	Knows first and last name Knows first or last name, not both Knows nickname Doesn't know
3. Ask your child, "**Where are your heels?**" ... "**ankles?**" ... "**shoulders?**" ... and "**elbows?**" How many does he or she know?	None 1 2 3 or more
4. Say to your child, "**I want you to say the alphabet.**" How many can he or she say or sing before making a mistake	None 1 to 8 9 to 15 16-25 All
5. -	
6. -	
7. Point to the 8 and ask your child, "**What's this?**" Then point to the 7, ... 9, ... and 10. How many does he or she name?	None 1 to 2 3 or more
8. Say to your child, "**I'm going to read you a story. When I'm finished, I want you to tell it back to me.**" Then read the story (about the ducks) and say, "**Tell me the story you just heard.**" What can your child tell you?	Nothing The beginning The middle The end All 3 parts

© University of Pretoria

FORM U: 6y1m-6y11m	
1. Point to the Δ and say, "Draw this". How did he or she do? 	Doesn't draw Some lines touch All lines touch but some have ears like this: All lines touch correctly
2. Ask your child "What is your address?" and "What town or city do you live in?" From what your child said, would someone else know how to get there?	No Maybe Yes
3. Say to your child, "Point to your hips,... wrist,... waist." How many does he or she know?	None 1 2 or more
4. Point to the picture of the puppy and tell your child, "Say what I say: 'Puppies make nice pets but need lots of love'." If there were any mistakes, try again with this: "Say what I say: 'The girl went swimming in the pool with friends'." How did your child do?	Lots of mistakes Some mistakes No mistakes on at least one sentence
5. -	
6. -	
7. Say to your child, " Sue has 3 big fish. She has 5 little fish. How many fish does she have?" What did your child say?	8 Another number No number
8. Point to the word, "Exit" and say to your child, "What does this say?" then point to "Checkers" and say to your child, "What does this say?". Point to "Stop", and say to your child, "What does this say?" and point to "Pick n Pay" and ask "What does this say?". How many can he or she read?	0 1 2 3 4

© University of Pretoria

FORM V: 7y1m-7y11m

1. Say to your child, "Please write these words" (make sure she can't see them while you are reading and give her time to write each one): "give…book…hope…use…add (as in I will add the numbers)." How many were spelled correctly?	0 1 2 to 3 4 to 5
2. -	
3. Say to your child, "I'm going to say four words. One does not belong. Listen and then tell me the word that doesn't belong." Chocolate Bathroom Brother Sugar Train Helper Chalk Kitchen Ladder Bread Bedroom Neighbour Did your child say say, "chalk", "train" and "ladder"?	No Some, but not all Yes
4. -	
5. -	
6. -	
7. Please point to the math problems and ask your child to do them. How many can he or she get right?	0 1 2 3 4
8. Point to the sign for "Fire alarm," and say to your child, "Please read this to me." Now point to "Caution, wet floor ", and say to your child, "Please read this to me." Now point to "No entry", and say to your child, "Please read this to me. How many could your child read?	0 1 2 3 4

© University of Pretoria

Pictures for

Form U question 8









Form V question 8







© University of Pretoria

APPENDIX Q: PROOF OF SUBMISSION FOR ARTICLE 1

© University of Pretoria



PHCFM | AFRICAN JOURNAL OF PRIMARY HEALTH CARE & FAMILY MEDICINE

HOME
ARTICLES
EDITORIAL TEAM
AUTHORS
ABOUT
CPD
CONNECT
TWITTER
MIGNON-BOTES
MY USER HOME
MY PROFILE
MY ALERTS (4)
LOG OUT

HOME ▶ USER ▶ AUTHOR ▶ SUBMISSIONS ▶ #3873 ▶ REVIEW

#3873 REVIEW

SUMMARY REVIEW EDITING

Submission

Authors	Mignon Botes, Jeannie van der Linde, De Wet Swanepoel
Title	Caregiver views on early childhood development, resources and services in a South African community
Section	Original Research
Editor	Bob Mash (Review) Keshia Jansen

Similarity Check

Score	12% 26-Oct-22 10:13
Report	VIEW REPORT

Peer Review

Round 1

Review Version	3873-39751-2-RV.DOCX 26-Oct-22
Initiated	08-Nov-22
Last modified	25-Nov-22
Uploaded file	

© University of Pretoria

APPENDIX R: PROOF OF SUBMISSION FOR ARTICLE 2

© University of Pretoria

Decision on your Submission to SAJCH

2 messages

SAJCH <em@editorialmanager.com> Thu, Nov 24, 2022 at 6:38 AM
Reply-To: SAJCH <submissions@hmpg.co.za>
To: Mignon Botes <mignon.botes1@gmail.com>

Ref.: SAJCH02022
Cultural and linguistic applicability of the PEDS tools in a low-income community: a caregiver perspective
South African Journal of Child Health

Dear Mrs Botes,

Reviewers have now commented on your paper. You will see that they are advising that you revise your manuscript. The reviewer's comments are attached to this email. I have also been through your manuscript - please would you follow the SAJCH author guidelines with regards to citations and the bibliography. I append the journal guidelines below and I have highlighted in red the relevant sections:

