

Investigating the Impact of a Parenting Intervention within a Rural South African
Community: A Longitudinal Social Network Analysis

Thesis presented for the Degree of Doctor of Philosophy in the Department of Psychology,
University of Cape Town

Lisa Marguerite Kleyn

Supervisor: Professor Catherine L. Ward¹

Co-supervisors: Professor Miles C. Hewstone², and Ralf Wölfer²

¹University of Cape Town, Department of Psychology

²University of Oxford, Department of Experimental Psychology

November 2020

The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.

Declaration

I, Lisa Marguerite Kleyn, hereby declare that the work on which this thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university. I authorise the University to reproduce for the purpose of research either the whole or any portion of the contents in any manner whatsoever.

Signature:

Date: 12 November 2020

Signed by candidate

Abstract

Colder, harsher parenting attitudes and behaviours negatively impact children's behaviour and development, and have been linked to heightened levels of violence towards children. Parenting interventions can improve outcomes by reducing violent and increasing non-violent parenting behaviours. I investigated how changes associated with a low-cost positive parenting intervention spread through a rural, low-income, South African community. Specifically, I assessed whether exposure to a community-wide social activation process and Parenting for Lifelong Health (PLH) programmes (focused on violence prevention in low-resource settings) significantly predict: (1) improved parenting, and (2) change in the communication networks of female caregivers in the whole community, while controlling for variables such as psychiatric symptoms, parenting stress, and alcohol misuse.

Additionally, I investigated whether ties to parenting programme attendees in the communication network predicted improved parenting. Afrikaans-speaking female caregivers ($n = 235$; mean age 35.92 years), with children aged between 1½ and 18 years old, participated in the intervention; three waves of data were collected (January 2016, June 2017, and February 2019). The social network was measured based on a peer nomination procedure (of study participants whom “you talk to about parenting”). To analyse the role of interpersonal ties as pathways for spreading intervention effects, I make use of Social Network Analysis (SNA), in the form of nominations of people with whom respondents discuss parenting, together with self-report measures of parenting-related outcomes (from caregivers and their children). I then trace the extent to which both the social activation process and the parenting programmes are effective, in part, via their diffusion throughout the community. SNA was used to disentangle whether network changes improved parenting practices (i.e., selection effects) or whether reported improvements in parenting practices improved caregiver information networks (i.e., socialisation effects).

Analysis of data from waves 1 and 2 indicated that community-wide improvements in parenting behaviour were evidenced. The significant predictors of improvement were social activation “dose” received, change in network centrality and the influence of indirect exposure to the parenting programmes via attendees. Furthermore, attending at least one session of a parenting programme offered in the intervention significantly predicted change in the caregivers' communication networks, indicating the spread of social influence through their network. The small subset of caregivers ($n = 51$; 21.7%) attending one or more sessions of a parenting programme evidenced greater activity (i.e., covariate ego effect) and potential

influence (i.e., covariate alter effect) within the communication network compared to caregivers who did not attend any programme sessions. This subset of attending caregivers were more likely to reach out to other caregivers to speak about parenting after being exposed to the intervention, and both sought and received social support from other caregivers. Follow-up assessment using a third wave of data showed that while attendees remained socially influential within the caregiver network the overall community improvement was not sustained.

These results illustrate the value of social network analysis for ascertaining the pathways through which the intervention achieved its impact and tracking the evolution of social norms within a community. The results indicate an association between spill-over effects from attendees to non-attendees and community-wide changes through targeted interventions.

Keywords: parenting, intervention, community, social influence, social network analysis, stochastic actor-based models.

Table of Contents

<i>Abstract</i>	2
List of Tables	8
List of Figures	9
<i>Acknowledgements</i>	12
1 Introduction	14
1.1 Child Development and Parenting Interventions	15
1.1.1 Child-directed violence.....	15
1.1.2 Negative child outcomes.....	15
1.1.3 Community-wide interventions.....	16
1.2 Global and South African Policy Initiatives	17
1.3 The Seven Passes Intervention	19
1.3.1 The community of Touwsranteen.....	19
1.3.2 Social activation in Touwsranteen.....	20
1.3.3 Traditional parenting programmes as part of the intervention.....	23
1.4 Investigating the Spread of Influence through a Social Network	29
1.4.1 Explicit use of Social Network Analysis in studying interventions.....	32
1.5 Rationale for the Present Study	32
1.6 Hypotheses	35
1.6.1 Waves 1 to 2.....	36
1.6.2 Waves 1 to 3.....	37
2 Method	40
2.1 Research Design	40
2.2 Participants	40
2.2.1 Analytic sample.....	42
2.3 Procedures	44
2.3.1 Mobenzi training and programming.....	44
2.3.2 Fieldworker recruitment and training.....	44
2.4 Materials and Measures	45
2.4.1 Household report forms.....	45
2.4.2 Demographics.....	45
2.4.3 Caregivers' self-report measures of their own parenting.....	46

2.4.4	Caregivers' self-report measures of their children's outcomes.	46
2.4.5	Caregivers' self-report measures of parenting stress.	47
2.4.6	Caregivers' self-report measures of their mental health.	48
2.4.7	Caregivers' self-report measures of Intimate Partner Violence.....	49
2.4.8	Caregivers' self-report measures of their alcohol use.....	49
2.4.9	Caregivers' self-report measures of poverty.....	50
2.4.10	Children's reports of caregiving behaviour.	50
2.4.11	Caregivers' self-report measures of their social network.	51
2.4.12	Community-wide intervention dose received.....	51
2.5	Parenting Measure Construction	51
2.5.1	Reason for creating a parenting summary statistic.	51
2.5.2	Construction of primary outcome measure of positive parenting scores.....	52
2.6	Social Network Analysis.....	57
2.6.1	Simulated Investigation for Empirical Network Analysis (SIENA).....	58
2.6.2	Disentangling socialisation and selection effects.	60
2.7	Data Analysis.....	65
3	Results: Waves 1 to 2	73
3.1	Alabama Parenting Questionnaire.....	76
3.1.1	Parenting Young Children Scale.....	77
3.1.2	Risk factor questionnaires.....	80
3.2	Factorial Invariance Testing.....	83
3.2.1	Confirmatory Factor Analysis results.	84
3.2.1.4	Exploratory Factor Analysis.	85
3.3	Attrition in the Afrikaans-Speaking Sample.....	88
3.4	Description of the Afrikaans-speaking Caregiver Sample.....	89
3.4.1	Programme attendance selection bias.	91
3.5	Intervention Outcomes: Tests of Hypotheses 1a-c.....	92
3.5.1	Hypothesis 1a. The intervention will be associated with improved scores when tested on all female caregivers in the community.....	92
3.5.2	Hypothesis 1b. The intervention will be associated with improved parenting scores, especially for caregivers who attend a parenting programme.	94
3.5.3	Hypothesis 1c. The intervention will be associated with improved parenting scores especially for caregivers that received a higher "dose" of the social activation process.	98
3.6	Network Characterisation.....	101
3.6.1	Change in centrality parameters.....	102

3.7	Hypothesis 2. Caregivers who do not attend programmes will be associated with greater improvements in parenting behaviour if they become more (a) central to the caregiver network, and (b) connected to caregivers attending programmes.....	104
3.8	Hypothesis 3. Caregivers attending parenting programmes will be associated with greater network salience and potential influence in the communication network.....	106
3.8.1	Baseline network.....	106
3.8.2	Network modifications.....	108
3.8.3	Network effects.....	113
3.9	Discussion	116
3.9.1	Summary of Findings.....	116
3.9.2	Effects of the Intervention on Parenting Behaviour	117
3.9.3	Effects of Social Connectivity on the Efficacy of the Intervention	121
3.9.4	Effects of the Intervention on the Caregiver Network.....	122
4	<i>Results: Waves 1 to 3</i>	127
4.1	Attrition Analyses	128
4.2	Description of the Analytic Sample.....	129
4.2.1	Parenting Behaviour.....	132
4.2.2	Child Behaviour Checklist.....	140
4.2.3	Parenting Stress Index.....	141
4.2.4	Other risk factors.....	142
4.3	The Effect of the Intervention on Parenting Behaviour: Tests of Hypotheses	
4a-d	144	
4.3.1	Caregivers' and Children's responses on the APQ: Test of Hypothesis 4e.....	148
4.4	Network Characterisation.....	152
4.4.1	Change in centrality parameters.....	153
4.5	Co-evolution of Selection and Socialisation Effects: Tests of Hypotheses 5 – 6	
	154	
4.5.1	Selection: network dynamics (H5a – H5c).	155
4.5.2	Socialisation: behaviour dynamics (H6a – H6c).	155
4.6	Discussion	160
4.6.1	Summary of Findings.....	160
4.6.2	Effects of the Intervention on Parenting Behaviour	161
4.6.3	Effects of the Intervention on the Caregiver Network.....	167
4.6.4	Effects of Social Connectivity on the Intervention.....	168
5	<i>General Discussion</i>	170

5.1	Implications	171
5.1.1	Cost-effective early violence prevention strategy.....	171
5.1.2	Intensive intervention targeting.	172
5.1.3	Social network analysis.....	173
5.2	Limitations.....	173
5.2.1	Methodological considerations.	174
5.2.2	Historical context.	175
5.2.3	Network maturation.	176
5.2.4	Future Directions	177
5.3	Conclusion	179
6	<i>References</i>	<i>181</i>
7	<i>Appendices.....</i>	<i>207</i>
7.1	Appendix A: Overview of Book Sharing and Thula Sana	207
7.1.1	Book Sharing Parenting Programme	207
7.1.2	Thula Sana Programme (from birth – 6 months).....	210
7.2	Appendix B: Ethical Approval	212
7.3	Appendix C: Household Report Form.....	213
7.4	Appendix D: Touwsrante Parenting Questionnaire.....	215
7.5	Appendix E: Factor Analysis.....	304
7.6	Appendix F: Growth Curve Model Fit Comparisons	310
7.7	Appendix G: Caregivers’ and Children’s responses to APQ Items.....	311

List of Tables

Table 1 PLH for Adolescents.....	25
Table 2 PLH for Young Children	27
Table 3 Description of Network Parameters.....	62
Table 4 Means and Standard Deviations of Questionnaire Responses.....	74
Table 5 Children's internalising and externalising symptoms	79
Table 6 Model fit indices for confirmatory factor analysis	86
Table 7 Dropping out of the study between waves 1 and 2.....	89
Table 8 Baseline demographics of the analytic sample	90
Table 9 Descriptive statistics for attendees and non-attendees at baseline.....	92
Table 10 Contingency table for parenting change	93
Table 11 APQ corporal punishment subscale.....	97
Table 12 Parenting improvement predictors.....	100
Table 13 Changes in relative frequencies for all triad configurations.....	102
Table 14 Centrality statistic change.....	103
Table 15 Indirect intervention effects	105
Table 16 wave 1 network parameters	108
Table 17 Predictors of network change	110
Table 18 SIENA parameters	115
Table 19 Dropping out of the study between waves 2 and 3.....	129
Table 20 The mean scores for each instrument at all three Waves.....	131
Table 21 Linear and quadratic model comparisons with programme attendance	145
Table 22 Coefficient estimates for growth curve analysis Model T0Q.....	146
Table 23 Quadratic model comparisons containing programme attendance.....	146
Table 24 Coefficient estimates for growth curve analysis Model T2Q.....	146
Table 25 Quadratic model comparisons containing social activation dose.....	148
Table 26 Coefficient estimates for growth curve analysis Model T2QS.....	148
Table 27 Coefficient estimates for the multivariate growth curve analysis model....	149
Table 28 Dyad Pearson's <i>r</i> correlations on the APQ subscales.....	151
Table 29 Network stability across three waves of data.....	153
Table 30 Centrality statistic change between waves 1-2, and waves 1-3	154
Table 31 Outcomes of the SIENA analyses of parenting behaviour	156
Table 32 Linear GCMs Fit Statistics	310
Table 33 Quadratic GCMs Fit Statistics	310

List of Figures

<i>Figure 1.</i> Final analytic sample (black outline) and exclusions.	43
<i>Figure 2.</i> Distribution of parenting questionnaire scores.	55
<i>Figure 3.</i> Threshold operation for deriving Baseline Parenting variable.	56
<i>Figure 4.</i> Threshold operation for deriving the Parenting Change variable.	56
<i>Figure 5.</i> Alabama Parenting Questionnaire scores by wave and language group	76
<i>Figure 6.</i> Parenting Young Children Scale scores by wave and language group.....	77
<i>Figure 7.</i> Parent Stress Index scores, by wave and language group.....	80
<i>Figure 8.</i> Parent Stress Index subscale scores	81
<i>Figure 9.</i> General Health Questionnaire scores by wave and language group.....	82
<i>Figure 10.</i> Intimate Partner Violence scores by wave and language group	83
<i>Figure 11.</i> Aerial View of the Community of Touwsranten	87
<i>Figure 12.</i> Afrikaans (red) and isiXhosa-speaking (blue) caregiver networks.....	88
<i>Figure 13.</i> A graphical depiction of improvement in parenting from waves 1 to 2	93
<i>Figure 14.</i> Improvement in parenting behaviour.....	95
<i>Figure 15.</i> Breakdown of change in parenting behaviour	95
<i>Figure 16.</i> Social activation dose and parenting improvement	98
<i>Figure 17.</i> Social activation dose and programme attendance	99
<i>Figure 18.</i> Programme attendance and parenting improvement.....	100
<i>Figure 19.</i> Centrality statistics	104
<i>Figure 20.</i> Indegree centrality by programme attendance.....	111
<i>Figure 21.</i> Outdegree centrality change.	112
<i>Figure 22.</i> Outdegree centrality change by programme attendance.....	112
<i>Figure 23.</i> Outdegree centrality change by parenting change	113
<i>Figure 24.</i> Correlation matrix between bivariate dropout and key variables.	128
<i>Figure 25.</i> Parenting behaviour reported by caregivers in the analytic sample.....	133
<i>Figure 26.</i> Mean item scores on the PARYC questionnaire.....	135
<i>Figure 27.</i> Mean item scores on the APQ for caregivers.	135
<i>Figure 28.</i> Parenting change by child age.	136
<i>Figure 29.</i> Parenting change by child age in older children.....	136
<i>Figure 30.</i> Parenting behaviour for caregivers in the analytic sample.	137
<i>Figure 31.</i> PARYC scores for caregivers in the larger community sample	138
<i>Figure 32.</i> APQ scores for caregivers in the larger community sample.....	138
<i>Figure 33.</i> The parenting summary statistic of the excluded caregiver sample.	139

<i>Figure 34.</i> Child Behaviour Checklist scores for younger children.	140
<i>Figure 35.</i> Child Behaviour Checklist scores for older children.	141
<i>Figure 36.</i> Parenting Stress Index total scores.....	142
<i>Figure 37.</i> General Health Questionnaire total scores.....	143
<i>Figure 38.</i> Alcohol Severity questionnaire.....	144
<i>Figure 39.</i> Parenting change growth curves.	147
<i>Figure 40.</i> Growth curves for mean APQ item score.	150
<i>Figure 41.</i> Correlations for caregivers' and children's APQ scores.....	151
<i>Figure 42.</i> Correlations for caregivers' and children's scores on all APQ items.....	152
<i>Figure 43.</i> Outdegree centrality change by programme attendance.	158
<i>Figure 44.</i> Outdegree centrality change by parenting change.	159

“We are all caught in an inescapable network of mutuality, tied into a single garment of destiny. Whatever affects one directly, affects all indirectly.”

Reverend Dr Martin Luther King Jr (1929 – 1968)



Acknowledgements

I would like to extend my deepest thanks and sincere appreciation to the many people who enabled me to complete this thesis. Firstly, my supervisory team, Professors Cathy Ward, Miles Hewstone, and Ralf Wölfer, who have not only provided me with academic support throughout my Masters and PhD thesis, but have also been a constant source of inspiration and given me wonderful opportunities along the way. Thank you for your passion for this project, your guidance, and your belief in me.

Secondly, Dr Chandré Gould, the World Childhood Foundation and the Seven Passes Initiative who made this work possible; Wilmi Dippenaar, Director of the Seven Passes Initiative for managing the implementation of the parenting programmes; our fieldworkers; and the parents and children of Touwsrante who participated in our survey. This work has been close to my heart for 4 years – and I could not be more grateful for the opportunity to add value through my research. This study was funded by the World Childhood Foundation (grants number 15368,15747 and 15589).

Thirdly, to the beautiful network of people who made Oxford feel like home and a wild adventure for the past three years - I cannot thank you enough. There are too many people to mention here, but I will continue to express my gratitude to you individually for your invaluable presence in my life. A special thank you also to one of my closest friends, Matt Jaquiere, for his generous help, inspiring discussions, and assistance in helping work through different ideas. I am grateful for your guidance, encouragement, and unconditional friendship. I quite frankly do not know how I would have survived the British winters, in conjunction with work related pressures and some personal hardships, without your care, support, and constant hounding to go play squash.

Finally, I would like to thank my incredible parents. I love you both more than I know how to put into words. Thank you for empowering me to design a life I enjoy; and for teaching me about the love of God that helps me renew my strength daily and gives me the courage to keep on pushing in the direction of my dreams, despite all odds. Your parenting has taught me the characteristics of grit that have been most helpful to me in my young life: courage, conscientiousness, long-term goal setting, endurance, resilience, optimism, confidence, and striving for excellence. I am truly blessed to have you both in my life - wherever I go, I carry you in my heart.

I dedicate this project to:

My wonderful parents; to children that will never experience the unconditional love, acceptance, support and security that I have received from them; and, to Cathy and Chandré for dedicating their careers to the upliftment of children that need it most.

1

Introduction

The economic costs and public health consequences of violence against children undermine investments in child well-being and erode the productive capacity of future generations (WHO, 2016). Violence prevention is progressively prioritised as a significant public health concern for low- and middle-income countries (LMICs), in which the vast majority of violence-related deaths occur (Mercy, Butchart, Rosenberg, Dahlberg, & Harvey, 2008; Rutherford, Zwi, Grove, & Butchart, 2007; Waters et al., 2004). Parenting interventions have demonstrated effectiveness for violence prevention, and function through two mechanisms: directly, by reducing violence children experience from caregivers; and indirectly, by preventing development of violent behaviour (Coore Desai et al., 2017; Knerr et al., 2013). Although outcome evaluations of such interventions are used to establish effectiveness (Knerr et al., 2013), social network analysis can be used to strengthen the evaluation by testing putative social influence processes which are predicted to be altered by intervention-based changes of attitudes, principles and behaviours (Gest et al., 2011; Veenstra et al., 2018). The present study demonstrates the additional benefit of using social network analysis in combination with traditional outcome evaluation approaches through an examination of a parenting intervention in rural South Africa which includes a novel social activation component.

1.1 Child Development and Parenting Interventions

Early child development influences many aspects of wellbeing, health, competence in literacy and numeracy, criminality, and social and economic participation throughout the life course (Morrison et al., 2014). By providing a positive start for children, improved developmental outcomes will be seen during later childhood and throughout their lives (Morrison et al., 2014). Parenting interventions form an important evidence-based strategy for improved developmental outcomes by aiding the prevention of violence, both against and by children. As such, the objective of this chapter is to lay the foundation for the importance of parenting interventions in terms of both reducing child-directed violence and negative child outcomes. The sections that follow delineate: community-wide parenting interventions that have aimed to improve child-directed violence and child outcomes (in line with the Seven Passes Intervention aims); and policy initiatives that have endeavoured to address risk factors associated with early child development. After which, a detailed description of the Seven Passes Intervention and the theories of change is provided.