References

NB: *Only complete, correctly formatted reference lists in Vancouver style will be accepted. If reference manager software is used, the reference list and citations in text are to be unformatted to plain text before submitting..*

- Authors must verify references from original sources.
- Citations should be inserted in the text as superscript numbers between square brackets, e.g. These regulations are endorsed by the World Health Organization,[2] and others.[3,4-6]
- All references should be listed at the end of the article in numerical order of appearance in the Vancouver style (not alphabetical order).
- Approved abbreviations of journal titles must be used; see the List of Journals in Index Medicus.
- Names and initials of all authors should be given; if there are more than six authors, the first three names should be given followed by et al.
- Volume and issue numbers should be given.
- First and last page, in full, should be given e.g.: 1215-1217 **not** 1215-17.
- Wherever possible, references must be accompanied by a digital object identifier (DOI) link). Authors are encouraged to use the DOI lookup service offered by CrossRef:
  - On the Crossref homepage, paste the article title into the 'Metadata search' box.
  - Look for the correct, matching article in the list of results.
  - Click Actions > Cite
  - Alongside 'url =' copy the URL between { }.
  - Provide as follows, e.g.: https://doi.org/10.7196/07294.937.98x
- Please also remove reference to the author's unpublished work in the bibliography;' rather if one wishes to indicate that the work is unpublished, then after the reference to the study or work, place in parentheses '(unpublished data)'.

We are pleased to tell you that your manuscript will be accepted for publication if you address all the recommendations of the reviewer/s.

For your guidance, reviewers' comments are appended below.

If you are prepared to undertake the revision required, please submit a list of changes or a rebuttal against each point which is being raised when you submit the revised manuscript. Please ensure that you use tracked changes when making your revisions.

Your revision is due by Jan 20, 2023. Please let us know if you require additional time.

To submit a revision, go to https://www.editorialmanager.com/sajch/ and log in as an Author. You will see a menu item call Submission Needing Revision

© University of Pretoria

APPENDIX S: PROOF OF SUBMISSION FOR ARTICLE 3 AND ARTICLE AS PUBLISHED IN JOURNAL

© University of Pretoria

Child: Care, Health & Development - Manuscript ID CCH-2022-0321

1 message

Jaya chithra <onbehalfof@manuscriptcentral.com> Wed, Jun 15, 2022 at 3:55 PM
Reply-To: CCHadmin@wiley.com
To: mignon.botes1@gmail.com
Cc: mignon.botes1@gmail.com, jeannie.vanderlinde@up.ac.za, dewet.swanepoel@up.ac.za

15-Jun-2022

Dear Mrs. Botes,

Your manuscript entitled "A multi-phased cultural and contextual adaptation of the PEDS tools for low-income communities: A South African example" has been successfully submitted online and is presently being given full consideration for publication in Child: Care, Health & Development.

Your manuscript ID is CCH-2022-0321.

Please mention the above manuscript ID in all future correspondence.

Co-authors: Please contact the Editorial Office as soon as possible if you disagree with being listed as a co-author for this manuscript.

~~~~~~

Please note: the average turnaround time for papers submitted to the journal is currently 3 months, but a paper may take as long as 6 months to recieve a decision. In exceptional cases, this can take even longer, but papers older than 6 months are made our top priority.

~~~~~~

Our journal is currently transitioning to Wiley's Research Exchange submission portal.

If you submitted this manuscript through our Research Exchange site, you can view the status of your manuscript by logging into the submission site at wiley.atyponrex.com/journal/CCH .

If you submitted this manuscript through ScholarOne, you can view the status of your manuscript by checking your Author Center after logging in to https://mc.manuscriptcentral.com/cch .

Thank you very much for submitting your manuscript to Child: Care, Health & Development.

Yours sincerely,

Jayachithra
Editorial Assistant
Child: Care, Health & Development

© University of Pretoria

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Received: 14 June 2022 | Revised: 15 October 2022 | Accepted: 15 November 2022
DOI: 10.1111/cch.13083

RESEARCH ARTICLE

WILEY

A multiphased cultural and contextual adaptation of the Parents' Evaluation of Developmental Status tools for a low-income community: A South African case study

Mignon Botes | **Jeannie van der Linde** | **De Wet Swanepoel**

Department of Speech-Language Pathology, University of Pretoria, Pretoria, South Africa

Correspondence
Jeannie van der Linde, Department of Speech-Language Pathology, University of Pretoria, Pretoria, South Africa.
Email: jeannie.vanderlinde@up.ac.za

Funding Information
This research study received no funding.

Abstract

Introduction: Culturally relevant developmental screening is one of the best ways to appropriately identify developmental delays and disabilities in children as early as possible across diverse cultural backgrounds. This study aimed to adapt the Parents' Evaluation of Developmental Status (PEDS) tools for a low-income community in South Africa by using a detailed multiphased cultural and contextual adaption process.

Method and Results: A three-phase mixed-method design relying on triangulation of data was used. Data were collected at an immunization clinic in a low-income community in Mamelodi, South Africa. Phase 1 was a focus group discussion with 11 community participants. The topics explored the possible changes to the PEDS tools to make them more relevant to the community. Phase 1 informed Phase 2 where 12 early childhood development experts achieved consensus through a two-round survey on a modified Delphi method. In Phase 3, a draft of the PEDS tools-SA was presented to the authors of the PEDS tools for final approval. Of 55 questions that were adapted for the PEDS tools-SA, two original questions (3.6%), 14 questions from the expert suggestions (25.4%) and 39 from the community participant's suggestions (71%) were included. A final version of the PEDS tools-SA was created.

Conclusion: This study used a systematic method to adapt the PEDS tools to create the culturally appropriate PEDS tool-SA for a low-income community in South Africa, informed by community stakeholders' views from the first step. This resulted in a high-quality adaptation process that is more likely to result in a tool that is more acceptable to caregivers from a low-income South African community.

KEYWORDS
community involvement, cultural and contextual adaptation, cultural appropriateness, low-income, PEDS tools, South Africa

1 | INTRODUCTION

Developmental screening, using standardized screening tools, during every health visit is one of the best ways to identify developmental delays and disabilities in infants and young children as early as possible and to ensure timely early intervention for the family and child (Lipkin et al., 2020; Macy, 2012). A significant barrier to accurately identifying developmental delays and disabilities in infants and young

 © 2022 John Wiley & Sons Ltd.

© University of Pretoria

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

children in low-income communities is the lack of culturally and linguistically appropriate screening tools (Lipkin et al., 2020; Rousseau et al., 2021). As a result, tools developed in high-income countries are often translated and adapted for use in low-income countries (Munoz-Chereau et al., 2021).

Cultural adaptation involves careful deliberation of cultural values, customs and traditions, using appropriate knowledge and skill (Bernal & Domenech Rodríguez, 2012; Rousseau et al., 2021) while maintaining functional similarity with the original version of the tool. It is a complex and demanding process that involves more than just language translation (Bernal & Domenech Rodríguez, 2012; Rousseau et al., 2021). There is no strong differentiation between translating a tool or culturally adapting a tool and therefore no clear guidelines for cultural adaptation of screening tools alone. Detailed techniques on cultural adaptation are often not reported (Rousseau et al., 2021; Small et al., 2019). At times, cultural adaptations are not even considered in the translation process (El-Behadli et al., 2015; Lipkin et al., 2020).

Most cultural changes made during the adaptations process are limited to superficial modifications or process adaptations, that is, changes that involve minor modifications to the tool, such as changes in ethnicity or measuring systems (Bernal & Domenech Rodríguez, 2012). For example, the word 'Cheerio' was used in the Korean Ages and Stages Questionnaire (ASQ), instead of 'black bean' (Heo et al., 2008). In the Afrikaans version of the ASQ, the picture of a snowman was omitted as snow is rare in South Africa (SA) (Bornman et al., 2010). However, these changes do not address the core values, competence, beliefs or norms of the targeted community. Content adaptation is required to address the deeper structural changes during the adaptation process (Bernal & Domenech Rodríguez, 2012; Rousseau et al., 2021).

A developmental screening tool, the Parents' Evaluation Developmental Status (PEDS) and PEDS: Developmental Milestones (DM) (collectively known as the PEDS tools), developed in the United States, is a standardized and validated measure that has been translated and adapted for many populations (PEDS Tools In Other Languages, n.d.). This tool has been considered for the use in the public healthcare setting in SA because it is quick, reliable and affordable to use (van der Merwe et al., 2019). The PEDS tools have successfully been translated into Zulu and Northern Sotho in SA (Fywie et al., 2016; Maleka et al., 2021; van der Merwe et al., 2017). However, providing equitable services to all clients in SA is challenging because of the country's 11 official languages. Adapting a developmental screening tool for a low-income community in English might ensure that no minority language in a setting is disregarded. Millions of South Africans use English as a second or third language for everyday communication and as the language of instruction in most schools in SA (Khokhlova, 2015; Schlebusch & Thobedi, 2004).

Yet Botes et al. (in press) reported that caregivers in a low-income community in SA interpreted the items on the PEDS:DM incorrectly on almost half (48%) of the items. Cultural changes are necessary to ensure that test takers interpret the items correctly for accurate developmental screenings (DuBay & Watson, 2019). Rigorous cultural adaptation that ensures both process and content adaptations can ensure that developmental screening tools are locally appropriate, increasing the likelihood of accurate early identification within a setting. Involving community participants during the adaptation process is likely to enhance the cultural authenticity of a developmental screening tool, as community members can provide valuable input in the content adaptation.

Key messages

- A culturally appropriate developmental screening tool was culturally and linguistically adapted for a low-income community in South Africa.
- A systematic method for culturally adapting a screening tool was used in this study.
- Community participants from a low-income community and experts in ECD informed the changes to the developmental screening tool.