1.1.1 Child-directed violence.

Robust evidence indicates a strong correlation between harsh early life experiences and a range of costly societal problems, such as reduced economic productivity, poor school achievement, unlawful behaviour, and poor health (Shonkoff, 2017). Several studies have clearly demonstrated that harsh parenting practices pose a significant risk for child abuse and subsequent poor behavioural outcomes (Gershoff, 2013; Sanders, Burke, Prinz, & Morawska, 2017; Ward, Gould, Kelly, & Mauff, 2015). Severe neglect, also prevalent in low-income communities, appears to be as great a threat to health and development as physical abuse (Shonkoff, 2017). Nevertheless, empowering caregivers with positive parenting skills (e.g., non-violent approaches to discipline) during evidence-informed parenting interventions has significantly reduced child-directed violence in low-income communities (Knerr et al., 2013). Similarly, mental health problems and decreased well-being of caregivers increase the risk of child maltreatment (Barlow, Smailagic, Huband, Roloff, & Bennett, 2012; Yu & Kim, 2016). However, while the areas of the brain dedicated to higher-order functions (e.g., decision-making) are strongly affected by early influences they continue to develop well into early adulthood (Shonkoff, 2017).

1.1.2 Negative child outcomes.

A large body of evidence illustrates that harsh parenting practices produce clear negative effects on child outcomes, including violent behaviour (Gershoff et al., 2017; Mikton

& Butchart, 2009). Childhood exposure to violence, including harsh parenting practices, leaves children at heightened risk for a variety of social, cognitive, and emotional problems, with problems manifested from infancy through young adulthood (e.g., Bogat et al., 2006; Shonkoff, 2017). It also contributes to poor mental health outcomes, poor school performance, reproductive health problems, a compromised immune system, and teen pregnancy (Gershoff et al., 2017).

This is due, in part, to the areas of the brain dedicated to executive functioning being adversely affected by early influences (Shonkoff, 2017). However, although increased exposure to violence during childhood may heighten the risk of social, cognitive, and emotional deficits, the window of opportunity for most regions of development remains open well into the adult years enabling us to remain capable of learning ways to “work around” earlier impacts (Shonkoff, 2017). Thus, these negative behavioural outcomes can be mitigated, at various developmental phases, by protective factors, such as: increased levels of parental involvement, praising positive behaviour, and using non-physical alternatives to discipline (Cluver et al., 2018). Randomized controlled trials (RCTs) show that skills-based parenting interventions lessen youth risk taking and aggressive behaviours (Cluver et al., 2018; Coore Desai et al., 2017; Day et al., 2012; Farrington et al., 2017; Furlong et al., 2012; Lester et al., 2017; McGilloway et al., 2012, 2014; Piquero et al., 2016). Additional evidence, based on developmental longitudinal studies (Black, Yamada, & Mann, 2002) and mediation analyses within RCTs (Eddy & Chamberlain, 2000; Gardner, Burton, & Klimes, 2006; Lachman et al., 2016), reveals similar benefits of improved parenting skills for healthy child development. For example, caregivers with more knowledge on how to recognise their children’s cues for physical and emotional need fulfilment are in a better position to facilitate optimal child growth and development (Perrin et al., 2020).

1.1.3 Community-wide interventions.

Interventions have been shown to produce community-wide effects in studies conducted in high-income countries (Dean et al., 2003; Prinz et al., 2009). The Triple-P intervention is a parenting programme designed to prevent and treat severe child behavioural, emotional, and developmental problems (Sanders, 2008; Sanders et al., 2017). Triple-P encompasses a range of specific interventions, from provision of information via online media, to a programme of ten 90-minute training sessions augmented with home visits and clinic observations, depending on the “level” of intervention desired. Two initiatives delivering the ‘Triple-P’ suite of parenting programmes have been used to produce reductions in child maltreatment community-wide (Dean et al., 2003; Prinz et al., 2009).

The first study randomly assigned nine medium-sized counties in South Carolina, USA to receive the Triple-P intervention, with another nine similar counties being assigned to a control group (Prinz et al., 2009). The counties which received the intervention showed decreases in maltreatment of children aged 0-8 years, as measured by substantiated reports of child maltreatment submitted to the Child Protective Services, numbers of children requiring fostering, and hospital records of admissions for child maltreatment. The second Triple-P intervention, in South-East Sydney, Australia, showed improvements in child behaviour, parental stress, and general health issues, as measured by questionnaires issued to intervention facilitators (Dean et al., 2003). Although this second study did not have a control group, effects continued to be seen at follow-up six months later. However, since the study was only assessed by the intervention facilitators, who could not have been blind to intervention, the validity of the findings may be compromised.

Research indicates that implementing strategies to enhance parenting skills may be particularly effective in contexts where risk factors for child-directed violence are common, such as LMICs (Knerr et al., 2013). Conversely, cold, harsh parenting practices may be endemic in high-risk environments, and may therefore be resistant to strategies which are successful in more typical contexts. A recent systematic review examining the effectiveness of parenting interventions in LMICs concluded that these interventions were associated with increased positive parenting behaviours, and reduced abusive parenting, thereby improving the caregiver-child relationship (Knerr et al., 2013). Thus, evidence suggests that parenting interventions can improve parenting practices, in LMICs (such as South Africa; Cluver et al., 2018; Knerr et al., 2013; Vally, Murray, Tomlinson, & Cooper, 2015), and that these improvements in parenting practice can lead to violence prevention.

1.2 Global and South African Policy Initiatives

Due to overwhelming evidence indicating the damaging effects of harsh parenting behaviour on child development, global efforts have been made to end violence against children by using evidence-based strategies (for a comprehensive overview see: WHO, 2016). The first of these strategies emphasises the importance of legally prohibiting all forms of child-directed violence. The other strategies advocated by WHO (2016) broadly encompass: addressing the attitudes and beliefs associated with physical punishment; creating safe spaces for children; and implementing parenting interventions as strategies to support caregivers, including teaching positive parenting skills such as effective non-violent disciplinary methods.

To date, 58 countries, including South Africa, have prohibited all corporal punishment of children (Global Initiative to End All Corporal Punishment of Children, 2020; Veriava et al., 2017). In South Africa, corporal punishment in schools was banned in 1996 (South African Schools Act, 1996), and effectively outlawed elsewhere when the judgement in *YG v The State* (2016) ruled the ‘reasonable chastisement’ defence unconstitutional, effectively banning all corporal punishment of children. This ruling was strengthened to overrule religiously-motivated child-rearing practices following an appeal (*Freedom of Religion South Africa v Minister of Justice and Constitutional Development and Others*, ZACC 34, 2019). However, the ban on corporal punishment could helpfully be supplemented by global initiatives that educate caregivers on warm, positive alternatives to discipline in order to adequately protect children’s safety (Global Initiative to End All Corporal Punishment of Children, 2020).

To this end, additional governmental involvement in South Africa to protect the rights of children includes: (1) The Children’s Act (which includes provisions for preventing programming to strengthen family relationships, improve caregiving and increase use of non-violent forms of discipline); (2) The *South African Integrated Programme of Action on Violence Against Women and Children 2013-2018*, which includes an emphasis on positive parenting; (3) The Department of Social Development’s (DSD’s) *Draft National Strategic Plan for Prevention and Early Intervention (2013 – 2017)* which focuses on strengthening families in relation to parenting; (4) The *Western Cape Youth Development Strategy* (WCYDS) which emphasises support towards effective parenting skills; (5) The *Western Cape Integrated Provincial Violence Prevention Policy Framework* (2013) which emphasises safe and nurturing parent/caregiver and child relationships; (6) The Western Cape DSD’s *Vision* which includes a focus on parenting (Daly et al., 2015); (7) The Sustainable Development Goals (SDGs) which is a key global policy promoting well-being for all ages and shared responsibility within the household and the family (Heymann et al., 2017); and, (8) The INSPIRE framework developed by the WHO and nine other global agencies, that provides seven evidence-based strategies to further the prevention of violence against children on a global scale, including “Parent and caregiver support” (the “P” in INSPIRE; WHO, 2016; p. 8). As such, it is clear that addressing parenting programmatically falls within the scope of a number of global and national policy frameworks and strategies.

While policy foundations illustrate strong commitments to addressing parenting skills and child maltreatment, there is a dearth of positive parenting programme models for low-resource, high-need contexts (Gould, Mufamadi, Hsiao, Amisi, 2017; Gould & Ward, 2015;

Heymann et al., 2017). Parenting programmes on their own may not reach everyone, and wide reach is essential in a high-violence community. Therefore, the novel parenting intervention investigated here is designed to inform policy makers about wide-reach violence prevention strategies that promote positive child outcomes. Moreover, the intervention aims to address the need for long-term, sustainable child and family wellbeing through an integrated community-level model for supporting positive parenting.

1.3 The Seven Passes Intervention

The present study implemented a cost-effective positive parenting intervention in a rural community in South Africa. The intervention consisted of two components with the specific aim of shifting cold and harsh parenting practices to more warm and positive parenting practices across the entire community. More specifically, this two-pronged intervention process consisted of: (1) a ‘social activation’ process (i.e., a community development process that used social activation or action media methods to mobilise the community around parenting); and (2) four evidence-based, age-specific parenting programmes rolled out after the activation.

The parenting intervention facilitated by Seven Passes Initiative (SPI), an established NGO, aimed to achieve a population shift towards warm, positive parenting in the whole community. The social activation process allowed community members to create a ‘parenting brand’ they wanted to be associated with. Previous studies showed that, because this approach encouraged the collaboration of community members, rather than imposing it on them, the influence of the brand on the designated community context was enhanced (Parker & Becker-Benton, 2016; Peltzer et al., 2012).

The media campaigns were complemented by four age-specific parenting programmes that taught skills directly. When broad media campaigns were combined with specific training programmes, were communicated through multiple channels, and maintained a high exposure over time, their chance of changing attitudes and behaviours was increased (Wakefield, Loken, & Hornik, 2010). By the same logic, the social activation process was theoretically able to augment the impact of the parenting programmes.

1.3.1 The community of Touwsranten.

Touwsranten is a small community in the Western Cape District of South Africa characterized by low socio-economic status. The community, with an estimated population of 2,822 inhabitants (based on Touwsranten baseline household survey data collected by the Seven Passes Initiative, 2016), is designated as a low-income community by the South African Government because the median household income is less than R19,200.00 per

annum (Statistics South Africa, 2018). The median household income in the Western Cape is R29 400 per annum (Statistics South Africa, 2018).

The community is comprised of two language groups, a larger Afrikaans-speaking Coloured community ($N = 2218$, 78.6%), and a smaller isiXhosa-speaking group ($N = 604$, 21.4%) who live in relatively distinct sections of the community. Touwsranten is also home to the Seven Passes Initiative (SPI), that has served the children of the community with after-school homework classes and other activities since January 2008. It is important to note, that this is the first parenting intervention of its kind implemented in the community. However, the NGO's long history in the community may have enabled it to implement the intervention more easily than might have been the case in a community where there was no track record and relationship of trust or mutual respect (e.g., as found when implementing the Sinovuyo Teen parenting programme in South Africa: Doubt et al., 2017).

Touwsranten provides an optimal setting in which to test this combined approach to improving parenting across a whole community for two reasons. First, it has a low level of population change, which simplifies and facilitates the assessment of parenting practices and community level changes over time: since the population does not change much, any changes in parenting in the community are less likely to be because of new residents bringing in new parenting skills (or, indeed, former residents leaving). Second, it has clearly defined geographic boundaries and is relatively isolated (it is a 30-minute drive to other communities); this allows for a relatively 'pure' manipulation of the independent variable in the form of an intervention, which is unlikely to be 'contaminated' by what is being done or occurs in other nearby areas (i.e., it is isolated, and so unlikely to be the target of other interventions).

1.3.2 Social activation in Touwsranten.

The social activation process facilitates the processes of shared learning, with a distinct focus on preventing and reducing health and social risk factors (Parker, 1997, 2003, 2010; Parker & Becker-Benton, 2016; Peltzer et al., 2012). The 'social activation' process was chosen as the first component of the intervention because parenting programmes are expensive to run and never reach an entire community; inclusion of the social activation process was aimed at amplifying, solidifying, and disseminating the positive effects of the parenting programmes. The social activation process consisted of establishing a community-based and community-developed "brand" around positive parenting, combined with evidence-informed positive parenting workshops and programmes to encourage and enable parents to share the information with each other.

In broader terms, the social activation process unfolded by: (1) conducting baseline research with 15 caregivers from the community to develop a community “brand” around positive parenting; (2) encouraging community engagement through Action Media; (3) establishing partnerships with key stakeholders to create violence-free zones for healthy child development; (4) developing communication materials and conducting communication activities to encourage positive parenting behaviour and taking ownership of their community; (5) tracking community engagement through regular process evaluation and monitoring of actions taken by ordinary community members to increase community cohesion and address factors associated with healthy child development; and (6) documenting and disseminating stories of action to serve as examples of what could be done within the community.

More specifically, the social activation (or community mobilisation) process in Touwsranten unfolded, firstly, by conducting a workshop (in February 2016; followed by a meeting in May 2016) with a small group of caregivers from the community. This workshop explored perceptions of positive and negative parenting, reviewed community challenges to parenting and potentials for change, developed songs supporting parenting change in the community, and contributed towards the development of what community members called the “Saamstaan” (Standing together) logo and manifesto to support positive parenting and community change processes. Secondly, we encouraged community engagement through the establishment of a steering committee which held regular meetings over the intervention period to arrange community involvement activities aimed at making the community a safer and more enjoyable space for children (e.g., fund-raisers to rebuild the community park). Many households signed the “Saamstaan” manifesto describing values related to change in Touwsranten, and displayed stickers with the logo on the doors of their homes. The parenting programme attendees were invited to participate in the social activation (i.e., community mobilisation) process. The social activation approach was intended to provide links between community-driven communication and action processes linked to other programmatic interventions to perpetuate the impact of parenting interventions long after their completion through the establishment of community-wide social norms.

1.3.2.1 Social Activation through Action Media.

Action Media is an intervention method for communication that was developed to incorporate community members problem-solving strategies and perceptions into the development and delivery of communication resources to address community challenges related to individual and collective wellbeing (Parker, 1997; Parker & Becker-Benton, 2016).

Action Media fits with processes of participatory engagement, through which “people, not as recipients, but as knowing subjects, achieve a deepening awareness both of the socio-historical reality that shapes their lives and of their capacity to transform that reality” (Parker, 1997, p. 57).

While communication programmes that promote positive parenting may contribute to changes in attitudes as well as access to services, such narrow orientations are insufficient to bring about fundamental changes at both behavioural and social levels (Gould & Ward, 2015). Complementary approaches that include communication, community engagement and family-level interventions are more likely to succeed than those that do not (Black et al., 2002; Peltzer et al., 2012; Wakefield et al., 2010). Combined community interventions that describe this general approach are necessarily culturally situated. As such, care and empirical evidence are required when generalising findings to other community contexts (Simons et al., 2003).

Community mobilisation programmes that link communication and parallel interventions have been shown in some studies to bring about community-level change in response to pressing issues (e.g., gender-based violence, Parker, 2003; Peltzer et al., 2012; Shisana et al., 2008). One example is the Prevention in Action programme to address gender-based violence in South Africa (Parker & Becker-Benton, 2016), which followed a process comprised of interactive discussions during structured workshops with community members to: identify the specific needs and priorities in the community, and the inhibitors and facilitators for transformation; understand the processes and value of knowledge mobilisation in their specific context; and integrate context-specific language and cultural perspectives into appropriate communication concepts (Parker & Becker-Benton, 2016). The method has been used in a number of different marginalised communities in Africa, Jamaica, the Bahamas, and China to address issues such as HIV, gender-based violence, maternal and child health, sanitation, and malaria (Parker, 2010; Parker & Becker-Benton, 2016; Peltzer et al., 2012; Shisana et al., 2008). Furthermore, this replicable social activation process stresses the importance of gaining a deep understanding of the community, in order to develop contextualised media products (e.g., songs written, and wall murals designed, by community members) for the effective dissemination of information (Parker, 1997).

1.3.2.2 Social Norms.

Action Media, and other components of the intervention, aim to bring about community-wide shifts in warm, positive parenting. A full understanding of community-wide shifts towards warm, positive parenting behaviour is likely to include changes in social norms. Norms are defined as attitudinal and behavioural collective views about the suitable

conduct of individuals in specific social settings or as members of groups governed by implicit or explicit rules (Bandura, 1986). According to Bandura's (1986, 1997) social cognitive theory, individuals establish social norms and imitate behavioural patterns by observing the behaviour of individuals with whom they identify in their social milieu. These established norms serve as strong guides of a range of social behaviours, including littering, recycling, drug-taking, violence, drinking and prejudice (for a review see Cialdini & Trost, 1998). People are particularly influenced by the behaviour modelled by individuals whom they classify as similar to themselves, or as 'ingroup members' (Hogg & Reid, 2006; Paluck et al., 2016).

Norms might initially be conceived as interpersonal processes – we are influenced by those we compare ourselves with. However, norms have a much broader impact, which can be understood by the classic work on 'neighbourhood effects' (e.g., Sampson, Raudenbush, & Earls, 1997). Thus, members of a community are influenced by the beliefs and practices in that community (Browning & Cagney, 2003; Cattell, 2001; Christ et al., 2014), by those they do not know personally, as well as by those with whom they have direct contact in their social milieu.

1.3.3 Traditional parenting programmes as part of the intervention.

Four evidence-based, open access, programmes, the Parenting for Lifelong Health (PLH) programmes – for pregnant women, infants, children and teenagers – were offered to caregivers in Touwsrante. PLH initiative is led by experts from: the Universities of Oxford, Reading, Stellenbosch, Cape Town, and Bangor; the World Health Organization; and UNICEF. The programmes are specifically designed for vulnerable families in low-income communities to prevent violence and decrease the occurrence of child maltreatment and poor behavioural outcomes. The four evidence-based parenting programmes were: (1) Thula Sana, a home-visiting programme starting during pregnancy that improves attachment between mother and child (Cooper et al., 2009); (2) a cognitive development book-sharing programme for infants that has been shown to be effective in a randomised control trial (RCT) in Khayelitsha, South Africa (Vally et al., 2015); (3) the Sinovuyo Caring Families Programme for children aged 2-9, for which evidence indicates that it increases positive parenting (an RCT was conducted in Khayelitsha in 2013; Lachman et al., 2018; Ward et al., 2019); (4) the Sinovuyo Caring Families Programme for parents and teens, for which evidence from RCT outcome data indicates that it reduces violent discipline, teen aggression and rule-breaking (Cluver et al., 2018; Cluver, Doubt, Lachman, Tsoanyane, & Ward, 2016). The programmes for parents of children aged 2-9 and teens aged 10-18 are intended to reduce child

maltreatment and child behaviour problems and increase positive parenting. Table 1 and Table 2 provide a detailed overview of the two programmes that most caregivers in the analytic sample engaged with: PLH for Adolescents and PLH for Young Children. A detailed overview of the modules covered in the additional programmes offered to caregivers with infants (Thula Sana) and toddlers (Booksharing) is provided in Appendix A. As a result of the increasing evidence base, the programmes are presently being rolled out in over 20 low- and middle-income countries across Africa, Asia, Europe, and the Caribbean (Alampay et al., 2018).