There is a lack of research on the approaches to culturally adapting developmental screening tools and the suggested method of using the expert panel to make cultural changes and only allowing community participant's input at the very end might not allow for all the needed content changes. Rousseau et al. (2021) did a scoping review on the cultural adaptation of a developmental screening tool and found that in only 70.3% of the adapted tools, language, visual and/or conceptual modifications were reported. Cultural content modifications were reported in 64.9% of adaptations. They concluded that most cultural modifications were minor and aimed at establishing an equivalence with the original version. The researchers found that the process of culturally adapting tools varied significantly in studies (Rousseau et al., 2021). The recommendations from the researchers were that the target community be engaged in every step; expert reviews used to verify the cultural, linguistic and developmental appropriateness of the tool and that a systematic methodology that considers language and culture is developed by authors.

As a result, this study aimed to adapt the PEDS tools for a low-income community in SA by using a detailed multiphased cultural and contextual adaption process. This study opted to use community participants as stakeholders from the start, informing the decisions of the expert panel and therefore permitting the community to give their perspectives regarding the changes needed to bring about the PEDS tools-SA.

2 | METHOD AND RESULTS

Institutional review board (IRB) clearance (HUM027/0819) was obtained for this study prior to any data collection. All participants, during all phases, provided consent to partake in the study. This study used a mixed-method design relying on triangulation of data for the cultural and contextual adaptation of the PEDS tools in a low-income

© University of Pretoria

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

community to create the PEDS tools-SA. Figure 1 represents the phases of the study.

2.1 | Phase 1: Community suggested adaptations

2.1.1 | Setting and participants

Data were collected at an immunization clinic in a low-income community in Mamelodi, South Africa. According to the latest available statistics, Mamelodi has one of the largest poverty-stricken low-income populations in the City of Tshwane (Statistics South Africa, 2011). Most residents are African (98.8%). Women head 40% of households and one third live on less than R20 000 a year (Statistics South Africa, 2011). This Community Health Clinic offers a full set of services, including a baby wellness clinic. Participants were selected using convenience sampling. Parents or caregivers, of a child between the ages of 0–8 years, waiting in line at the baby wellness clinic, who were able to communicate in English were invited to participate. The study aimed to adapt the tool and not translate it; therefore, the focus group was conducted in English, as the original PEDS tools are in English. Demographics of the 11 participants are provided in Table 1.

2.1.2 | Material and data analysis

In an earlier study, caregivers from the same community identified 58 of the 124 (46.8%) questions on the PEDS:DM and the 10 questions on the PEDS as problematic (Botes et al., in press). Forty-five of the questions on the PEDS:DM and all 10 questions on the PEDS have been identified by 10% or more of the caregivers as difficult to understand, containing unfamiliar words or as too difficult for the child's age (Botes et al., in press). The focus group was facilitated by the first author, who is an English second language speaker. The facilitator read each original 55 questions and asked the group how they would change it to make it more relevant to other caregivers in the community. If the question could not be understood, the facilitator used gestures (e.g., walking heel-to-toe) or explained the meaning in simple terms. Each member had an equal opportunity to voice their opinions on the items. Consensus was reached on the suggestion of an item after a conversation from the participants. The topics explored the possible changes to make it more relevant for the community. The focus group discussion, of 103 min, was audio-recorded and transcribed. Analysis of the data was generated from the transcripts of the audiotapes. The research question guided the deductive

TABLE 1 Demographic information of focus group participants ($n = 11$)

	N (%)
Age of participants	
30 years or younger	7 (63.6)
31 years or older	4 (36.4)
Home language	
Sepedi	7 (63.6)
isiZulu	2 (18.2)
Other	2 (18.2)
Caregiver employment	
Employed	3 (27.3)
Unemployed	8 (72.7)
Education level	
Grades 10–11	2 (18.2)
Grade 12	9 (81.8)
Household	
Single parent	7 (63.6)
Married	2 (18.2)
Living with partner	2 (18.2)
Dwelling	
Brick house	6 (54.5%)
Informal dwelling (shack)	1 (9.1%)
Room in a house	1 (9.1%)
Flat	3 (27.3%)

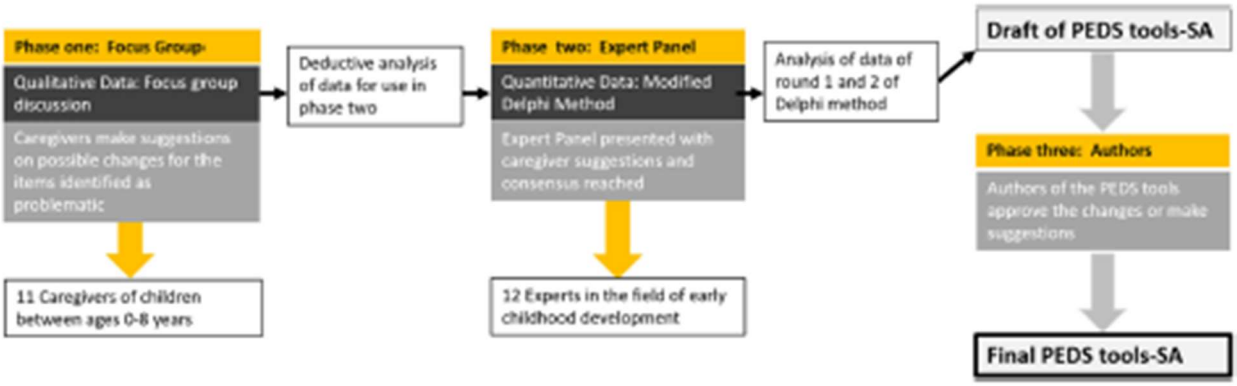


FIGURE 1 Phases in the study design

© University of Pretoria

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

thematic analysis. The first author read the transcript and identified themes and subthemes that were given a code. All items with the same code were grouped together. The rater then reread the passages and came up with a phrase or word that described the typical characteristics of the passages. Interrater reliability was conducted by having the second and third authors, who have extensive early childhood development knowledge, independently read the data. The themes and subthemes that were consistent and that community participants had consensus on were included. Table 2 lists the participants, examples of quotes and the themes that emerged.

2.1.3 | Results

The themes and subthemes that evolved from the analysis are schematically represented in Figure 2.

Table 3 sets out examples of the changes proposed by community participants according to each theme. Tables S1–S3 outline all the suggestions made by community participants. These recommendations were applied to the original items of the PEDS tools for presentation to an expert panel in Phase 2.

2.2 | Phase 2: Expert panel consensus

2.2.1 | Setting and participants

A modified Delphi method is a structured process for collecting and distilling knowledge from a group of experts through a series of questionnaires. Purposive sampling was used to identify 12 experts in early childhood. Table 4 provides the details of the experts. These experts were recruited, through e-mail, to form part of the expert panel. This

TABLE 2 Participant quotes/suggestions and themes that emerged from the focus group

Original question presented by moderator	Participant	Quotes/suggestion	Consensus from community participants	Theme
Does your baby like to play peek-a-boo?	32-year-old female	You must just say what it means. Just say—when you put the blanket on your face, and pull down … then the baby she laughs. The person must just show what it is.	Yes	Describe an item
	27-year-old female	Or can you tickle the baby and then they laugh?	No	Change the item
Can your baby stack blocks?	45-year-old female	Is that like to build something with blocks? You then say—Can your baby build something with blocks.	Yes	Change the item
	39-year-old female	Or can they play with rocks? To say play with rocks?	No	Change the item
Does your child try to jump, even if both feet do not leave the ground?	37-year-old female	What is that? Must the baby just jump? Why you make it difficult? Just say—Can your baby jump?	Yes	Leave out confusing part
Can your baby poke at things with just his or her first finger?	32-year-old female	Is it like this? (gestures poking with finger). You must show them; they will not know. You must put a picture or something.	Yes	Add a picture
	27-year-old female	Like push to push the finger. You say push the finger.	Yes	Change a word

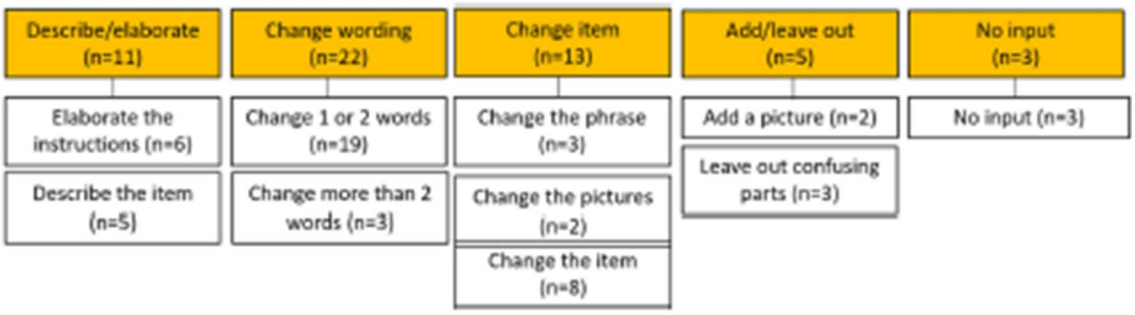
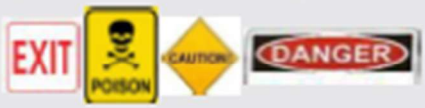


FIGURE 2 Themes identified in the focus group discussion to change questions on the PEDS tools (number of questions identified in each theme)

© University of Pretoria

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

TABLE 3 Examples of community participants' suggested changes in each identified theme