1.3.3.1 Theory of change and sustainability.

The Action Media findings, in conjunction with the parenting programmes, provide an opportunity to develop an expanded ‘Theory of Change’ that links the integration of community mobilization and parenting programme activities to cost-efficient, sustainable, and long-term changes in community norms and behaviours. The mechanism of change for the intervention programme studied was conceived in terms of diffusion through social contact: parents who attended parenting programmes would tell people in their social network (e.g., their friends, neighbours, and colleagues) what they had learned, and so spread the positive parenting concepts beyond the immediate influence of the programmes themselves. The social activation process would facilitate this diffusion by helping non-attendees become more receptive to the new concepts and by reinforcing those concepts once they had been acquired. On this model, the efficacy of an intervention is linked to the extent to which the community can be fundamentally transformed over time, as well as to the extent to which community members and stakeholders can be drawn in as social and programmatic actors to support long-term change processes.

Table 1

PLH for Adolescents

Session Curriculum (Duration in minutes)	Configuration	Goals	Actions	Home Activities
Introducing the programme & defining goals (160)	Joint	Introduce the programme and establish common ground rules and goals.	Explanation of programme content and format. Participants articulate desired outcomes. Perform guided roleplays that demonstrate the importance of praise in relationships.	Praise your teen/parent once a day. Complete a physical exercise once a day.
Building a positive relationships (180)	Joint	Building a positive relationship while spending time with each other.	Discussion about the understanding of quality time to establish healthy relationships. Complete roleplays demonstrating the negative effect of cell phone use during quality time.	Spend 15 minutes' quality time together doing an activity you both enjoy. Do physical exercise daily (this is reiterated after every session).
Praising each other (175)	Joint	Understand the benefits of praise and practicing ways of praising.	Perform guided roleplays to understand the importance of praising good behaviour. Practice giving praise in a compliment circle. Introducing the Sinovuyo Buddy System (i.e., expanding support network within the group).	Practice giving each other structured praise once a day. Visit your Sinovuyo Buddy at least once a week. Complete a physical exercise daily.
Talking about emotions (170)	Separate	Learn to identify, name and discuss emotions.	Perform roleplays that demonstrate the importance of becoming aware of and acknowledging emotions.	Comment on their emotions and ask their teen/parent about theirs.
What do we do when we are angry? (180)	Separate	Managing anger and solving problems.	Practice understanding and reflection of own feelings, breathing and talking to manage stress and anger in a controlled way. Practice changing thoughts from negative to positive.	When you feel stressed or angry, practice the skills you have chosen. Visit your Sinovuyo Buddy.
Problem solving. Putting out the fire (190)	Joint	Learn the techniques of problem-solving.	Complete the 'Human Knot' teamwork activity. Perform 'freeze and play roleplays' to facilitate discussions about effective problem-solving strategies using different challenging scenarios (e.g., teen staying out after curfew).	Practice solving a problem at home using the steps learned during the session. Visit your Sinovuyo Buddy to discuss problem solving exercise.
Motivation to save and budget (165)	Joint	Budgeting can help reduce stress about money; having goals can help save money.	Read and discuss a story that emphasises the importance of goal setting in order to budget and save more effectively. Discuss ways to alleviate financial stressors.	Brainstorming possible saving goals. Make a visual budget with your family. Visit your Sinovuyo buddy.
Dealing with problems	Separate	Identify problem behaviours and focus instead on the behaviours you want.	Practice clearly defining the behaviour you desire from your teenager focusing on the specific problem that arose.	Practice Taking a Pause before dealing with a problem to prevent conflict. Visit your buddy.

Session Curriculum (Duration in minutes)	Configuration	Goals	Actions	Home Activities
without conflict I (185)			Use praise to get good behaviour. Encourage perspective-taking and empathic skills using roleplays.	Complete a physical warm-up daily.
Dealing with problems without conflict II (135)	Separate	Learn relevant and non-harmful alternatives to violent discipline. Change cultural norms that support violence.	Use guided positive, negative and Freeze-and-Play roleplays to demonstrate ineffective violent punishment and model better training strategies. Practice staying calm and explaining yourself rather than lashing out in anger.	Use “I feel...” statements to explain yourself. Visit your buddy. Complete a physical warm-up daily.
Establishing rules and routines (170)	Joint	Establishing family rules and routines.	Play a game of no-rules to demonstrate the importance of rules and routine within families. Use Negative and positive roleplays and discussions to place further emphasis on healthy routine.	Make two rules for your household and share these with your family. Visit your Sinovuyo buddy. Complete a physical warm-up daily.
Ways to save money & making a family saving plan (185)	Joint	Understand ways to save and the risks of borrowing money.	Complete an activity to establish which saving choice is best (e.g., saving at home, in bank, in a savings group, or buying things to sell). Perform a guided negative roleplay to understand the consequences of taking money from a loan shark.	Present your saving plan sheet to your whole family and have a discussion about relevant saving choices. Visit your Sinovuyo buddy and praise each other for following the saving plan.
Keeping safe in the community (285)	Joint	Make a plan with teenagers to keep them safe in the community.	Mapping and discussing risk areas and safe spaces (see Fig 1 for an example). Perform open roleplay about hanging out at the local shebeen(or other risk areas).	Discuss one safety concern. Make a plan together to protect teens from a safety risk. Visit your Sinovuyo Buddy.
Responding to crisis (285)	Joint	Combine active listening, anger reduction and problem-solving to help parents and teens respond to abuse and crisis.	Perform guided roleplays and activities to demonstrate and facilitate discussions about ways to respond effectively to crisis situations. . Train and practice effective ways to respond to crisis.	Make a plan together to protect teens from a safety risk. Visit your Sinovuyo Buddy. Complete a physical warm-up daily.
Widening the circle of support (160)	Joint	Plan how to move on from here and identify support structures that can help us.	Set up support groups for the future. Creative movement dance celebration for completing the programme. Repeat, discuss, and evaluate the content of the programme.	

Note: PLH is an abbreviation for Parenting for Lifelong Health. The joint and separate configuration means those teenagers and their caregivers either attend the sessions together or apart, respectively. There are three types of role-plays: ‘negative’, ‘positive’ and ‘open’. The open role-plays are ‘open’-ended, and a scenario acted out could be both positive and negative depending on participants’ discussion. Sinovuyo buddies are important during the time of the programme and participants are encouraged to meet up with their buddies as part of their weekly home programme.

Table 2

PLH for Young Children

Session Curriculum (Duration: 180 minutes)	Goals	Actions	Home Activities
Pre-programme home visit.	Get to know caregivers and family dynamics.	Provide an overview of programme.	
Nurture the roots of the tree in your family: special time for you and your child.	Introduce the programme, and discuss ground rules, goals and spending special time with your child.	Emotional check-in and out, and discussion about home activity weekly. Read and reflect on a story that facilitates a discussion about special time with your child. Discuss and brainstorm useful tips, and activities for special time. Facilitators model & parents practice child-directed play.	Spend at least 5-minutes of special time with your child daily - allowing them to lead play. Tell your child the story read in the session. Do Physical Warm-Up upon waking.
Nurture tree trunk: Spend special time with your child; say what you see.	Building your child's vocabulary by describing what your child is doing during Special Time.	Play Mirror Game that facilitates the discussion about caregivers as models of children's behaviour. Introduce "Say What You See" during Special Time Parents practice commenting during Special Time and discuss activity.	At least 5 minutes Special Time with your child each day. Practice using "Say What You See". Play Mirror Game with child. Do Physical Warm-Up and Relaxation.
Special time with your child: naming feelings.	Effectively communicate about our own and our children's feelings.	Problem-solve challenges experienced during home practice Practise connecting emotions to feelings in the body.	Spend Special Time and Say What You See. Practice Naming Your Child's Feelings.
Praising your children.	Using praise and encouragement to increase behaviour we want.	Group practice: Naming Feelings. Brainstorm examples of praise and encouragement Group Practice: Using specific and genuine praise Group Support: Introduce Sinovuyo Partner and Compliment Circle.	Think of desired child behaviours. Choose 1 behaviour in normal daily routine for which to praise your child. Praise, Spend Special Time and say what you see.
Rewards (a little something extra).	Using rewards to encourage good behaviour from our children	Practice praising and rewarding behaviour you want. Brainstorm behaviours to use with, and examples of, rewards. Reward yourself: Creative Dance Party, Circle Sharing about activities you enjoy, and Compliment Circle.	Repeat session 4 home activities in addition to: doing something fun for yourself during the week and meeting with your Sinovuyo Partner.
Train the branches: giving clear and positive instructions to our children.	Learning how to give clear, positive and specific instructions.	Discuss benefits of and steps in Giving Clear Instructions. Practice changing bad instructions into good instructions. Parents brainstorm 3 instructions in pairs & report back to group. Group practice and review tips, for giving instructions.	Repeat session 5 home activities in addition to: reducing the number of instructions that you give your child. Choose 3 instructions for specific behaviours
Keeping our children safe: household rules.	Keeping children safe through household rules.	Discuss places of safety and danger at home and in the community.	Repeat session 6 home activities.

Session Curriculum (Duration: 180 minutes)	Goals	Actions	Home Activities
		Use illustrated stories to facilitate discussions about how household rules and routines can help children thrive. Practise establishing household rules in the group. Choose 1 specific household rule to discuss with your child.	Continue to reduce the number of instructions that you give your child. Have 1 meal together and regular bedtime for child Praise your child, yourself, and your partner.
Managing difficult behaviours.	Learn how to reduce negative behaviour by distracting, redirecting, or ignoring it.	Discuss, brainstorm and practice strategies to ignore, redirect or distract difficult behaviour. Brainstorm strategies to keep calm within the storm. Practise Cool Down Activity.	Repeat session 7 home activities. Practice Ignoring, Distracting, or Redirecting with the 1 challenging behaviour you have worked on today. Practice Cool Down when you feel stressed.
5-minute cool down: supporting household rules.	Dealing with difficult behaviour by using a 5-Minute Cool Down.	Discuss which behaviours cannot be ignored. Introduce 5-Minute Cool Down using an illustrated story Discuss using 5-Minute Cool Down for Breaking a Rule Group practice using 5-Minute Cool Down in different scenarios.	Ongoing activities from previous sessions. Discuss the 5-Minute Cool Down strategy with other adults in the house Introduce the 5-Minute Cool Down to your child and do a practice run.
5-minute cool down: helping children follow instructions.	Using the 5-Minute Cool Down to help children learn to follow instructions. Change cultural norms that support violence.	Use different illustrated Stories & group practice to train caregivers to: (1) use warning for a 5-Minute Cool Down when child initially doesn't follow instructions. (2) Use a 5-Minute Cool Down when child doesn't follow instructions. (3) Use a consequence when child refuses to Cool Down.	Ongoing activities from previous sessions. Read the Golden Rules for a 5-Minute Cool Down Use 5-Minute Cool Down when child does not follow instructions, or after an aggressive or dangerous behaviour that is against a household rule
Consequences and problem solving.	To practice using consequences for difficult behaviour. Explore ways of involving children in problem solving.	Discuss benefits of using consequences as a last resort. And involving children in problem solving. Practise using consequences and involving children in problem solving. Remember coping strategies: Take a Pause, Body Relaxation, Exercise, do something you enjoy.	Special Time, praise and reward good behaviour. Use Consequences, Cool Down, and Ignore strategies for challenging behaviours. Give clear and positive instructions. Establish a new household rule with your child; and meet with your Programme Partner.
Reflection and moving on.	Reflect on one's experience during the programme.	Discuss: experience during sessions and at home, and ways to continue supporting children. Ongoing practice of warm, positive parenting skills taught at the programmes and staying connected to the caregiver social support structures (i.e., caregiver network).	

Note: PLH is an abbreviation for Parenting for Lifelong Health.

1.4 Investigating the Spread of Influence through a Social Network

Social networks are constructed based on inter-related patterns of interactions between actors (e.g., people, organisations, continents) within a defined network (Valente et al., 2005; Wasserman & Faust, 1994). The inevitable evolution of social networks among human actors are prompted by both external factors (e.g., proximity; Preciado et al., 2012) and internal factors (e.g., individual characteristics; McPherson et al., 2001). These resulting social networks have the potential to influence what people within their respective networks consider normative attitudes, beliefs and behaviours (Fujimoto et al., 2018). Therefore, analysing social network dynamics offers valuable insights into human behaviour and increase their predictability (Brechtwald & Prinstein, 2011).

Consequently, a community-wide shift towards warm, positive parenting behaviour is likely to include changes in: social norms, the interplay between individual- and population-level characteristics, and the socialisation patterns within a social network (Shoham, Hammond, Rahmandad, Wang, & Hovmand, 2015). For example, caregivers' social contacts could influence their parenting-related behaviours either directly or indirectly due to the significant reorganisation of social networks around warmer, more positive caregivers. This line of reasoning coincides with that of Christakis and Fowler (2007; see also Shoham et al., 2015), who established that social contacts of individuals influence obesity-related behaviours and that the configuration of social networks therefore shapes who becomes obese.

Norms and influence operate on a range of levels starting with the more basic dyadic and triadic levels (2 and 3 people, respectively; Wölfer et al., 2015). Based on insights gained from social capital theories, mutually connected triads persist over time when strong normative influences are present to ensure their longevity (Kempe, Kleinberg, & Tardos, 2015). According to Coleman's (1988) work on social capital, the strong relationship between norms and social cohesion can often be explained by sanctions of norm violation (Shoham et al., 2015); relevant sanctioning for caregiving might include direct intervention of welfare services in the family, or (less catastrophically) shaming by other parents in the community.

Social norms and social influence also operate alongside diffusion processes: the patterns of communication which result in the diffusion of ideas through a social network depend upon the structure and dynamics of the network. Thus, understanding the interactions between individuals as characterised by their network positions can provide insights into these diffusion processes at the network level (Kempe et al., 2015). For example, individuals more central to the networks tend to act in accordance with larger group norms possibly due to their influence on the group norms; whereas the behaviour of those on the periphery have less

influence on the system as a whole (Shoham et al., 2015). The structure and dynamics of social networks, and the flow of information within them, is formalised in a theoretical and computational approach known as Social Network Analysis (SNA).

In line with the definition of SNA, network theory emphasises the significance of relationships or intermediating processes for explaining the behaviours of network members, beyond their individual attributes (Borgatti & Halgin, 2011). SNA codifies the influences on a person through direct contact with others, allowing researchers to explain the behaviour of members of a social network based on their interrelating ties (see Veenstra, Dijkstra, & Kreager, 2018; Wölfer, Faber, & Hewstone, 2015). These network ties, within a specified network boundary (e.g., a classroom, a school, or, as here, a whole community), have been demonstrated to influence individual behaviour, either directly, vicariously, or on a neighbourhood level (Gremmen et al., 2018). Furthermore, the structure of a network may be associated with the spread of information and, in turn, the types of behaviour endorsed by individuals based on their position in the network. Theoretical network approaches elucidate the feedback between actors and are based on the *structural holes* theory (Burt, 2005), *strength of weak ties* theory (Granovetter, 1973), and, more recently, *complex contagion* theory (Centola et al., 2018). These theories emphasise that atypical connections are inclined to connect dissimilar others and, in turn, facilitate the exchange of novel perspectives, information, or resources within a network. Nevertheless, these theories also provide support for the notion that rapid diffusion of information can be evidenced throughout both clustered communities (i.e., via strong ties: e.g., close friends or family members) and distant communities (i.e., via weak ties: e.g., neighbours or acquaintances; Ghasemiesfeh et al., 2013). Centola et al. (2018) provide a more nuanced perspective on diffusion processes by differentiating between the rates at which simple and complex contagions diffuse through a network. According to their research, simple contagions (e.g., information or disease) may spread through single contact while more complex contagions (e.g., social behaviours or pricey technological innovations) require multiple contacts for the spread of the contagion. The present study draws on these social network theories to understand how the distribution of information in caregiver conversation networks may influence short term behaviour changes that could translate into long term behaviour changes and possibly norm changes (Gest et al., 2011). I propose that this intervention (which aims to diffuse warmer, more positive parenting behaviours and possibly norms throughout a caregiver network: a complex contagion) fits into a complex contagion model for two reasons. Firstly, social norms favouring a behaviour can be inferred from the frequency with which individuals displaying that behaviour are selected as caregiver connections (Yamin et al., 2019). Secondly, positive parenting

behaviours or norms can be framed as a type of complex contagion on a caregiver network (requiring multiple points of contact to effect change), and the propagation of positive parenting behaviours or norms as an information diffusion process. The intervention is therefore conceptualised as an attempt to create lasting and wide-ranging change in the state of the caregiver network. In so doing, there are instances where the recommendations of social norms theory match up to theoretical predictions from information diffusion models, such as targeting interventions to community groups. Yet, irrespective of the specific focus of the various theories, the central construct remains clear: the changes in the collective state of a network indicate whether an intervention created a lasting impact. Ideally, this would mean that nodes changed from undesirable behaviours to desirable ones and did not subsequently return to their previous undesirable state.

SNA facilitates the examination of naturally occurring social structures, which is particularly beneficial for evaluating human behaviour in prevention science (i.e., the application of scientific methodology to prevent dysfunctionality; Tseng & Seidman, 2007).

Gest et al. (2011) argue that SNA makes both conceptual and analytical contributions to prevention science, providing both new concepts with which to express hypotheses and new approaches to testing these hypotheses. They argue that, conceptually, SNA provides “a source of tools for refining programme theories” (p. 349). For example, as they point out, some social interventions (they focus specifically on what they term, ‘prevention programmes’) specifically target change in peer relationships and behavioural norms, which they identify as “setting-level social network dynamics” (p. 349); while other programmes are focused on alternative targets, but as a result of the intervention seeking to change norms or develop certain new skills in individuals who are located in that setting, they result in widespread change throughout the community, ‘setting-level peer effects’. The analytical tools built upon SNA concepts can quantify the contribution of those concepts to effects of interest. Importantly, the methods in many evaluations assume independence of observations, and thus fail to acknowledge interdependencies in the data (e.g., the extent to which Person 1 is influenced by the evaluation may depend on the extent to which their close friend Person 2 is influenced; see Wölfer & Scheithauer, 2014). SNA tools provide researchers with a means to interpret these interdependencies statistically and study them as features of interest in their own right (Tseng & Seidman, 2007). Despite this considerable potential, psychology has been slow to adopt the concepts and measures from SNA into either the *development* or *evaluation* of intervention programmes.

1.4.1 Explicit use of Social Network Analysis in studying interventions.

To my knowledge no studies have employed social network techniques to investigate the impact of parenting programmes on and via social networks. However, several studies have used social network analysis to investigate the impact of school-based bullying interventions (Paluck, 2011; Paluck & Shepherd, 2012; Paluck, Shepherd, and Aronow, 2016; Wölfer & Scheithauer, 2014), as well as social influence of different health related behaviours (Valente, 2017), namely: contraception (Valente et al., 1997), risk for adolescent smoking and substance use (L. Mercken et al., 2010; Schaefer et al., 2013; Valente et al., 2004), and obesity and physical activity (Christakis & Fowler, 2007; Sabina B. Gesell et al., 2013).