Theme	Original question examples	Examples of community participant's suggestions
Elaborate the instructions	If you hold out your hand and ask your child to give you something, does he or she give you something even if it is not the right thing	If you hold out your hand and ask your child to give you something like a toy, does he or she give you something in your hand even if it is not the toy?
Describe the item	Does your baby like to play peek-a-boo?	When you put a blanket on your face and pull it off, does your baby laugh?
Change 1 or 2 words	Does your baby try to keep his or her head steady?	Does your baby try to keep his or her head still?
Change more than 2 words	Can your child scribble with a crayon or marker without going off the page much?	Can your child draw with a pen without going off the pages much?
Change the phrase	Does your baby try to get to toys that are out of reach?	Does your baby try to get to toys that are too far to reach?
Change the picture	Point to the word 'Exit' and say, 'What does this say?'; then point to 'Danger', 'caution' and 'Poison' and ask your child to read them. How many can he or she read? 	Point to the word 'Exit' and say to your child, 'What does this say?'; then point to 'Danger' and say to your child, 'What does this say?'; point to 'Stop' and say to your child, 'What does this say?'; and point to 'Poison' and ask 'What does this say?' How many can he or she read? 
Change the item	Can your child stack blocks?	Can your child build a tower with blocks?
Add a picture	Can your child walk three steps putting one foot in front of the other with heel touching toe?	Can your child walk three steps putting one foot in front of the other with heel touching toe? 
Leave out the confusing part	Does your child try to jump, even if both feet do not leave the ground?	Does your child try to jump?
No input	When your child tries to run, does each foot leave the ground a little, even if he or she falls often?	

Delphi method used two rounds of online surveys to achieve consensus on the recommended changes in the PEDS tools. Figure 3 sets out the steps in the Delphi method.

2.2.2 | Material, analysis and results: Round 1

Experts were surveyed using the online Qualtrics software. In Round 1 of the Delphi method, the 55 questions from Phase 1 that were adapted with community participant's suggestion were presented to the experts. Round 1 questions consisted of the original question and community participant's suggestion. The experts had a choice to agree with community participant's suggestion or disagree. If they disagreed, they were asked to give a reason and another suggestion to the question.

Of the 55 questions, all experts supported the suggestions made by community participants for five of the questions. With the remainder of the 50 questions, some experts disagreed and made alternative suggestions to the question. There were a total of 145 suggestions made by the expert panel for all the questions. Expert suggestions were eliminated (see Figure 3) that resulted in 59 usable suggestions on 31 questions (21 of the PEDS:DM and 10 of the PEDS). These suggestions on the questions were used for Round 2. The table in Figure 3 shows the distribution of the expert selections. After Round 1, one original question and 23 community suggestions were placed in the first draft of the PEDS tools-SA. On the 23 community suggestion, for five questions, 100% of the experts agreed; for the other 18, more than 67% agreed.

2.2.3 | Material, analysis and results: Round 2

In Round 2 of the Delphi method, the original questions, community member's suggestions and expert suggestions were presented to the expert panel. The experts were asked to rank the question options from the most preferred to the least preferred option. The average

© University of Pretoria

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

TABLE 4 Details of expert panel participants

	Profession	Age	Years of experience	Race	Highest qualification	Field of expertise
1	Speech therapist	25–35 years	5–10 years	White	PhD	Knowledge of specific community and PEDS tool
2	Speech therapist	25–35 years	>10 years	White	PhD	Expert in early childhood development and knowledge of PEDS tools
3	Occupational therapist	56–65 years	>10 years	Black	Bachelors	Expert in early childhood development
4	Occupational therapist	56–65 years	>10 years	White	PhD	Special interest in low-income communities and expert in early childhood development
5	Psychologist	36–45 years	>10 years	White	PhD	Expert in early childhood development
6	Psychologist	36–45 years	5–10 years	Black	Bachelors	Expert in early childhood development
7	Paediatrician	36–45 years	5–10 years	White	Specialist medical degree	Expert in early childhood development
8	Paediatric neurologist	46–55 years	>10 years	White	Specialist medical degree	Expert in early childhood development
9	Physiotherapist	46–55 years	>10 years	White	PhD	Special interest in low-income communities and paediatric HIV
10	Healthcare worker	46–55 years	>10 years	Black	Grade 12	Knowledge of specific community, expert in early childhood development
11	Remedial therapist	46–55 years	>10 years	White	PhD	Special interest in low-income communities and expert in early childhood development
12	Nurse	56–65 years	>10 years	Black	Nursing diploma	Knowledge of specific community and expert in early childhood development

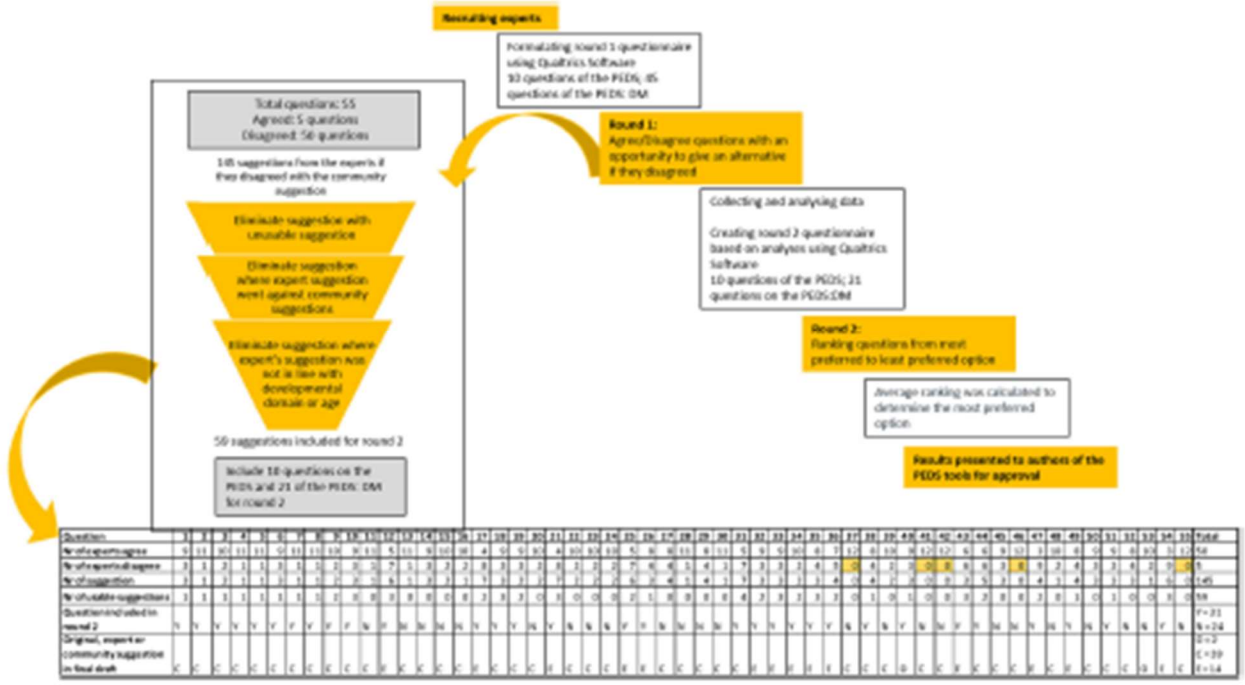


FIGURE 3 Steps in the Delphi method for consensus on the PEDS tools

ranking for each answer choice of the 31 questions was calculated. The answer with the highest ranking was the most preferred choice. Tables S1–S3 show the highest ranked questions. On the 31 questions, the experts ranked one original question the highest, 16 community participants suggestions the highest and 14 expert suggestions the highest.

© University of Pretoria

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

2.3 | Phase 3: Consultation with the authors

2.3.1 | Material and results

When culturally adapting a tool, the integrity of the tool should be maintained. There should be a clear similarity between the original and the adapted tool (DuBay & Watson, 2019). The authors of the original tool should agree with the changes made, that the integrity of the original tool is evident. The PEDS was developed in 1997 by Dr F. Glascoe for the developmental-behavioural screening and surveillance of children birth to 8 years (Glascoe, 1997). The PEDS: DM was designed by Brothers, Glascoe and Robertshaw in 2008 (Brothers et al., 2008) for children from birth to 8 years as a milestone-focused measure that consists of six to eight questions per visit or age range.

The results of the two rounds were put together to create a first draft of the PEDS tools-SA. The following were included: Two questions were kept as the original (3.6%), 14 questions from the expert suggestions were included (25.4%) and 39 from community participant's suggestions were included (71%). The table in Figure 3 shows the distribution. This draft was electronically presented to the authors of the PEDS tools for final approval of the suggested changes on the PEDS tools. The authors approved all the changes but suggested that the graphics of the pictures should be enhanced. The final version of the PEDS tools-SA was created.

3 | DISCUSSION

This study is one of the first examples of culturally and linguistically adapting a developmental screening tool, where community participants were seen as specialists, and their input was not only one of the initial steps in the adaptation process but also invaluable. Understanding community member's perspectives in the decision-making process on adaptations must be prioritized from the outset. Although community involvement is suggested with all cultural adaptions of tools, it forms part of the cognitive interviews, one of the last steps in cultural adaptation of tests recommended by the World Health Organization (2016). The goal of cognitive interviews is to evaluate the questions on a tool to determine whether the true meaning of the question is conveyed to respondents and whether the question is functioning as intended. Questions found to have problems can then be modified to reduce errors in the response process (World Health Organization, 2016). In the current study, the goal was to involve community members from the start as decision-makers to ensure that the items on the tool for consideration were culturally, linguistically and contextually informed. This inclusive method incorporates the local expression or customs, language and parental understanding as a point of departure (Kohli-Lynch et al., 2019; Rousseau et al., 2021). Using this detailed adaptation method, the study resulted in the culturally adapted PEDS tools for a low-income community in SA.

A previous study established that a systematic and detailed adaptation of the PEDS tools was necessary, as many items were identified as being culturally inappropriate or irrelevant for a low-income community in SA (Botes et al., in press). The adaptations made to the PEDS tools-SA included modifications of words, phrases and items, using local South African English, illustrations of some items and changing the pictures to make them culturally appropriate. One of the suggestions from community participants to increase the comprehensibility of the questions was to elaborate the instructions. This recommendation was similar to that of the Denver Developmental Screening Test in the Philippines translation of the item 'What is a spoon made of?' that was elaborated to read: 'If a table is made of wood, a spoon is made of ...?' (Kling et al., 2012). Another suggestion was to change some words to make them culturally appropriate. On the PEDS:DM, questions on the use of *markers* were changed in this study to *pens*; similarly, questions on the use of *crayons and pencils* on the ASQ-3 for the Australian aboriginal community were changed to *drawing with sticks* (D'Aprano et al., 2016).