Wölfer and Scheithauer (2014) investigated the social processes responsible for the efficacy of school-based bullying prevention programmes within a pretest-posttest control group design. Their study demonstrated that shifts in norms and attitudes regarding bullying behaviour effectively mitigated the social influence of bullies in the intervention group by decreasing their connectedness within the network structure. Paluck and Shepherd (2012) implemented a network-based, peer-influence intervention aimed at mitigating the effects of harassment in a high-school. This study demonstrated that delivering the programme to a highly connected subset of students influenced the norms across the entire student body. Paluck et al. (2016) validated the previous findings across 56 US schools. By employing social network techniques they were able to identify the most influential students in a school setting. A subset of those students was directly targeted to participate in a study focused on shifting the norms associated with peer conflict. The study demonstrated that by encouraging the *social referent* sample (i.e., individuals in a network characterised by high centrality and salience; Hogg & Reid, 2006; Paluck et al., 2016) to take a stand against peer conflict they were able to decrease the overall levels of conflict by an estimated 30%. Moreover, the students that were directly exposed to social referent students were most likely to change their attitudes regarding normative levels of conflict among their peers. These findings demonstrate students' willingness to adjust their behaviour based on behaviours endorsed by centrally located students which reflect the accepted norm.

1.5 Rationale for the Present Study

This study is critical for understanding how a parenting intervention with aspirations of community-wide change might achieve the goal of impacting on an entire low-income community in South Africa. As explained in detail above, the aim of the intervention was to bring about widespread change in parenting practices through the combination of community-wide social activation workshops and events, followed by four age-specific parenting

programmes. It is essential to note that this was intended as a low-cost strategy to provide a parenting intervention with a specific focus on mitigating the deleterious effects that harsh parenting can have on healthy child development; and, consequently, aims to alleviate the burden of violence that plagues South Africa (Gould et al., 2017). Literature has specifically identified the need for researchers to study how behavioural changes influence network dynamics in a longitudinal investigation of the efficacy of an intervention (Veenstra et al., 2013, 2018). As such, the present research endeavours to address this need via a longitudinal investigation into the evolution of the network structure. The network is expected to evolve due to the improvements in parenting behaviour brought about by direct exposure to programmes and a social activation component encouraging socialisation around parenting to amplify the dissemination of information.

In social network analysis terminology, the community of Touwsrante is a bounded network of ‘senders’ and ‘receivers’ of social influence (Brechtwald & Prinstein, 2011). Arguably, the parenting intervention will succeed to the extent that it successfully influences ‘opinion leaders’ in the community, who then influence others (Valente & Pumpuang, 2007). Thus, influence will come, initially, from the intervention directly; but then latterly via indirect influence, whereby the effects of the intervention are mediated via other social referents or significant others, especially those who are particularly important members of the community (i.e., central network members), and those whom respondents see as similar to themselves and nominate as members of their own small-scale social network of people whom they consult on parenting issues. Social network analyses allow the examination of these influence effects at various levels of granularity depending on the specifics of the technique employed.

Moreover, any intervention aimed at changing the norms and behaviours within a whole community, as the Seven Passes programme is, should expect to see not only a mean-level improvement in parenting scores (its main aim), but also a significant reorganisation of the social structure of the network. The rationale for predicting a significant reorganisation of the caregiver communication network in association with the intervention is as follows. Caregivers who (a) score higher on positive parenting, (b) attend the programme (more consistently), and (c) are more influenced by the social activation process (three measures between which we should anticipate significant overlap) may see an increase in their salience and potential social influence over time. Their opposites (lower score on parenting, non-attendees, not influenced by social activation) may see a decrease in their salience and potential social influence post intervention (if the intervention did bring about significant shifts towards warmer, more positive parenting behaviour). For example, caregivers who attend parenting programmes

should become more salient in the caregiver contact network because: (a) they will have more relevant parenting information to share; (b) caregivers that are proactively involved in an exciting or noticeable movement in the community such as the Seven Passes parenting intervention will have increased opportunities to become noticeable; and, (c) if caregivers attend the parenting programmes and report that their parenting behaviours have become more positive, they may be modelling positive parenting practices or dispensing information which could increase their potential social influence and network salience. Wölfer and Scheithauer's (2014) work supports these predictions with respect to expected, and actual, reduction in the powerful network position and social influence impact of bullies, as a result of a network-based anti-bullying programme in schools. Moreover, in a fundamental practical way, both the social activation activities and the parenting programmes may bring caregivers together in new ways that may not align with their existing networks. As a result, both intervention components have the potential to then foster discussions about parenting (especially in the programme groups, where this is a key part of the intervention). Caregivers might become more authoritative over time, or develop new relationships with people they trust who were in the programme groups with them, which could alter their network structure. As such, various intervention components and associated factors could effect change in the caregivers discussion networks.

The SNA approach is particularly relevant and valuable in the context of the intervention programme in Touwsranten because the intervention specifically aims to promote warmer, more positive parenting in *all* the individuals within the community. Gest et al. (2011) point out that such setting-level effects often come about as a result of change in social networks. If network dynamics constitute the mechanism by which individual-level outcomes come about, obtaining a complete understanding of the consequences of the intervention will depend critically upon being able to examine and quantify those network dynamics. To analyse the role of conversational/interpersonal ties as pathways for spreading intervention effects in Touwsranten, I make use of SNA (in the form of nominations of people with whom respondents discuss parenting), together with self-report measures of parenting-related outcomes (from caregivers and their children) with the main aim of disentangling whether caregiver communication network changes improved parenting practices or whether reported improvements in parenting practices improved caregiver information networks (specifics delineated in Hypotheses below; and in Disentangling socialisation and selection effects.⁶⁰). For example, SNA was used to disentangle whether network changes improved parenting practices (i.e., selection effects) or whether reported improvements in parenting practices improved caregiver information networks (i.e., socialisation effects). Social network analysis techniques can be used in such settings to assess

(a) the direct and indirect influence of the parenting programmes on parenting behaviour, and (b) how that can shift community-wide parenting practices or norms.

1.6 Hypotheses

The social activation process, combined with delivery of intensive parenting programmes, is intended to shift parenting in the community to a more warm and consistent form. The intervention sets out to bring about increases in positive parenting behaviour which is comprised of: parental involvement, monitoring and supervision, positive parenting, consistent discipline, low corporal punishment scores, setting limits and supporting positive behaviour. Thus, the term ‘warm, positive parenting’ refers to warmth and positivity, consistency, non-violent punishment, and supervision of the child (Gould & Ward, 2015; Patterson, 2002). Analyses will be undertaken to assess the extent of any such changes in the community as a whole, in the subset of the community who attended a parenting programme, and in those who participated in the social activation process activities. Also of interest is the change in network structure, measured by caregivers’ centrality parameters; this is done by using two measures – their number of incoming (‘indegree’) and outgoing (‘outdegree’) connections convey their position in and their role as a sender and recipient of influence in the network. I make use of SNA (in the form of caregiver communication networks), together with self-report measures of parenting-related outcomes to: trace the extent to which both the social activation process and the parenting programmes are effective, in part, via their diffusion throughout the community. I explore the extent to which the communication network changes as a consequence of those who attend programmes or exemplify improved parenting behaviour, and how far a caregiver’s position in the communication network can explain the change in their parenting behaviour.

Hypothesis-testing for the intervention (i.e., the social activation process plus the parenting programmes) was based on there being available three waves of community-wide measurement: (1) baseline assessment just prior to introducing the intervention (January, 2016); (2) assessment of the programme 18 months after beginning programme implementation (July, 2017); (3) follow-up assessment 36 months after beginning programme implementation (February, 2019). For the purposes of the present study the results are separated into two sections: the first pertaining to the first two successive waves of data collected; and the second relating to all three waves of data. This approach allows for maximising the sample size when inspecting the initial impact of the intervention, while also allowing for an analysis of the longer-term evolution of these associations.

1.6.1 Waves 1 to 2.

H₁. Parenting practices will improve for all caregivers in the analytic caregiver sample, irrespective of programme attendance. Specifically, if successful, the intervention should promote higher improvement scores for caregivers over time (i.e., improvement on parent scores from baseline to immediate post-test) across the whole community. Whether or not this result is found, the intervention is still likely to have greatest impact on the relatively small subset of caregivers who choose to attend one or more of the age-specific parenting programmes. The specific hypotheses are thus:

1a. The intervention will be associated with increased overall parenting scores from wave 1 to wave 2 across all female caregivers in the community.

1b. The intervention will be associated with improvements in overall parenting scores especially (or if less successful, perhaps only) for those female caregivers who do, versus do not attend, a parenting programme, across time.

1c. The intervention will be associated with improvements in overall parenting scores especially for caregivers who received a high dose of the social activation process.

H₂. The amount of indirect exposure to the intervention, due to the change in network centrality (indegree and outdegree; see Table 3 for a description) and the number of connections to programme attendees, will be associated with improvements in parenting.

Centrality is important because it reflects the actual state of the network (Opsahl et al., 2010). The overall goal is to produce an actual state of the network that is organised around programme attendees and more warm, positive caregivers. I acknowledge that using the absolute network centrality parameters would be useful to assess that. However, in order to detect whether this reorganisation is happening in response to the intervention it is more effective to look at the association between predictors and change in centrality because this presents a more level playing field between caregivers by partially controlling for their initial network positions (R Wölfer & Scheithauer, 2014).

H₃. After the intervention, caregivers who attended parenting programmes will be associated with more network centrality (i.e., network salience, indegree-centrality) and higher potential for social influence (i.e., outdegree-centrality) over time.

This hypothesis reflects the interest in the association between informational social influence and involvement in the parenting intervention. Producing an intervention that results in attendees improving to discuss positive parenting behaviour with one another, as well as discussing with non-attendees, is non-trivial in practice (e.g., Wölfer & Scheithauer, 2014). Having these discussions remain salient enough that people remember and report them when

interviewed months later is even less trivial. In addition to the impact of the parenting programmes, the potential effect of the social activation process could bring non-friends together and so increase the caregiver discussion contacts and the diffusion of positive parenting information and behaviour throughout the network.

1.6.2 Waves 1 to 3.

1.6.2.1 The importance of the third wave of data.

The intervention continues throughout the data collection of all three waves, and thus data collection at wave 3 is important for at least three reasons. First, it can assess whether any change that occurred at wave 2 has been sustained. Second, it can verify initial results in wave 2 through comparison with individuals in a similar position at wave 3, as in a time-lag sequential design. Third, given that the intervention is conceived as having its impact by diffusing attitudes and practices through the network, such diffusion might require *time*. Even if the intervention appears to have a weak initial association, it could become more strongly associated with parenting in the longer term if those who are most exposed to the intervention are associated with positive influences on the attitudes and behaviours of those with whom they discuss parenting (i.e., a positive sleeper effect; Bayer, Hiscock, Ukoumunne, Scalzo, & Wake, 2010; Whittingham, Sofronoff, Sheffield, & Sanders, 2009).

Sleeper effects imply that caregiver-child interactions may not have been fully established during the intervention, and may continue establishing themselves after the intervention, leading to gradually increased intervention effects over time (van Aar et al., 2017). The rationale for the expected lagged effects, in the present study, is that: certain positive parenting skills require practice (e.g., setting limits or supporting positive behaviour) to implement habitually (to the extent that they will break coercive caregiver-child response patterns; Lindsay et al., 2011). Moreover, children may need some time to adjust to the newly implemented skills (e.g., taking time-out or receiving praise), and may even be resistant to those changes at first (Webster-Stratton & Reid, 2010). As such, caregivers in parenting programmes (e.g., the Incredible Years Programme) are often specifically informed not to expect immediate changes in their children's behaviour (F. Gardner et al., 2019; Leijten et al., 2016; van Aar et al., 2017).

H₄. The intervention will be associated with improving parenting behaviour in the entire community. If successful, the intervention should be associated with an increase in positive parenting behaviour for caregivers over time (i.e., improvement on parenting scores from baseline to immediate post-test and from baseline to delayed post-test). An extension of the

specific hypotheses pertaining to the longer-term association between the intervention and improvement is thus:

4a. There will be a significant association between improvement in mean positive parenting scores from wave 1 to wave 3.

4b. The improvements in parenting scores from wave 1 to wave 2 will be sustained or enlarged at wave 3.

Caregivers who attend a parenting programme will show greater improvement in positive parenting scores than those who do not attend a parenting programme:

4c. Caregivers directly exposed to the age-specific parenting programmes will be associated with greater improvements, even if the benefits of the intervention reach the entire community.

The social activation component is expected to be associated with the amplified spread of positive parenting information and facilitate skill acquisition in the caregiver community.

4d. There will be an association between caregivers reporting improvements in parenting scores and those reporting a higher social activation dose.

Children's reports of their caregiver's positive parenting behaviour are associated with the validity of caregivers' responses:

4e. The relationships in H4a, and H4b will be mirrored when using the children's reports of their caregiver's behaviour.

H₅. *Selection*; the intervention will be associated with an structurally altered social network:

5a. Caregivers attending parenting programmes will be associated with higher levels of potential influence in the caregiver contact network.

5b. There will be an association between whom caregivers select to speak to about parenting and those caregivers' levels of parenting behaviour score.

5c. Caregivers with greater improvements in positive parenting scores will be associated with greater influence in the caregiver network.

Social influence can come from varied sources (family, important others, the class leader) and can have an impact on numerous manifestations of behavioural involvement (Gest et al., 2011; Veenstra et al., 2013). Moreover, research demonstrated that positive influence comes from peers and individuals able to lead others (Sanders et al., 2017). As such, it is reasonable to predict that those reporting greater improvements may be more competent or confident caregivers who could exert greater levels of influence on their discussion network.

H₆. *Socialisation*; caregivers who are connected to each other will behave more similarly (in terms of positive parenting) to each other than would be expected by chance. These effects are likely to be associated with a combination of parenting norms (and their change) and the social structure of the network:

6a. Caregivers' positive parenting behaviour scores will be associated with increased similarity to the average scores of their contacts in the caregiver network.

6b. Parenting scores of caregivers will be associated with greater improvements if they are connected to caregivers that have high parenting scores.

6c. There will be an association between greater improvements in caregiver behaviour and the number of caregivers they are connected to who attend programmes.

2

Method

2.1 Research Design

The study used a longitudinal design in which three waves of data were collected. Intervention activities, social activation workshops and parenting programmes were run intermittently between all three waves of data collection. All measures were assessed at all three waves.

Ethical approval for the parenting intervention was obtained from the University of Cape Town, for the three-year project, including the rolling out of the four parenting programmes and the subsequent community-wide surveys (reference number PSY2015-049). My research proposal was submitted as an amendment to the intervention protocol, and covered the collection and analysis of social network data (reference number PSY2016-003; Appendix B).

2.2 Participants

Dwellings in Touwsrante are organised by plot. A total of 670 plots were visited (762 households – because there is sometimes more than one household on a plot). There were a total of 481 households in which children were living. The number of children living in the identified households in Touwsrante (481; 63.1% of 762) ranged from one to six ($M = 1.74$; $SD = 1.12$). Based on reporting from the caregivers who completed the community survey, we identified 838 children in total in Touwsrante: 22 aged 4-7 months, 159 aged 12-30 months, 325 aged 31 months – 9 years, and 332 aged 10 and older.

Participants were recruited in a door-to-door survey conducted in January 2016. All caregivers living in Touwsrante with children aged under 18 were invited to complete a household survey and parenting questionnaire which assessed factors influencing their parenting and children's behavioural outcomes as well as their social network. I, and my colleagues in the research team, identified 506 caregivers who met the criteria for an interview (from a total of 1,979 adults; in a number of cases, there is more than one family per household). In other words, of the 1,979 adults identified in the community, 506 caregivers (one per family; if there were two, whichever was willing, and available for interview) were invited to complete a questionnaire (25.6%), and a total of 473 were interviewed (23.9%; and also invited to participate in the parenting programmes) – 411 mothers and 62 fathers.

Only 33 people refused to be interviewed, a refusal rate of 6.9% (which is very low – generally refusal rates are expected to be around 15-20%; Battaglia, Roloff, Posner, & Freund, 2007; Ward, Gould, et al., 2015). The low baseline refusal rates may have been due to caregivers' initial curiosity, the promise of a reward for their participation, and the enumerators' diligent pursuit of the caregivers' participation. For example, the enumerators would revisit the caregivers that initially declined to participate at more convenient times, which usually increased their willingness to participate in survey research. It is important to note that enumerators were paid per completed questionnaire, thereby motivating them to accommodate the needs of the specific caregivers they were assigned to survey.

Each caregiver selected their eldest child under 18 years old as their 'focus child', and completed questionnaire responses about that child. Ages of the focus children of the caregivers who were interviewed were broken down into categories of: aged 6-18 (287; 60.6%), aged 1½-5 (135; 28.5%), and infants under the age of 1½ (51; 10.8%) based on the structures of the different versions of the questionnaires available for caregivers with different aged children (Essau et al., 2006; McEachern et al., 2012). Of the children who were the focus of the interview, 240 (50.7%) were male and 233 (49.3%) were female. The sample included 365 Afrikaans- and 108 isiXhosa-speaking caregivers.

Those All caregivers with children aged between 1½ and 18 years (422; 89.2% of interviewed caregivers) completed a section of the questionnaire which assessed their parenting behaviour, factors influencing their parenting, and their child's behaviour. Caregivers with a focus child aged 1½ to 5 completed the Parenting Young Children questionnaire (PARYC), while caregivers with a focus child aged 6-18 completed the Alabama Parenting Questionnaire (APQ). Caregivers with a focus child under 1½ years did not complete a parenting section (due

to the structure of that specific questionnaire), but did complete other parts of the questionnaire assessing risk factors for cold, harsh parenting behaviour.

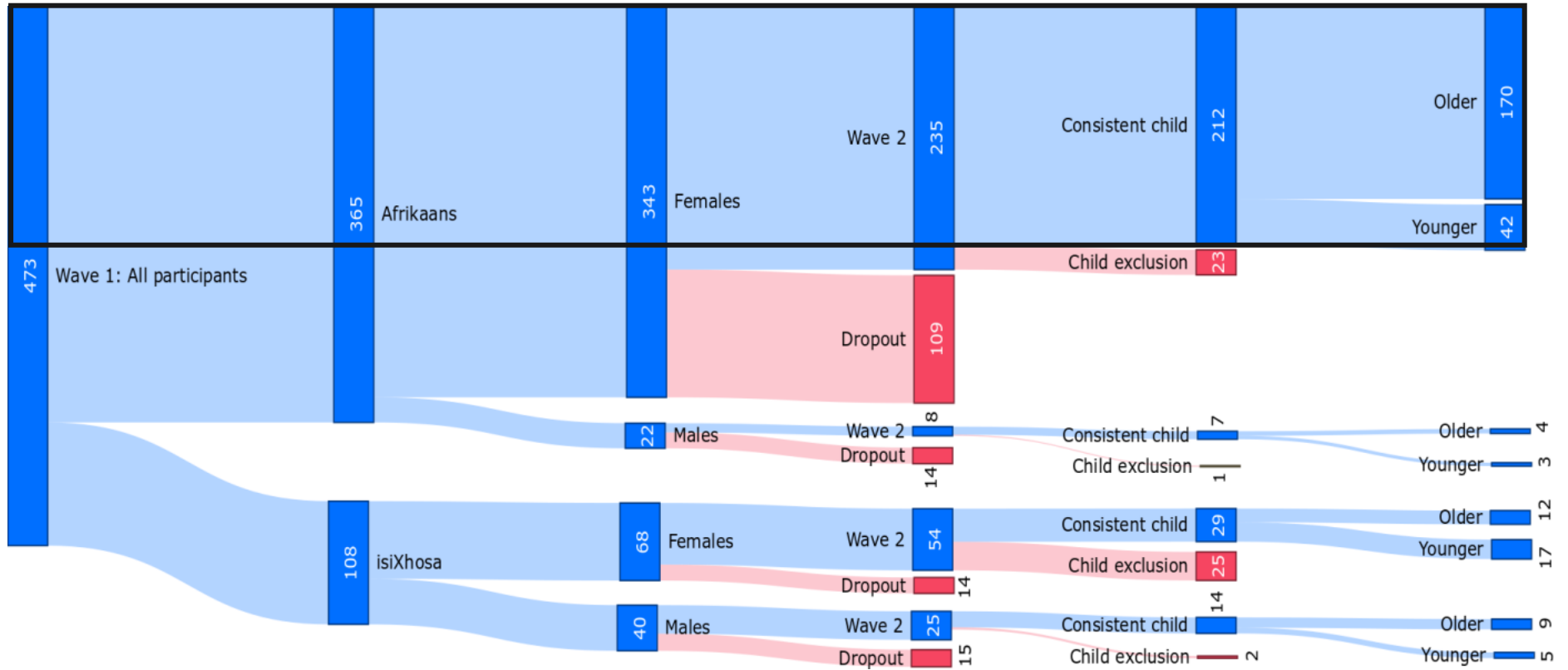
Children over the age of 10 whose caregiver had completed a questionnaire (185), and whose caregiver gave permission for the child to be interviewed (153; 82.7% of those asked; 46.8% of children aged 10-18 years), were approached to complete a questionnaire exploring the child's experience of their caregivers.

2.2.1 Analytic sample.

The final analytic sample for the first two successive waves (Figure 1) included only Afrikaans-speaking female caregivers for reasons of data integrity: the isiXhosa-speaking caregivers appeared to interpret the questionnaires in an unexpected manner (see section Confirmatory Factor Analysis results.); and no isiXhosa-speaking participants attended parenting skills training programmes. This sample consisted of 235 caregivers that were able or willing to answer questions about parenting risk factors. The network boundary for social network analysis was drawn around these 235 caregivers: 227 of these caregivers in the analytic sample answered questions about a child over 1½ at baseline, and 212 caregivers answered questions about a focus child that was consistent (i.e., remained in the same age category) from wave 1 to wave 2. Of the consistent focus children, 42 were aged 1½-5 years (19.8%) and 170 were aged 6-18 years (80.2%). Reasons for child exclusion included: children aging into a new age group, or caregivers answering questions about a different focus child. Of the caregivers with focus children aged 6-18 years, 88 (51.5%) had focus children who were over 10 years old and were permitted to complete the assessment.

The final analytic sample for all three waves of data, consisted of 203 caregivers, of which 191 answered questions about a child over 1½ at baseline. Of the 191 focus children that remained in the sample across all three waves: 17 (8.9%) remained in the younger age category, 148 (77.5%) remained in the older age category, and 38 (19.9%) children started off in the younger category and aged into the older category. Variance and attrition analyses are presented in the Results section.

Figure 1. Final analytic sample (black outline) and exclusions.



2.3 Procedures

Participants were recruited in a door-to-door survey conducted in January-March 2016. A designated member of each household (usually a senior member of the household that was able to report on the family structures within the household; e.g. who formed part of the nuclear family) was asked to complete a household report form (Appendix C) and, if they met the criteria for participation, a written consent form and parent survey that took approximately two hours. Caregivers that met the criteria were asked to identify their oldest child (under the age of 18), and, with that child in mind, complete the survey. Data for the baseline measures were collected in January-March 2016, using an Android app (designed by *Mobenzi*) to present a survey comprising multiple elements of which the main measures analysed are detailed below. Wave 2 data were collected in July-November 2017, and wave 3 data were collected in February-April 2019. Social Network Questionnaire data were collected with paper surveys at wave 1, and using *Mobenzi* at waves 2 and 3. All the measures used in this study were translated into Afrikaans and isiXhosa and translations were checked by back-translation, and then pilot-tested with a few volunteers from a local child protection organisation before being finalised. A webinar was conducted to present the wave 1 – wave 2 results to the Touwsrante community (October 2018) after which a discussion regarding the presented results was facilitated.

For all questionnaires, where the number of observations allowed, metric variance testing was used to establish whether the responses were appropriately similar to those described in the questionnaire documentation. The results of these analyses are reported in the Results section.

2.3.1 Mobenzi training and programming.

Digital technology advances provide efficient alternatives to paper questionnaires, thereby reducing time and errors in data transcription (Ballivian et al., 2015). The parent, child and social network surveys were designed for and deployed onto android phones, which made it possible to link each fieldworker to a specific phone and to manage the daily survey submissions and analytics on the Mobenzi web console, thereby facilitating cleaning and data analysis in real-time (see Mobenzi.com for more details).

2.3.2 Fieldworker recruitment and training.

Focus group discussions conducted in 2015 revealed that community members would feel more comfortable sharing sensitive information with individuals they felt somewhat familiar with, and who were trusted. As such, fieldworkers were recruited where possible from the community of Touwsrante. Fieldworkers were trained in the ethics of fieldwork, to

conceptually understand the questionnaire, to manage data, and to use cell phones for data collection.

2.4 Materials and Measures

The measures used were: a household report form (Appendix C: Household Report Form); and a questionnaire, programmed onto Mobenzi, comprised of several different measurement instruments (Appendix D) that will be addressed in detail in the following section. The main outcomes of interest were derived from the caregivers' self-reports of their: parenting behaviour, children's behaviour, risk factors associated with cold, harsh parenting and child behaviour outcomes, and their social network activity. Data regarding the "dose" of the intervention received (number of sessions attended) were obtained from the social activation measure and programme attendance spreadsheet.

2.4.1 Household report forms.

Prior to conducting the baseline survey, to determine the eligibility of community members to participate in the study, as well as provide other valuable information about the community as a whole, all households were asked to complete a household survey. The survey required a household member to specify the number of families living on the property, and provide detailed specifics about household composition (i.e., the names and ages of each individual, their relation to each other, and, if applicable, details about pregnant household members). These data were not collected again in waves 2 and 3.

2.4.2 Demographics.

Demographic information collected about participants included: participant's gender and age, relation to focus child, highest educational qualification obtained, marital status, employment status, sources of income, number of individuals that play a caregiving role to child, number of individuals living in the household and their ages, number of working caregivers living in the household, whether there is an adult present in the home all day, as well as number of children living in the home, child age and gender, the school child attends and their current grade.

As part of the sources of income information, participants reported which of three means-tested government grants they received as a measure of poverty. These grants were the Disability Grant (up to ZAR 1780 (USD \$120)), awarded for those deemed unfit to work due to disability and earning less than ZAR 6510pcm (around \$440); the Child Support Grant (up to ZAR 430pcm (around \$30)) for those with children earning up to ZAR 4000pcm (around \$270); and the Older Person's Grant (up to ZAR 1780pcm (\$120)) for those over the age of 60 earning less than ZAR 6510pcm (\$440).

2.4.3 Caregivers' self-report measures of their own parenting.

The Alabama Parenting Questionnaire (APQ) Global Parent Report was used to assess the parenting behaviour, related to youth and conduct problems, in caregivers of children 6 -18 years old in this study. It is specifically designed to assess parenting associated with conduct problems and delinquency in youth (e.g., “You slap your child when he or she has done something wrong”; “you hug or kiss your child when he or she has done something well”). The APQ is a 42-item questionnaire for caregivers (Essau et al., 2006), and has five different subscales, namely: (a) poor supervision and monitoring, (b) parental involvement, (c) positive parenting, (d) inconsistent discipline, and (e) corporal punishment (Frick et al., 1999). Items are rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

The Global Parent Report (i.e., questionnaire) of the APQ has shown adequate reliability, with Cronbach's alphas greater than $\alpha = 0.70$ for all subscales excluding poor monitoring and supervision ($\alpha = 0.67$) and corporal punishment ($\alpha = 0.55$) in an Australian study (Dadds et al., 2003). Furthermore, the APQ has been found to have moderate to adequate levels of reliability and validity in studies conducted in the US (Shelton et al., 1996), Australia and Canada (Elgar et al., 2007). In the present study, the Cronbach's alpha scores for the subscales mirror the findings in the Dadds et al. (2003) study: with Cronbach's alphas greater than $\alpha = 0.70$ for all subscales excluding poor monitoring and supervision ($\alpha = 0.62$) and corporal punishment ($\alpha = 0.47$). Due to corporal punishment being an important outcome and the reliability being relatively low, each item of that subscale was analysed separately.

Two subscales of 14 items ('setting limits' and 'supporting positive behaviour') from the Parenting Young Children Scale (PARYC; McEachern et al., 2012) assessed the parenting behaviours of caregivers of children aged 18 months to 5 years (e.g., “How many times in the past month did you teach your child new skills?”; “How many times in the last month did you stick to your rules and not change your mind?”). These subscales had response options of 1 (*never*) through 7 (*almost daily in the past month*). McEachern et al. (2012) demonstrated the validity of the PARYC scale among high risk caregivers from rural communities in Charlottesville and Pittsburgh, USA. The cross-cultural and test-retest validity of the PARYC measure has been demonstrated in the South African context (Lester, 2015). In the present study, the Cronbach's alphas were greater than $\alpha = 0.80$ for both subscales.

2.4.4 Caregivers' self-report measures of their children's outcomes.

The Child Behaviour Checklist (CBCL) for children aged 6-18, and the pre-school CBCL (for children aged 1½ – 5) were used to assess children's emotional and behavioural problems (Achenbach & Ruffle, 2000; Ebesutani et al., 2010). The CBCL for children aged 6

to 18 is a 118-item self-completion scale for caregivers about the behaviour of their child (e.g., “drinks alcohol without parents’ approval”, “argues a lot”, and “overeating”). The item on this scale had response options of 0 (*not true*) through 2 (*very true or often true*). The preschool Child Behaviour Checklist is a 99-item self-completion scale that assesses child outcomes for children 18 months to 5 years (e.g., “can't concentrate”, “can't pay attention for long”). These scale items also had response options of 0 (*not true*) through 2 (*very true or often true*). Initial studies suggest that the CBCL is robust in a variety of cultural contexts namely American, Dutch, Mexican, and Norwegian (Albores-Gallo et al., 2007; Nøvik, 1999), and has demonstrated its capacity to distinguish between children with or without internalising and externalising symptoms across different contexts (Albores-Gallo et al., 2007; Nøvik, 1999). Furthermore, the internal consistency and test-retest reliability of the CBCL/4-18 scales were rated good to excellent in several samples – for instance, American, Mexican, Chinese, Norwegian and Spanish (Achenbach & Ruffle, 2000; Albores-Gallo et al., 2007; Nøvik, 1999; Rubio-Stipec, Bird, Canino, & Gould, 1990). In the present study, the Cronbach’s alphas were greater than $\alpha = 0.90$ for both the CBCL for children aged 6-18 and the pre-school CBCL (for children aged 1½ – 5). As such, the CBCL is a robust measure for assessing children’s behavioural and emotional problems in a variety of cultural and language settings including South Africa (Calkins and Dedmon 2000; Gross et al. 2006; Mesman, Bongers, and Koot 2001; Nöthling et al. 2013).

2.4.5 Caregivers’ self-report measures of parenting stress.

The Parenting Stress Index short form (PSI-SF; Abidin, 1990, 1995) was used to assess parenting stress. This is a 36-item self-completion scale that screens for stress in the parent-child relationship (e.g., “my child is not able to do as much as I expected”). It yields outcomes on three subscales, namely: (1) Parental Distress, due to personal factors such as anxiety, depression or conflict with an intimate partner; (2) Parent-Child Dysfunctional Interaction, indicating parental tolerance for child’s conduct and the level of dissatisfaction with their interactions; and (3) Difficult Child, assessing caregivers’ perceptions of their child’s degree of autonomy (Haskett et al., 2006). These subscales had response options of 1 (*strongly disagree*) through 5 (*strongly agree*).

The PSI-SF is a well-researched measure that has been used extensively in a variety of contexts and samples, namely:

- low-income, urban African-American mothers ($n = 191$) of infants and toddlers recruited from a primary health care facility (Hutcheson & Black, 1996);

- children with disabilities ($n = 725$) from nine different states in America (Innocenti et al., 1992; Smith et al., 2001);
- preschool children ($n = 196$) from low income families in rural United States (Reitman et al., 2002);
- the caregivers of children ($n = 263$) identified by the New England Consortium of metabolic programmes as suffering from genetic disorders (Waisbren et al., 2004);
- Caucasian and African American families raising children 8–54 months old with Cerebral Palsy (Button et al., 2001).

Acceptable test-retest reliability (an average score of .76) and high internal consistency (.85) were identified in the original validation study in rural and urban areas of Virginia (Abidin, 1995). The measure has been found to have good convergent and discriminant validity in non-clinical samples (Calkins & Dedmon, 2000; Irwin et al., 2002) and clinical samples (Silovsky & Niec, 2002). Moreover, the PSI-SF has been found to have high test-retest reliability and validity in a sample of children that are HIV positive in South Africa (Abidin, 1995; Potterton, Stewart, & Cooper, 2007). Furthermore, changes in PSI-SF scores have been reported after the longitudinal evaluation of a parenting intervention programme in rural (Cowen, 1998) and urban (Wolfe & Hirsch, 2003) samples. In the present study, the Cronbach's alphas for the PS-SF subscales were greater than $\alpha = 0.90$.

2.4.6 Caregivers' self-report measures of their mental health.

The General Health Questionnaire (GHQ) provided a measure of respondents' mental health. More specifically, it served as a screening tool to detect symptoms related to (1) depression, (2) anxiety, (3) somatic problems and (4) social withdrawal (Goldberg & Hillier, 1979). The questionnaire consists of 28 items (e.g., "Have you been getting scared or panicky for no good reason?" "Have you been getting edgy and bad tempered?"; Goldberg & Hillier, 1979). The response options were: 1 (*better than usual*), 2 (*same as usual*), 3 (*worse than usual*), or 4 (*much worse than usual*). Raw scores, the sum of the responses to all items, ranged from 28 to 112. Recoded scores were calculated using a binary scoring method where an item score greater or equal to 3 is coded as 1 and lower scores coded as 0. These scores are then summed and a total score greater than 4 indicated 'psychiatric caseness' (Goldberg & Hillier, 1979). The reported Cronbach's alpha coefficients for the GHQ fall in a range of 0.79 to 0.95 in numerous studies (Jackson, 2007). Furthermore, the instrument has been shown to be a reliable and valid measure of psychological well-being in over 38 different contexts (Jackson,

2007), including: The Netherlands, where the original validation study was conducted (Goldberg & Hillier, 1979), India (Sriram et al., 1989), Spain (Lobo et al., 1986), Germany (Schnitz et al., 1999), Greece (Fichter et al., 2004), and the U.K. (Jones et al., 2006). In the present study, the Cronbach's alphas for the PS-SF subscales were greater than $\alpha = 0.90$.

2.4.7 Caregivers' self-report measures of Intimate Partner Violence

The 16-item Short Form of the Revised Conflict Tactics Scale (CTS) (Straus, Hamby, Boney-McCoy, & Sugarman, 1996) was used to assess levels of intimate partner conflict and violence. These items, exploring psychological and physical aggression, ranged from mild to severe forms of aggression and violence (e.g., "My partner insulted or swore at me"; "My partner used a gun or a knife on me"). The CTS is the most widely used measure of intimate partner violence (IPV) (Newton, Connelly, & Landsverk, 2001; Straus et al., 1996). The measure has been found to have good internal consistency and factor validity in diverse samples (e.g., 295 high-risk postpartum women; 1,266 Spanish women; 359 women imprisoned in Maryland's maximum security institution; Calvete, Corral, & Estévez, 2007; Lucente, Fals-Stewart, Richards, & Goscha, 2001; Newton et al., 2001). The measure was also found to have satisfactory reliability and validity in male-dominated countries such as: South Africa (Swart et al., 2002), Thailand (Kerley et al., 2010), Botswana (Jankey et al., 2011), Mozambique (Lehrer et al., 2009), China (Hou et al., 2011), Israel (Haj-Yahia & Dawud-Noursi, 1998), as well as in fairly gender-equal countries (Straus & Mickey, 2012). In the present study, the Cronbach's alpha for the CTS was greater than $\alpha = 0.90$.

2.4.8 Caregivers' self-report measures of their alcohol use

Since the first two community surveys conducted prior to the baseline for this study (Ward et al., 2015) found that alcohol was the primary substance misused in the community, only the alcohol subscale from the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) was used to assess the risk level of the respondents' alcohol intake (e.g., "have you ever tried to control, cut down or stop using alcohol?") (Group, 2002; Humeniuk et al., 2008; Humeniuk et al., 2010). The ASSIST has been validated in a number of diverse settings, including the USA, Spain, India, Zimbabwe and South Africa (Humeniuk et al., 2008; Rubio Valladolid et al., 2014; Sorsdahl et al., 2015; Ward et al., 2008). The ASSIST was found to have high internal consistency ($\alpha = 0.81 - 0.95$), as well as convergent and discriminant validity in a sample ($n = 200$) of South African emergency centre patients (van der Westhuizen et al., 2016). In the present study, the Cronbach's alpha for the ASSIST was greater than $\alpha = 0.70$.

2.4.9 Caregivers' self-report measures of poverty.

A Household Inventory (multiple response questions allowed caregivers to select which 15 household items they had) and a Household Hunger Scale (HHS) which comprised nine items (Ballard, Coates, Swindale, & Deitchler, 2011) were used to assess levels of poverty. The Household Inventory consisted of 15 items that constituted a "wealth index" (e.g., T.V., electricity, cell phone, running water, flushing toilet inside the house, car, fridge, microwave, landline, radio, video/DVD, satellite, computer or internet) – the more of these one had, the wealthier one was. In the present study, the Cronbach's alpha for the Household Inventory was greater than $\alpha = 0.70$.

The Household Hunger Scale consisted of three main questions (namely: "Does your household ever run out of money to buy food?", "Do you ever cut the size of meals or skip any meals because there is not enough food in the house?", "Do you or any of your children ever go to bed hungry because there is not enough money to buy food?") with two sub-questions each (namely: "Has it happened in the past 30 days?" and "Has it happened 5 or more times in the past 30 days?"), the possible range of scores was 0–nine (0 indicating that the parent answered "no" to all nine questions; 9 indicating a "yes" response to all nine questions). The HHS measure has been shown to exhibit cross-cultural and test-retest reliability in a variety of contexts, namely: South Africa, Mozambique, Zimbabwe, Kenya, and Malawi (Ballard et al., 2011). In the present study, the Cronbach's alpha for the Household Hunger Scale was greater than $\alpha = 0.70$.