In some circumstances, items can be identified that may not be suitable for the target population. (Botes et al., in press) noted that items in the pre-literacy category in the age group 4 to 5 years of the PEDS:DM were not age appropriate for the community; as many children cannot identify the alphabet letters. This was also the case in the Arabic translation of the ASQ-II where many children were not yet taught the Arabic alphabet at the age interval of 4 to 5 years (Charafeddine et al., 2013; Rousseau et al., 2021). Such items can be replaced with age-appropriate questions that still examine the developmental domain.

What set this study apart was community members' involvement from the onset of the study on the cultural adaptations. Usually, it is the role of an expert panel to make the cultural adaptations to a tool as an initial step in the adaptation process (World Health Organization, 2016). One of the limitations of using an expert panel to make cultural adaptations to a tool is that the changes might only be minimal modifications (Bernal & Domenech Rodríguez, 2012). The changes that experts make are based upon their understanding of the culture and their knowledge in their field of expertise. In this study, community members were part of the developmental process that resulted in a version of the PEDS tools that is more accessible to South African caregivers in low-income communities, representative of the majority of the country. Detailing this adaptation process provides an example of the procedure to address the lack of guidelines for cultural adaptations of tools. This procedure can be duplicated in other settings to attain a quality cross-cultural adaptation of screening tools for linguistically and culturally diverse low-income communities.

The thorough method of cultural adaptation in this study involving community members suggestions in the beginning steps of the adaptation process demonstrates significant value, with more than two thirds (71%) of community participants suggestions incorporated in the final version of the PEDS tools-SA. Further research studies can incorporate this method of involving communities to make suggestions on items to ensure a better culturally adapted tool.

© University of Pretoria

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Promoting optimal development: Identifying infants and young children with developmental disorders through developmental surveillance and screening. *Pediatrics*, 145(1), e20193449. https://doi.org/10.1542/peds.2019-3449

Macy, M. (2012). The evidence behind developmental screening instruments. *Infants & Young Children*, 25(1), 19–61. https://doi.org/10.1097/IYC.0b013e31823d37dd

Maleka, B., van der Linde, J., Graham, M., & Swanepoel, D. W. (2021). Evaluating the PEDSDM Developmental Screening Tool in Zulu and Northern Sotho. *Language Matters*, 52(3), 72–93. https://doi.org/10.1080/10228195.2021.1969589

Munoz-Chereau, B., Ang, L., Dockrell, J., Outhwaite, L., & Heffernan, C. (2021). Measuring early child development across low and middle-income countries: A systematic review. *Journal of Early Childhood Research*, 19(4), 443–470. https://doi.org/10.1177/1476718X211020031

PEDS Tools In Other Languages. (n.d.). PEDStest.Com. Retrieved 12 June 2021, from http://pedstest.com

Rousseau, M., Dionne, C., Savard, R. T., Schonhaut, L., & Londono, M. (2021). Translation and cultural adaptation of the Ages and Stages Questionnaires (ASQ) worldwide: A scoping review. *Journal of Developmental & Behavioral Pediatrics*, 42(6), 490–501. https://doi.org/10.1097/DBP.0000000000000940

Schlebusch, G., & Thobedi, M. (2004). Outcomes-based education in the English second language classroom in South Africa. *The Qualitative Report*, 9(1), 35–48. https://doi.org/10.46743/2160-3715/2004.1936

Small, J. W., Hix-Small, H., Vargas-Baron, E., & Marks, K. P. (2019). Comparative use of the Ages and Stages Questionnaires in low- and middle-income countries. *Developmental Medicine & Child Neurology*, 61(4), 431–443. https://doi.org/10.1111/dmcn.13938

Statistics South Africa. (2011). Census 2011 Census in brief. Report no.: 03-01-41. http://www.statssa.gov.za/census/census_2011/census_products/Census_2011_Census_in_brief.pdf

van der Merwe, M., Cilliers, M., Marié, C., van der Linde, J., & Le Roux, M. (2017). Evaluation of a Zulu translation of the Parents' Evaluation of Developmental Status. *African Journal of Primary Health Care & Family Medicine*, 9(1), 1–6. https://doi.org/10.4102/phcfm.v9i1.1365

van der Merwe, M. N., Mosca, R., Swanepoel, D. W., Glascoe, F. P., & van der Linde, J. (2019). Early detection of developmental delays in vulnerable children by community care workers using an mHealth tool. *Early Child Development and Care*, 189(5), 855–866. https://doi.org/10.1080/03004430.2018.1480481

World Health Organization. (2016). Process of translation and adaptation of instruments. http://www.who.int/substance_abuse/research_tools/translation/en/

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Botes, M., van der Linde, J., & Swanepoel, D. W. (2022). A multiphased cultural and contextual adaptation of the Parents' Evaluation of Developmental Status tools for a low-income community: A South African case study. *Child: Care, Health and Development*, 1–9. https://doi.org/10.1111/cch.13083

© University of Pretoria