2.4.10 Children's reports of caregiving behaviour.

Those 10-year olds whose caregivers gave permission for them to be approached, and who themselves assented, completed the Child Report Questionnaire of the APQ. This questionnaire included 37 items regarding the caregiver's behaviour towards the child (Shelton et al., 1996). The caregivers' positive and negative behaviours were explored, with the following five measures: (1) parental involvement, (2) positive parenting, (3) poor monitoring/supervision, (4) inconsistent discipline, and (5) corporal punishment (Essau et al., 2006). Items are rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The information received from children provided both an additional outcome measure with which to evaluate the intervention, and a means of assessing the validity of the caregivers' self-reported parenting practices. The measure was found to have satisfactory factorial validity in a sample of 1,219 German school-children, aged 10–14 years (Essau et al., 2006). Furthermore, this measure has good construct reliability and validity across the five

dimensions (Frick et al., 1999; Shelton et al., 1996). In the present study, the Cronbach's alpha for the Child Report Questionnaire of the APQ was greater than $\alpha = 0.70$.

2.4.11 Caregivers' self-report measures of their social network.

The caregivers' social network was elicited based on a peer nomination procedure. Given the focus of the intervention, I assessed: the participants' network of people whom they "talk to about parenting *in* the community". The caregivers were asked to nominate up to 10 other caregivers in these respective networks (e.g., Kindermann, 2007; Molloy et al., 2010). Previous studies indicated that when participants were given unlimited nomination options they would nominate between four and eight persons (more than 20% fewer than the upper limit of nominations permitted in the present study), of which only 50% of network ties were reciprocated (e.g., Molloy et al., 2010; Ryan, 2001). Thus, albeit a restricted peer nomination procedure, it allows investigation of the complex interconnected and overlapping nature of social networks. Caregivers were also asked to rate on a three-point scale the frequency with which they saw these caregivers; the response options were: 1 (*daily*), 2 (*weekly*), and 3 (*monthly*).

2.4.12 Community-wide intervention dose received.

2.4.12.1 Social activation awareness.

Questions relating to the social activation process were included in the survey administered at wave 2 in order to establish to what extent caregivers were aware of the committee's activities and the brand developed to amplify the positive parenting movement. Caregivers were asked to select which statements were applicable to them from a list of 16 statements (example items: "You know about the *social activation group*", "You have attended a meeting held by the *social activation group*", "You talk about the social activation meetings at home?", "You have read and signed the positive parenting manifesto"). This measure yields a score out of 16 which was used to evaluate the level of exposure to the programme.

2.4.12.2 Programme attendance.

Programme dosage refers to the extent to which a respondent was exposed to the programmes. I created two measures of programme attendance: (1) a binary variable which is whether a caregiver attended at least one programme session, and (2) a continuous variable which records the number of sessions a caregiver attended.

2.5 Parenting Measure Construction

2.5.1 Reason for creating a parenting summary statistic.

The overarching research question of interest is whether caregivers in an entire community can improve their parenting practices, thereby moving from a harsh parenting style

to a more positive approach to parenting. The measures of parenting (i.e., APQ and PARYC) used to evaluate the main intervention programme were selected specifically to assess the change in the parenting of children in the different age groups. The APQ measure for caregivers with children older than six is composed of 42-items tapping five subscales, and is assessed using a 3-point scale. However, the PARYC measure for caregivers with children younger than six is composed of 14 items tapping two subscales, and uses a 7-point scale. The use of these two distinct measures posed two significant challenges: firstly, due to the reduced sample size, when the overall sample has to be split into two age-specific sub-samples, and subsequent loss of explanatory power; and, secondly, it artificially bifurcates the caregiving community from the perspective of the social network analysis software restricting the evaluation of the community network due to untracked transmission between caregivers with older and younger children. Evaluating social transmission within two arbitrary halves of one social network produces misleading results because social networks are created through mutual dependencies and transmission through a network structure as opposed to random collections of individual. As such, it was important to find a way to assess the change in parenting on the same metric in both groups to allow evaluation of the community as whole. This was achieved using a reference population approach wherein standardised parenting scores at wave 1 were used to benchmark scores at wave 2 (or wave 3). The reference population approach to interpretation of individuals' scores is a technique frequently used in anthropometric and economic studies (Vidmar et al., 2004; Y. Wang & Chen, 2012). Below I delineate how I used this approach to create a continuous and combined parenting change variable, termed the *parenting summary statistic*.

2.5.2 Construction of primary outcome measure of positive parenting scores.

The outcome measure was change in the *parenting summary statistic* (P), expressed in terms of the standard deviation of the reference sample (all caregivers at wave 1). This is calculated as follows:

$$\Delta zP_i = zP'_{i,2} - zP_{i,1}$$

where $zP_{i,1}$ is the standardised (z-score) for the summary statistic for caregiver i at wave 1, and $zP'_{i,2}$ is the comparative score for the summary statistic for caregiver i , at wave 2 (or $zP'_{i,3}$ in the case of wave 3). The calculation of each of these components is described below. The wave 1 standardised measure (z-score) is obtained in the usual manner (Field, 2009; Fryar et al., 2012):

$$zP_{i,1} = \frac{P_{i,1} - \bar{P}_1}{\sigma_{P_1}}$$

where $P_{i,1}$ is caregiver i 's P score at wave 1, \bar{P}_1 is the mean score in the parenting summary statistic at wave 1, and σ_{P_1} is the corresponding standard deviation. The comparative score is calculated using the wave 2 (or wave 3) parenting summary statistic. To obtain this comparative score, the z -score for the wave 2 (or wave 3) summary statistic is calculated using the population statistics of the reference sample:

$$zP'_{i,2} = \frac{P_{i,2} - \bar{P}_1}{\sigma_{P_1}}$$

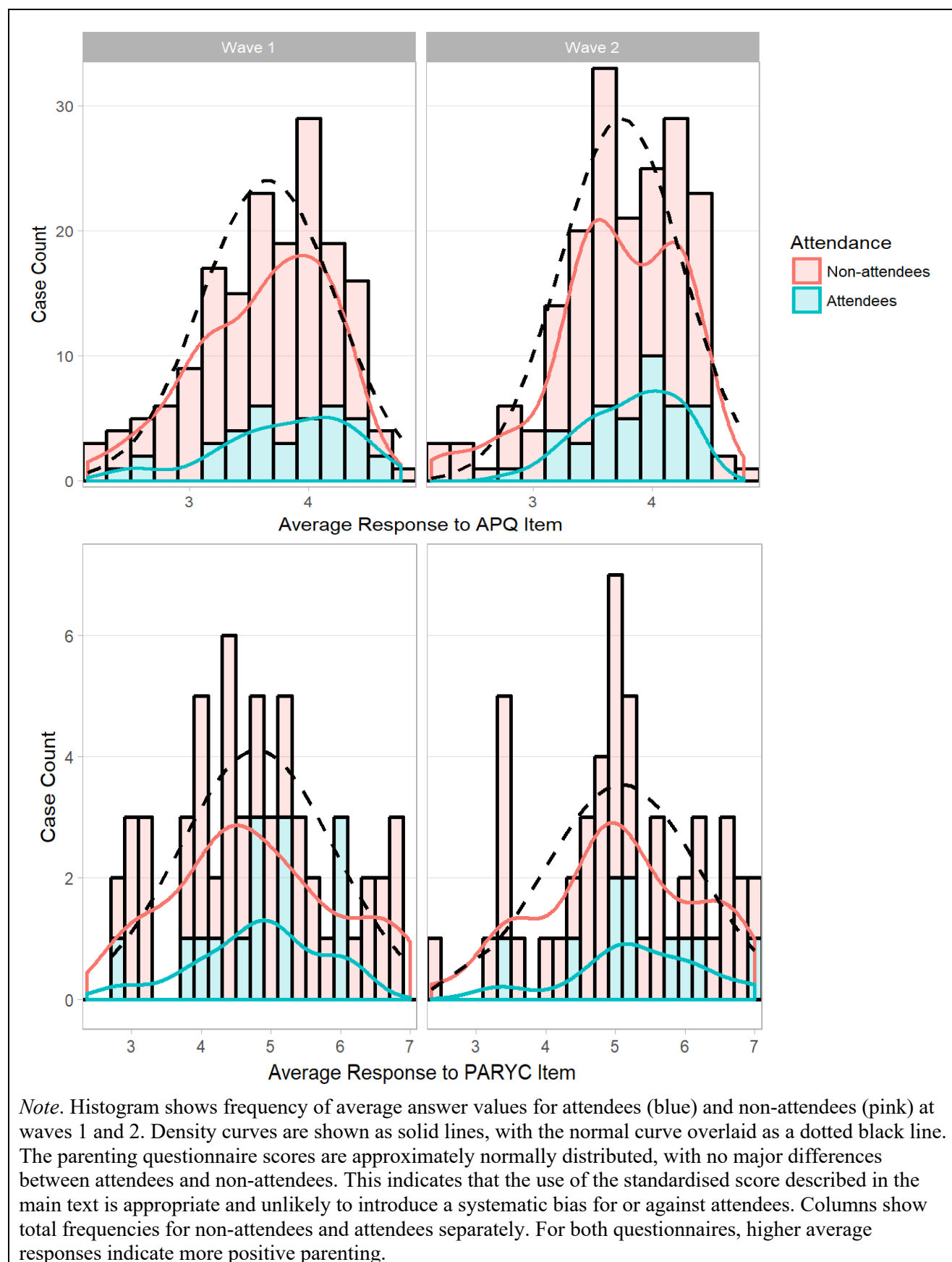
The comparative score for wave 2 (or wave 3) thus represents where a caregiver would appear within the wave 1 sample on the basis of their wave 2 (or wave 3) score, while the standardised score for wave 1 represents where they actually appeared within the wave 1 sample. Both are expressed in terms of standard deviations of the wave 1 sample. In other words, a person's score at wave 2 (or wave 3) indicates where that score would have placed them in the wave 1 distribution. As such, the Parenting Summary Statistic is not simply a standardised score at wave 2 (or wave 3). Instead the score uses the wave 1 scores as a reference population (Fryar et al., 2012). Thus, based on the measurement construction one would be able to assess the association between the wave 2 (or wave 3) population reporting improvements or deterioration with reference to the wave 1 population.

The scores for both parenting questionnaires were normally distributed throughout the respective populations (i.e., skewness between -2.00 and +2.00, and kurtosis between -7.00 and +7.00), and the variance was comparable across waves (see Figure 2; Field, 2009). The APQ skewness was -.63 ($SE = .16$) at wave 1 and -.73 ($SE = .18$) at wave 2; kurtosis values were .13 ($SE = .31$) at wave 1 and .48 ($SE = .36$) at wave 2. The PARYC weighted average skewness statistic at wave 1 was -.022 ($SE = .26$), and at wave 2 was 1.10 ($SE = .34$); and kurtosis values were -.40 ($SE = .51$) at wave 1 and -.39 ($SE = .67$) at wave 2. As such, the measures met the normality assumptions which suggest that using z -score standardisation to establish a reference population is appropriate to reflect the underlying population. The normality assumptions made for the first two successive waves of data collected also apply to the wave 3 analytic sample.

Several analyses require categorical rather than continuous variables, and to this end binary variables were calculated for key measures. Caregivers were assigned a Baseline Parenting category, coded as 1 or 0 based on whether their standardised parenting score at wave 1 was above or below the mean of the reference sample. They were also assigned a Parenting Change category based on whether or not their parenting summary statistic was

above 0 (= 1) or not (= 0). A presentation of this process is shown in Figure 2, Figure 3 and Figure 4.

Figure 2. Distribution of parenting questionnaire scores.



Note. Histogram shows frequency of average answer values for attendees (blue) and non-attendees (pink) at waves 1 and 2. Density curves are shown as solid lines, with the normal curve overlaid as a dotted black line. The parenting questionnaire scores are approximately normally distributed, with no major differences between attendees and non-attendees. This indicates that the use of the standardised score described in the main text is appropriate and unlikely to introduce a systematic bias for or against attendees. Columns show total frequencies for non-attendees and attendees separately. For both questionnaires, higher average responses indicate more positive parenting.

Figure 3. Threshold operation for deriving Baseline Parenting variable.

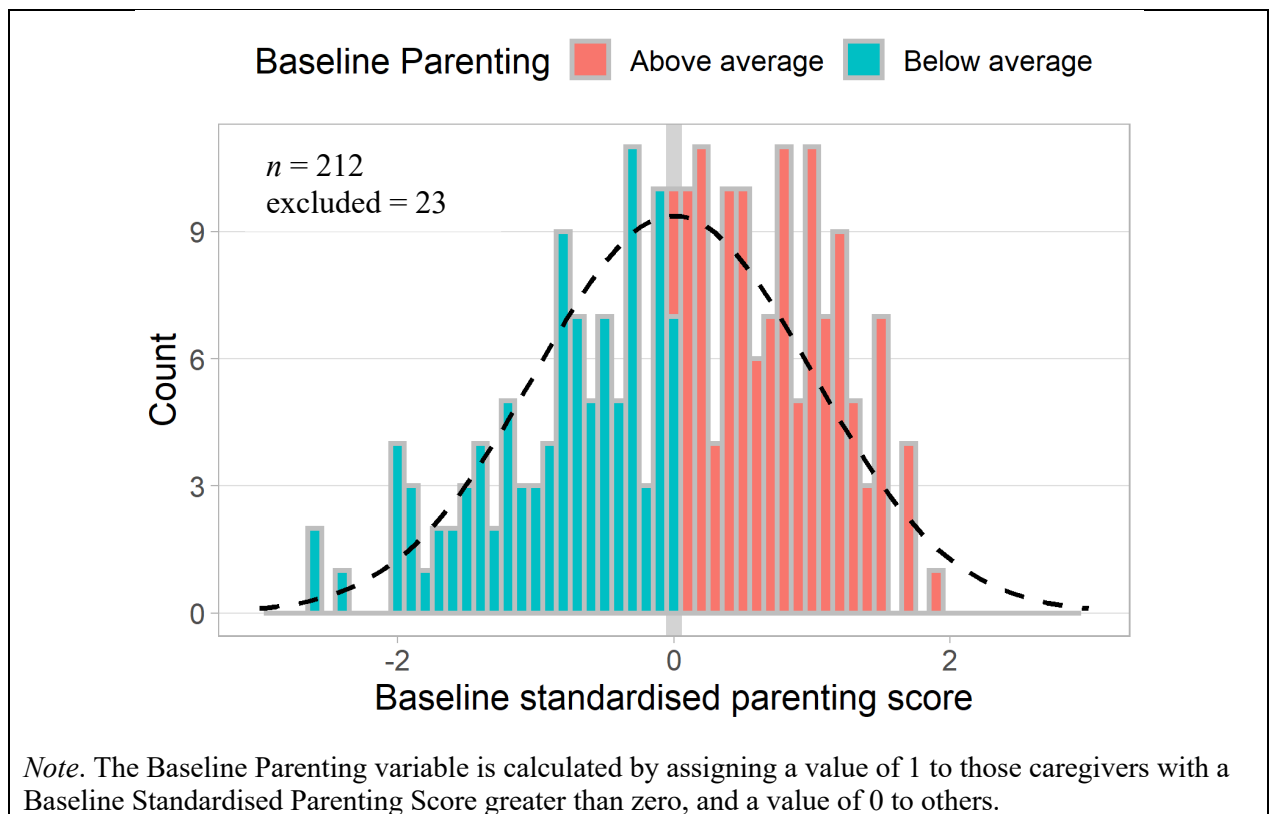
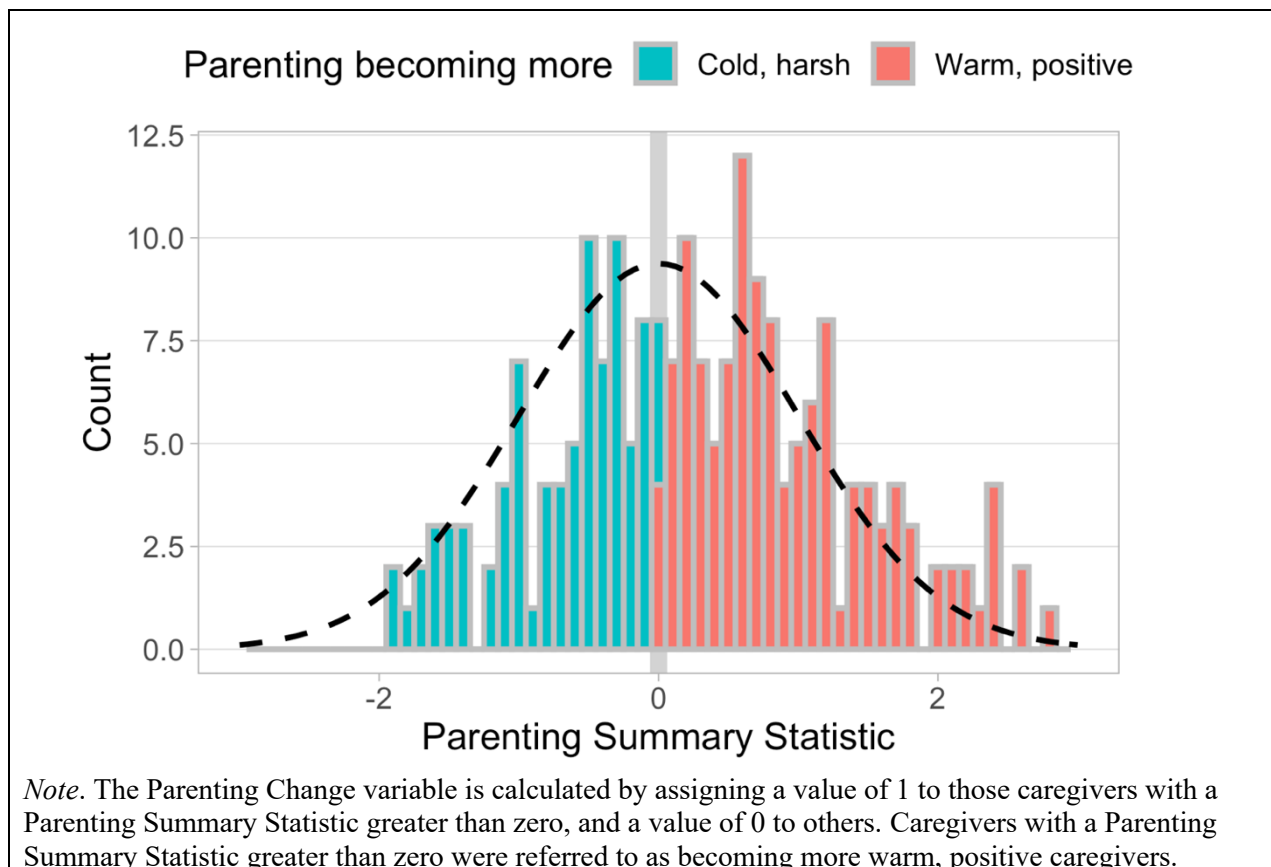


Figure 4. Threshold operation for deriving the Parenting Change variable.



2.6 Social Network Analysis

Social network analysis (SNA) uses graph theory to depict and assess the structure and dynamics of social networks. Due to the relative novelty of the approach in psychology, and the technical nature of the techniques involved, a relatively detailed description of SNA is included here.

In SNA, social relationships are encoded as connections between individuals, and change in the behaviour of individuals is explained using connectivity patterns and dyadic interactions along the connections. Social networks are typically constructed using a nomination procedure wherein all individuals within the network are asked to nominate a subset of individuals within the network to whom they are connected. The basis upon which nominations are made varies. The network studied here was constructed by asking caregivers to nominate other caregivers in Touwsrante to whom they speak about “caregiving” or “parenting”. Caregivers were given the opportunity to make up to 10 nominations.

SNA explains changes in the behaviour of individuals through interaction between those individuals and the other individuals to whom they are connected. Thus, changes to an individual’s parenting behaviour can be explained by the parenting behaviour of their network neighbours, and the parenting behaviour of these neighbours can be explained through further connections, together with, in both cases, direct exposure to the intervention. These effects, wherein individuals’ behaviour tends to align with those to whom they are connected, are known as ‘socialisation effects’.

The structure of an individual’s local environment, and their position in the wider network, known collectively as ‘centrality’ (Table 3) can be used to explain the influence those individuals exert and experience. The two simplest measures of centrality are self-explanatory: “the number of *incoming connections* (‘indegree’), and the number of *outgoing connections* (‘outdegree’)” (Wölfer, Faber, & Hewstone, 2015; p. 49). Indegree is regarded as a measure of potential influence, while outdegree is regarded as a measure of gregariousness. Both centrality parameters capture potential influence and allows researchers to identify salient network members. Given that information and influence flow along connections between individuals, individuals with similar configurations of connections will have similar experiences of those flows. For example, individuals with high indegree centrality are likely to experience high levels of influence due to their many incoming connections. Next, ties can be either *direct* (e.g., A connects directly with B, $A \rightarrow B$) or *indirect* (e.g., A only connects to C via B, $A \rightarrow B \rightarrow C$); and the number of both such ties can be calculated. Individuals embedded within the core of

the global network structure (e.g., those with high ‘closeness’ centrality) are likely to experience, and help diffuse, a greater potential influence towards the overall average behavioural change of the network.

My design does not offer a direct test of the relationship between centrality and influence: I measure conversations about parenting but cannot say definitively who is influenced by whom because of the mutual nature of conversations. However, because programme content will diffuse outwards (Valente, 2016), I can consider attendees as likely to transfer knowledge from the programmes (irrespective of any reciprocal influence). Consequently, it can be assumed that the directionality of knowledge shared during social interactions is from attendee to non-attendee. Therefore, I equate both higher indegree and outdegree centrality of attendees with greater potential influence. By tracking the social networks and behaviours over time, it is possible to determine how behaviours spread through a network which can provide adequate support for assumptions made about the potential influence of certain network members. More specifically, these assumptions are supported by the significant socialisation effects reported in the results sections below.

2.6.1 Simulated Investigation for Empirical Network Analysis (SIENA).

Just as the behaviours of individuals are a product of individual tendencies and social connections, individuals’ social choices, forming and breaking connections, are also a function of these influences. Thus, the way individuals alter their connections over time (‘selectivity effects’) emerge from the structure of the network and the properties of the individuals to whom they are connected. SIENA, or Simulated Investigation for Empirical Network Analysis (R. Ripley et al., 2011; Snijders et al., 2010), is a computer programme for the analysis of SNA data that is specifically designed for exploring these dynamic network properties. SIENA can, in a single model, examine multiple different effects while simultaneously controlling for structural network and socialisation effects (R. Ripley et al., 2011; Snijders et al., 2010).

SIENA estimates the extent to which individuals are likely to break and form connections using parameters which encode general network properties (endogenous effects) and the behavioural properties of individuals and the individuals to whom they are connected (exogenous effects; Veenstra et al., 2013). Network properties specify the general tendency of individuals within a network to make, break, or maintain connections (Wölfer & Scheithauer, 2014). Behavioural properties include an individual’s network position and personal properties; the latter may be static (e.g., ethnic background) or dynamic (e.g., parenting behaviour). These parameters are expressed as the log-odds ratio of an individual making or maintaining a

connection versus breaking or leaving a connection unmade (Mercken et al., 2010; Wölfer & Scheithauer, 2014).

SIENA runs multiple simulations to estimate parameters. Each simulation consists of myriad ‘ministeps’ in which individuals within the network are given the opportunity to make, break, or leave a connection (Ripley et al., 2011). The choice made by an individual depends on the ‘objective function’, a set of rules which comprises the individual’s connectivity, global network properties, and the personal properties of the individual and their “connectees” (Veenstra et al., 2013). Although the objective function is the same for all individuals in the network, because it takes into account at each step the current configuration of the network (and because its output alters that connectivity), it produces different outputs for different individuals (Ripley et al., 2011). The objective function is stochastic in nature, meaning that identical parameter sets can produce divergent results (Ripley et al., 2011). SIENA runs multiple instances of each parameter set in order to sample the space of possible results, and the final output is based upon a battery of simulation runs in which the parameter set is fixed (Veenstra et al., 2013).

Endogenous network effects are the properties of the network which are simulated by SIENA, and which can change at each ministep (Veenstra et al., 2013). Key measures for describing the ‘*social integration*’ within a network, or its overall richness and interconnectedness are: (1) *density*, or the proportion of all potential connections which exist in the network; (2) *reciprocity*, or the proportion of all connections that are bidirectional; and (3) *transitivity*, or the extent to which “friends of friends are friends” or, in this parenting network, the extent to which the caregivers one discusses parenting with also discuss parenting with each other (see Gest et al., 2011). Closely related to *transitivity* is *balance*, the extent to which an individual and the individuals to whom they are connected make similar nominations.

For example, a network in which every individual nominates every other individual would be one in which density, reciprocity, and transitivity reached their highest possible value: the ratio of existing connections to possible connections would be 1; every connection would be reciprocated; and there would be complete transitivity in connections. In contrast, in a minimally socially integrated network, no individual would nominate any other individual; the density of parenting ties would be zero; and neither reciprocity nor transitivity would have meaning (Gest et al., 2011). Consideration of extremes illustrates that these three different aspects of network integration are interconnected (i.e., reciprocal and triadic ties increase when the network density increase). Yet, each facet of social integration becomes distinctly informative when an intermediate number of connections are evidenced (Wölfer, Cortina, &

Baumert, 2012). These endogenous network effects are potential confounds for studying exogenous effects of interest, and are controlled for by SIENA.

Exogenous network effects comprise alter, ego, and similarity effects (Table 3; see below). The effects do not change during the course of the SIENA simulations, but their parameters are included in the objective function and used to determine whether or not connections are forged or broken at each ministep (Snijders et al., 2010). Thus, these effects specify which attributes of an individual make that individual more likely to form connections with others (ego effects), be nominated more by others (alter effects), or seek out connections with those individuals who have a similar level of an attribute (similarity effects; Snijders, 2009; Veenstra et al., 2013).

2.6.2 Disentangling socialisation and selection effects.

The change of social actors' individual characteristics depending on the attributes of those to whom they are connected is referred to as 'socialisation' (Friedkin, 1998), and the evolution of network structure is known as 'selection' (Lazarsfeld & Merton, 1954). The assumption employed here is that a network boundary was clearly defined, thereby making it meaningful to investigate the socialisation and selection processes of the demarcated group without considering external network connections. The importance of studying socialisation and selection processes in networks simultaneously has been critically evaluated (Steglich et al., 2010) and is made clear in this example: research demonstrates that friends tend to exhibit similar smoking behaviours, but it is unclear to what extent this is due to the selection of friends on the basis of common-behaviour, or the adoption of friends' behaviour.

'Socialisation' measures social influence, and concerns how peer relationships can alter individual behaviours and other malleable characteristics (e.g., social attitudes). For example, caregivers with 'positive parent' connections may develop positive parenting skills. 'Selection' processes refer to mechanisms by which people alter their relationships in response to the social context (Veenstra et al., 2013). A caregiver who is a 'positive parent' may prefer to form connections with other 'positive parents'. The interdependence of people's behaviour and their social choices can make the relative influence of each hard to isolate (Steglich et al., 2010). Socialisation and selection effects can be disentangled using advanced statistical techniques such as longitudinal stochastic actor-based modelling approaches including SIENA (de Klepper, Sleenbos, van de Bunt, & Agneessens, 2010; Mercken, Snijders, Steglich, Vertiainen, & De Vries, 2010).

When testing socialisation effects, behaviour dynamics are categorised into: (a) shape effects (i.e., behavioural tendencies) and (b) influence effects. Shape effects are used as

important control variables that model the distribution of the behaviour under investigation to assess the baseline probability of changes taking place. Influence effects are used to test the likelihood of a specific attribute altering the behaviour of others they are directly or indirectly connected to in the network structure (Veenstra et al., 2013).

When testing selection effects, network dynamics are categorised into two main categories: (a) endogenous (i.e., structural network effects), and (b) exogenous (i.e., attribute related selection effects). Evidence suggests that the endogenous effects are interdependent, and should be included in the model as control variables to mitigate simpler, more general explanations for changes in selection processes biasing exogenous effects (Ripley, Snijders, Boda, Vörös, & Preciado, 2011; the specific socialisation and selection effects that will be modelled to test the hypotheses in question are described in Table 3). The first model was run with two successive waves of data, and the second one with three waves of data. The three wave model included effects necessary for modelling selection and socialisation processes concurrently, in order to account for interdependence between these processes, while the two-wave model isolated selection effects in order to provide a more focused view of caregiver interactivity. The precise specifications of the models, and the hypotheses they test, are detailed in the Data Analysis section below.

Table 3

Description of Network Parameters

Network Parameters	Description	Waves 1-2	Waves 1-3
Centrality Parameters			
Indegree	<p>Actors who have high indegree receive many nominations and may be thought of as ‘popular’ or having greater potential influence on network members. The basic idea is that many actors in the network seek to make connections with these individuals providing an indication of their importance (Veenstra et al., 2013). However, as mentioned above, this study measures conversations about parenting and cannot definitively determine who is influenced by whom. Nevertheless, the directionality of knowledge transfer during social interactions can be assumed to be from attendees to non-attendees. Therefore, both higher indegree and outdegree centrality of attendees can indicate greater potential influence.</p> <p>Plausible explanations for possible changes in indegree-centrality associated with parenting behaviour may include, for example: (a) more competent caregivers with high, or increasing positive parenting scores, becoming recognised as trusted individuals with valuable information to share on parenting and being sought out by other caregivers (e.g., Venkatramanan & Kumar, 2011); and, (b) caregivers that have a low score on parenting behaviour may have a high indegree due to the number of individuals willing to reach out in support.</p>	✓	✓
Outdegree	Actors who have high outdegree centrality make many nominations, and may be thought of as gregarious. These actors are keen to exchange information with others and are often characterized as influential. For example, caregivers growing in parenting competence may also gain confidence in their parenting ability and thus become more inclined to reach out to discuss parenting with others.	✓	✓
Betweenness	Caregivers with high betweenness scores connect smaller networks together and help to spread information between otherwise isolated groups. Because caregivers high on betweenness centrality are depended upon to make contact with others, they play an influential role (Freeman, Borgatti, & White, 1991). They regulate the flow of information through the network by virtue of their brokering position between other individuals.	✓	✓
Closeness	Network members with a high closeness score have good reachability (i.e., spatial centrality) for and to every member of the social network (Freeman et al., 1991). These caregivers are influential in the sense that their ideas and attitudes can be easily accessed from anywhere in the networks	✓	✓

Structural Network Effects (Endogenous Effects)			
Rate Parameter	The amount of change within the network structure. A low rate parameter indicates a hyper stable network, while a high rate parameter indicates a very volatile one. SIENA functions best when examining networks which are semi-stable.	✓	✓
Outdegree (Density)	The tendency for a network member to form a tie to a random network member.	✓	✓
Reciprocity	A measure of the proportion or probability of all parenting nominations that are reciprocated by the other caregiver (i.e., the number of bidirectional relationships; Veenstra et al., 2013).	✓	✓
Balance/structural equivalence	The tendency to maintain or make new ties with others that make similar network choices.	✓	
Transitive Triplets	This is the tendency of connections to form on the basis of a mutual connection (Veenstra et al., 2013).	✓	
GWESP (geometrically weighted edgewise shared partners)	A triadic effect representing network closure is the GWESP. GWESP is a useful effect to include in a model as it can be interacted with all dyadic effects and sometimes yields better fit than other transitivity effects in SIENA (i.e., transTrip or transTies; Snijders et al., 2010).		✓
In-degree related activity (sqrt) effect (inPopSqrt)	The inPopSqrt effect is defined by the sum of the square roots of the in-degrees of the other network members to whom the specific individual in the network is connected.		✓
Out-degree related activity (sqrt) effect (outActSqrt)	The outActSqrt effect is defined by the sum of the square roots of network members' nominations. Specifically, this is the tendency for caregivers with higher outdegree scores to begin with to nominate more caregivers to speak to about parenting.		✓
Covariate Effects (Exogenous Effects [†])			
Alter Effects	Alter effects are properties which increase potential influence: being high in a property with a strong alter effect means that a caregiver will increase her indegree. In this regard, I included programme attendance, and improvement in parenting behaviour.	✓	✓
Ego Effects	Ego effects indicate that caregivers become more gregarious; scoring highly on a property with a strong ego effect means a caregiver will increase her outdegree.	✓	✓
Similarity (Same) Effects	Similarity effects indicate the preference of actors in the network to make connections to individuals that share similar attributes on a specific covariate. Moreover, this network parameter serves as a useful control variable in the SIENA model (R Wölfer & Scheithauer, 2014).	✓	✓
Socialisation: specific attributes (e.g., parenting behaviour) as outcome			
Shape Effects*			
Linear Shape Effects	An intercept indicating the average tendency towards values on the variables under investigation (Veenstra et al., 2013).		✓

Quadratic Shape Effects	Express the extent to which extremes of a behaviour are self-reinforcing or self-correcting (i.e., a positive or negative feedback loop with itself).		✓
Influence Effects ^{††}			
Average alter effect	Providing an indication of contagion effects in the network by taking into account the number of a caregiver's connections and their specific score on the variable under investigation. More specifically, the likelihood of improving versus remaining constant in parenting behaviour based on the average parenting score of the caregivers in your network.		✓
Max Alter effect	The likelihood of improving versus remaining constant in parenting behaviour based on the presence of a caregiver with an extremely high parenting score in your network.		✓

Note: *Control variables; [†]changes in caregivers' network driven by exogenous effects; ^{††}changes in caregivers' behaviour based on influence effects. The wave 3 model included different effects necessary for modelling selection and influence processes simultaneously.

2.7 Data Analysis

Data were analysed using IBM SPSS Statistics version 24, JASP version 0.8.6, and R version 3.4.3 (RCore Team, 2013). R packages used were: lavaan for metric invariance testing (Rosseel, 2012), foreign for SPSS interfacing, reshape2 for data reorganisation, tidyr and ggplot2 for data visualisation, igraph for network representation, jmv for multivariate analyses, lsr for calculating effect sizes where data were approximately normal (Cohen's d), lmer for linear mixed effects modelling, and RSiena (version 4.1.2) for longitudinal network simulation modelling.

The intervention, and the data, spanned two language groups and three waves of a longitudinal design. Thus, the data analysis of the first two waves unfolded in eight main sections: description of the sample, assessing metric invariance of the scales across language groups, attrition analysis, description of analytic sample, intervention outcomes, network characterisation, socialisation effects, and selection effects. Techniques are described in the order they appear in the Results section for the first two waves. Where relevant, the techniques are presented in the same order in the Results section for analysis based on all three waves as they are in the Results section for the analysis based on the first two waves.

2.7.1.1 *Description of the sample.*

Descriptive statistics were calculated to understand the characteristics of the data, including sample sizes, means and standard deviations on all measures for the whole sample of caregivers at baseline, for the Afrikaans- and isiXhosa-speaking sub-samples, as well as for the attendee and non-attendee sub-samples. Descriptive statistics are presented for all waves. Prerequisites for subsequent analyses were checked (normality, homoscedasticity, and Cronbach's alpha statistics; Field, 2009) and simple differences between the Afrikaans- and isiXhosa-speaking sub-samples presented.

2.7.1.2 *Factorial Invariance Testing.*

An essential prerequisite for using self-reports from members of more than one group in quantitative comparative research is to determine whether the measured constructs have the same meaning across groups, and thus that differences between the groups reflect differences in the underlying constructs rather than in the interpretation of the measure (Gregorich, 2006), and hence the groups can be compared statistically. Comparing dissimilar groups should be done with caution to ensure that group-specific traits that are unrelated to the paradigm of interest do not influence the results. Confirmatory Factor Analysis (CFA; Cheung & Rensvold, 2002; Gregorich, 2006; Meade, Johnson, & Braddy, 2006; Vandenberg & Lance, 2000) was used to assess the stability of measured constructs across language groups. Metric invariance

tests were computed to compare caregivers' responses to the Afrikaans and the isiXhosa versions of the questionnaire, to assess whether their scores across the various measures could be compared statistically, or whether the two linguistic groups understood the scales in different ways.

Bivariate correlations were computed to ensure that the items forming each of the constructs were positively correlated with one another. Items on a given construct that were not scored in the correct direction were reverse coded. Thereafter, the item distributions were explored to determine whether they fell into the acceptable range of normality for the language groups separately. All items met these criteria and therefore none were omitted or transformed. The parcelling technique was not used because the use of parcels as indicators in a CFA model can produce false positive results in invariance tests (Meade & Kroustalis, 2005).

Confirmatory factor analysis was used to test the predetermined factor structures of the measurement instruments in question. The reliability of the resulting scale dimensions was tested for measurement invariance across language group. The following fit indices and cut-off values were used (based on Hu & Bentler, 1999; Schermelleh-Engel, Moosbrugger, & Müller, 2003):

- Chi-square goodness of fit test (χ^2): $p > .05$; $\chi^2/df < 3$;
- SRMR (standardised root mean squared residual): $< .08$;
- RMSEA (root mean squared error of approximation): $< .05$;
- TLI (Tucker-Lewis Index): $> .95$;
- CFI (Comparative Fit Index) $> .95$.

Following the recommendations of Little (2013), models were compared using increasingly strict invariance constraints. First, configural invariance was tested, which tests whether the models exhibit a different factor structure. Next, metric invariance was tested which explores whether the models exhibited different factor loadings: $\Delta CFI < .01$ was selected as the criterion to decide whether a more constrained model fit as well as a less constrained model.

2.7.1.3 Attrition analyses.

Attrition tests were conducted to examine the possibility of systematic differences between caregivers that dropped out of the study and those that remained in the analytic sample. Attrition analyses were conducted following the steps outlined by Goodman and Blum (1996); I tested for systematic differences along any of the following dimensions: education, employment status, caregiver and child age, child gender, parenting behaviour, child

behaviour, parenting stress, general health, relationship status, experiences of intimate partner violence, alcohol use, number of household items, hunger scores, and programme attendance. These variables were selected on the basis of them being used in various analyses to test specific hypotheses, and therefore it is important to test whether they are likely to be biased by attrition.

In order to maintain data integrity, complete case analyses were conducted. Due to the data being missing completely at random the statistical analyses were based on participants with a complete set of outcome data (see Attrition analyses.). Although a complete case analysis may reduce statistical power due to the reduced sample size, the observed data will not be biased (Jakobsen et al., 2017). Moreover, social network analyses are extremely sensitive to missing data (Krause et al., 2018).

2.7.1.4 Description of the analytic caregiver sample.

The analytic sample is characterized based on the baseline findings. Additionally, a multivariate test was conducted to determine whether systematic differences existed between caregivers who did versus did not attend parenting programmes.

2.7.1.5 Intervention outcomes.

2.7.1.5.1 Analysis of variance: Waves 1 – 2.

Evaluation of the effectiveness of the Parenting Programme and Social Activation Process was addressed in tests of Hypotheses 1a-c. Initial analysis of mean change in parenting behaviour across the community was conducted with a one-sample *t*-test. To examine the direct effects of programme session attendance on improvement in parenting skills, with a specific emphasis on the use of corporal punishment, a 2 (attending vs not attending a program) x 2 (wave 1 vs wave 2) mixed-model analysis of variance (ANOVA) was run, with the second factor within-subjects. Seven tests were conducted using Bonferroni adjusted alpha levels of .0007 per test (.05/7; Field, 2009). Multiple regression analyses assessed the extent to which the two components of the intervention, programme attendance (a categorical variable: attendance vs non-attendance) and participation in social activation activities (a continuous variable), predicted change in parenting behaviour, after controlling for other relevant measures including demographic (e.g., age of child) and personal (e.g., use of alcohol, parenting stress, general health) characteristics that may affect parenting.

2.7.1.5.2 Growth Curve Modelling: Waves 1 – 3.

Growth Curve Modelling (GCM) was used to evaluate the rate of change in parenting scores across all three waves (H4). GCM describes how differences in the way individuals' parenting behaviour changes over time are associated with other factors (such as attending a

parenting programme; Duncan & Duncan, 2009). GCM can identify factors influencing trajectories because, as opposed to aggregating data across individuals at each time point, it uses individual trajectories as the unit of analysis. GCM is also well suited to dealing with non-linear relationships (Cillessen & Borch, 2006).

I compare linear and quadratic GCMs to determine whether the quadratic model has a better fit than the linear model (i.e., having significantly lower overall error; Wu et al., 2009). For each of these models, GCM tries to fit the model (linear or quadratic) for each individual by selecting the parameters (slope and intercept for the linear model; slope, intercept, and quadratic component for the quadratic model) which results in the lowest error between predicted and observed data (Byrne & Crombie, 2003). Those parameters are then used as the units of analysis in the GCM, allowing further statistical analyses to be conducted to determine whether the intervention components were associated with significant changes in the individual trajectories. In these models, the intercept is where individuals are positioned at baseline. The slope represents continual growth over a period of time. The quadratic models include an additional second order coefficient which describes the change in the growth between time periods (Wu et al., 2009).

I compared the fit statistics for the linear models and then selected models that improved on previous iterations according to a significant chi-square statistic (Wu et al., 2009). Models tend to fit better the more parameters they have, therefore, how much a model explained the data was balanced against how complicated the model was. The overall fit to the data for even the best linear model was poor in absolute terms. After visual assessment of the patterns observed in the data it appeared likely that a quadratic model might have a better fit. As such, similar comparisons were made in order to determine the best fitting quadratic model. The best fitting linear model was *T0* and the best fitting quadratic model was *T0Q* (see below for details). These models were compared to one another using the same approach to select a final model, *T0Q*.

More specifically, the linear models were tested in a staged process in which progressively more complex models were constructed. The shared starting point for the linear models was a linear base model using wave to predict changes in the parenting summary statistic.

1. *Model 0* extended the base model by including programme attendance as a predictor of the intercept and the slope of the parenting summary statistic. Random effects of participant were included.

2. *Model 1* extended *Model 0* by including the interaction between programme attendance and wave to determine whether attendance was associated with different rates of change in parenting behaviour.

Models T0 and *T1* were identical to *Models 0* and *1* (respectively) except that wave was included as an additional random effect, and thus *T* designates that these models include a coefficient for time-point.

Likewise, the quadratic polynomial models (designated with *Q*) were tested in a similar staged process. The quadratic baseline model was constructed using wave and the square of wave to predict parenting summary statistic, alongside random effects of participant.

1. *Model 0Q* extended the quadratic base model by including programme attendance as a predictor (predicting the intercept and the slope).
2. *Model 1Q* extended *Model 0Q* by including the interaction between programme attendance and Wave.

Models T0Q and *T1Q* were identical to *Models 0Q* and *1Q* (respectively) except that wave was included as a random effect.

Finally, *Model T2Q* extended *Model T1Q* by including the interaction between programme attendance and the square of Wave. *Model T2QS* is the same as *Model T2Q* except that social activation (*S*) is exchanged for attendance as a predictor (including in interactions). The contributions of the intervention components will be evaluated, below, in separate models due to their multicollinearity.

The same model building process was conducted to determine the association between the social activation dose and the trajectory of parenting scores by replacing the programme attendance variable in the models.

Furthermore, multivariate growth curve analyses were conducted to evaluate the relationship between caregivers' and children's responses on the APQ, in which caregivers with children over the age of 10 report on their children, and the same children report on their caregivers' parenting. Results of caregiver' and matched children's self-reports are then compared.

2.7.1.6 Network characterisation.

The caregiver social network, consisting of Afrikaans female caregivers, was described in terms of social network analysis parameters. Longitudinal changes in the nature and structure of the social network were characterised in terms of four key contextual network measures (density, reciprocity, transitivity, and centrality). Density was calculated (1) as a percentage of the theoretical maximum: $E/(n \cdot e_{\max})$, where e_{\max} is the number of possible

nominations; and (2) in terms of standard density figures: $E/n(n - 1)$. Reciprocity and transitivity were explored using the relative frequencies of the possible dyads and triads within the network.

Social influence of community members was determined by analysing the four most established individual centrality parameters (Wölfer & Scheithauer, 2014): indegree, outdegree, closeness, and betweenness. The rationale for selecting these four centrality parameters is that each of these parameters reflects a very specific aspect of caregivers' influence within their network, hence they should all be analysed for a comprehensive overview of changes in influence due to either attendance status or parenting scores. For example, the closeness parameter represents the distance of a caregiver to all other network members and thereby reveals their reachability (i.e., potential for influence; Freeman, 1979). Moreover, the closeness parameter estimates how fast the flow of information would be through a given caregiver to other caregiver. The betweenness centrality parameter reflects someone's linking role within a network and can be understood as a score that represents the tendency that the network structure could change, for example, in the case of a specific caregiver changing their position or becoming absent (Freeman, 1979). As such, the betweenness centrality parameter was included in the model as a way of detecting the amount of influence a caregiver had over the flow of information in the network due to their attendance status or parenting scores. For example, if programme attendance predicted change in the betweenness centrality parameters, that would theoretically indicate that programme attendees had more control over the network, because more information passes through them.

2.7.1.7 Socialisation and selection effects.

For waves 1 – 2, socialisation effects (H2) were assessed using hierarchical regressions and multivariate analyses of variance. In analyses based on both waves 1 – 2 and waves 1 – 3, SIENA was used to assess socialisation (H2, H6) and selection (H3, H5) effects simultaneously.

2.7.1.7.1 Hierarchical regressions.

For waves 1 – 2, hierarchical regression modelling was used to investigate the role of the social network in diffusion of the effects of the intervention on parenting behaviour. Assumptions were checked as detailed above, and multicollinearity was checked using a correlation matrix (all $r < .80$) and variance inflation factors (all VIF < 10).

2.7.1.7.2 *Multivariate analysis of variance and covariance (MANOVA and MANCOVA).*

At waves 1 – 2, two separate multivariate regression models were used to assess the direct influence of programme attendance and parenting behaviour on the structure of the network. The first model (MANOVA) contained two predictors (i.e., programme attendance and baseline parenting) and the four centrality parameters as the outcome measures (i.e., indegree, outdegree, betweenness, and closeness). The second model (MANCOVA) contained the change in parenting behaviour as an additional predictor, the change in the four centrality parameters as the outcome measures, and baseline centrality measures as controls.

2.7.1.7.3 *SIENA model specification: Waves 1 – 2.*

At waves 1 – 2, the direct influence of programme attendance and parenting behaviour on the structure of the network was assessed while accounting for several endogenous network effects (e.g., reciprocity, transitivity) and selection effects based on risk factors associated with parenting and child age. Although Intimate Partner Violence is a plausible risk factor associated with parenting it has been excluded from the model due to too few participants choosing to answer the question. The SIENA model included network parameters, as well as alter, ego, and similarity effects for covariates. To account for inherent dependencies between individuals embedded in a social network (following Ripley et al., 2015) the network parameters included in the model were: the model rate parameter, the outdegree (density), reciprocity, and transitivity parameters (i.e., balance and betweenness). Covariates included were programme attendance, general health, parenting stress, alcohol misuse, and child age. This model allows me to investigate the relationship between a caregiver's attendance at parenting programmes and the change in their position in the communication network (H3).

2.7.1.7.4 *SIENA model specification: Waves 1 – 3.*

At waves 1 – 3, SIENA simulations were used to assess the direct influence of programme attendance and parenting behaviour on the structure of the network, as well as the impact of the caregiver network on the evolution of parenting and attendance behaviour. The SIENA model included the effects listed in Table 3, reviewed below.

Selection effects (network dynamics). The network parameters (explained in Table 3) included in the model were: the compulsory model rate parameter; the semi-compulsory outdegree (density) parameter; reciprocity; a transitivity effect which modelled the tendency for ties to close triangles (GWESP); and degree-related parameters which modelled the tendency for nodes to keep receiving and sending ties (inPopSqrt and outActSqrt, respectively; Ripley et al., 2015). The GWESP, inPopSqrt, and outActSqrt, were added to improve model fit

when adding the third wave of network data to the model. The covariates modelled were programme general health, parenting stress, alcohol misuse, and child age. These variables have been included in the model as potential explanatory factors that may influence parenting behaviour, programme attendance and tie creation. Attendance was modelled as a varying covariate. Varying covariates represent gaps between time points and thus there were two gaps between the three waves. The value of attendance in the first gap was 0 or 1, depending on whether a caregiver attended a parenting programme between waves 1 and 2. The value of attendance in the second gap was correspondingly 0 or 1, depending on whether a caregiver attended at any point during the course of the intervention or not. These components of the model allow the assessment of Hypothesis 5.

Socialisation effects (behaviour dynamics). The compulsory rate parameters for each behavioural variable and each period were included in the model, as well as the linear and quadratic shape effects. The influence effects used were all average alter effects, included to determine the association between caregivers changing their parenting behaviours and contact (i.e., socialisation). The behaviour variable modelled was the Parenting Summary Statistic at each Wave. Hypothesis 6 is tested using these components of the model.

3

Results: Waves 1 to 2

Exploration of baseline demographics revealed that the majority of caregivers (433; 91.5% of 473) who completed the baseline questionnaire were the biological parents of the focus child in question, of which 179 (41.3%) biological parents reported that they were single parents. Nevertheless, the majority of caregivers (332; 70.4%) reported receiving caregiving assistance from another person in the community with their child. Nearly half, 214 (45.4%), of the children's primary caregivers indicated that they were unemployed. Female caregivers were predominantly employed as domestic workers (211; 50.7%), while male caregivers were predominantly employed as unskilled labourers (35; 59.3%). Most caregivers (375; 79.3%) received income from at least one government grant; 325 (68.7%) caregivers received income from one government grant, 44 (9.3%) from two, and 6 (1.3%) from three. The 98 (20.7%) caregivers that did not receive a government grant were either employed or received money from a partner or family member.

Questionnaire responses are presented below. Table 4 shows the scores for each instrument at baseline separated by caregiver language group. Data for the Child Behaviour Checklist are presented separately in Table 5. Each instrument is discussed below with descriptive details of its responses. Figures are also presented throughout this section, showing mean responses split by language group at both baseline and wave 2. Below we present statistical tests indicating that the group comparisons should not be regarded as evidence of actual group differences (see Factorial Invariance Testing).

Table 4

Means and Standard Deviations of Questionnaire Responses

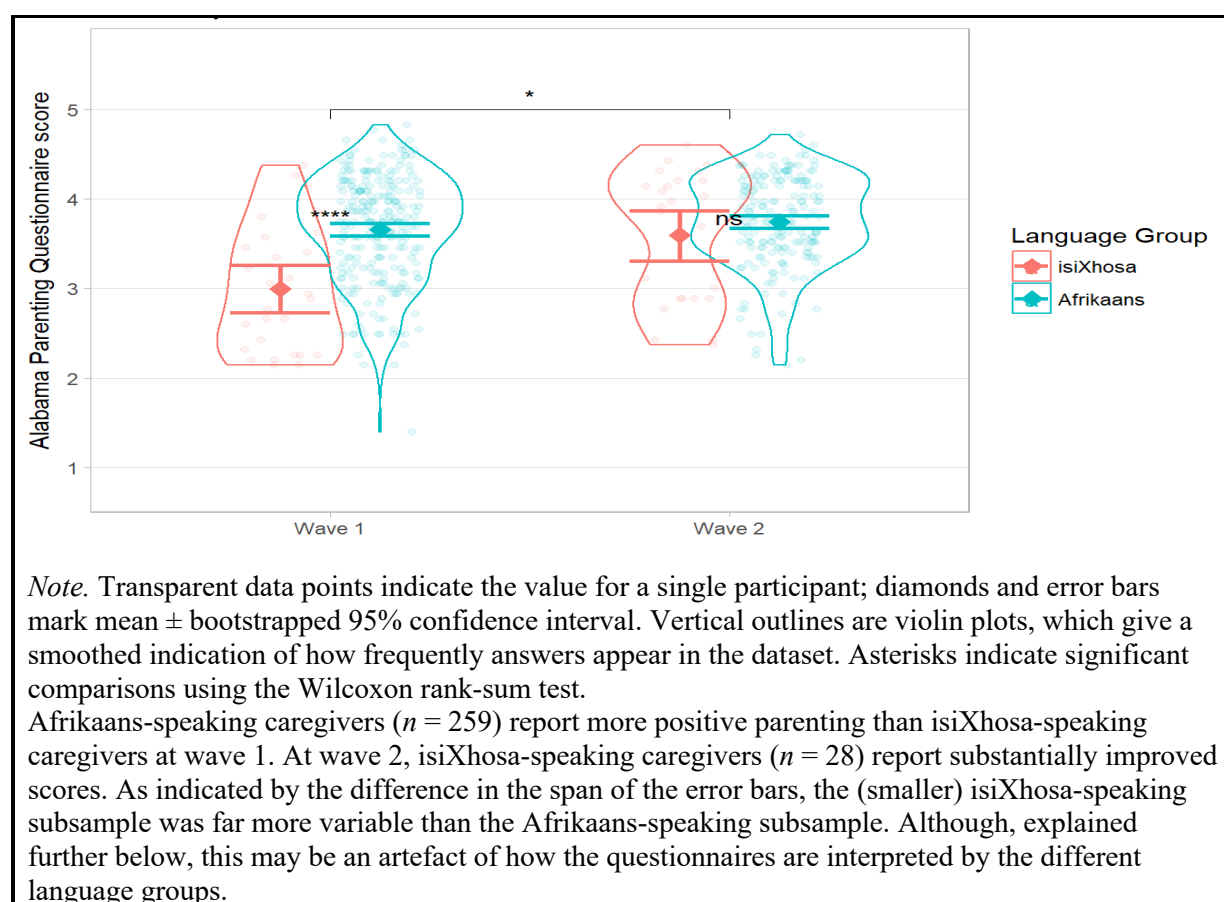
	Group	<i>n</i>	Possible Range	Actual Range	μ	σ
Parenting Younger Children (PARYC)						
Supporting Positive Behaviour	isiXhosa	41	1.00 -7.00	1.14 -5.00	2.72	0.91
	Afrikaans	94	1.00 -7.00	1.00 -7.00	5.04	1.27
Setting Limits	isiXhosa	41	1.00 -7.00	1.00 -5.00	2.90	1.03
	Afrikaans	94	1.00 -7.00	1.00 -7.00	4.45	1.57
Alabama Parenting Questionnaire (APQ) - Older Children						
Involvement	isiXhosa	28	1.00 -5.00	1.00 -4.60	3.39	0.89
	Afrikaans	259	1.00 -5.00	1.80 -5.00	3.95	0.81
Positive Parenting	isiXhosa	28	1.00 -5.00	1.00 -5.00	3.77	0.96
	Afrikaans	259	1.00 -5.00	2.00 -5.00	4.46	0.65
Poor Monitoring and Supervision	isiXhosa	28	1.00 -5.00	1.00 -4.00	2.51	0.83
	Afrikaans	259	1.00 -5.00	1.00 -3.80	1.89	0.70
Inconsistent Discipline	isiXhosa	28	1.00 -5.00	1.00 -4.33	2.95	0.90
	Afrikaans	259	1.00 -5.00	1.00 -5.00	2.77	0.77
Item: Spank Child	isiXhosa	28	1.00 -5.00	1.00 -5.00	2.79	1.75
	Afrikaans	259	1.00 -5.00	1.00 -5.00	2.71	1.60
Item: Slap Child	isiXhosa	28	1.00 -5.00	1.00 -5.00	2.29	1.56
	Afrikaans	259	1.00 -5.00	1.00 -5.00	1.22	0.65
Item: Hit Child with a Belt/Whip/Stick	isiXhosa	28	1.00 -5.00	1.00 -5.00	2.50	1.77
	Afrikaans	259	1.00 -5.00	1.00 -5.00	1.62	1.22
Item: Yell and Scream	isiXhosa	28	1.00 -5.00	1.00 -5.00	2.93	1.59
	Afrikaans	259	1.00 -5.00	1.00 -5.00	2.67	1.42
Parental Stress Index – Short Form (PSI-SF)						
Consider themselves Negative Parents	isiXhosa	108	1.00 -5.00	1.00 -5.00	3.17	0.84
	Afrikaans	365	1.00 -5.00	1.00 -5.00	1.57	0.93
Parental Distress	isiXhosa	108	12.00-60.00	12.00-60.00	43.32	11.96
	Afrikaans	365	12.00-60.00	12.00-58.00	28.93	8.52
Dysfunctional Interactions	isiXhosa	108	12.00-60.00	19.00-60.00	39.99	11.95
	Afrikaans	365	12.00-60.00	12.00-55.00	26.30	6.87

Difficult Child	isiXhosa	108	12.00-60.00	12.00-56.00	37.12	10.29
Parental Stress Total Score	Afrikaans	365		12.00-52.00	27.30	7.04
	isiXhosa	108	36.00-180.00	68.00-175	120.43	27.90
	Afrikaans	365	36.00-180.00	37.00-160.00	82.53	19.16
Conflict Tactic Scale (CTS)						
Relationship Status	isiXhosa	108	-	67.5% partnered		
Intimate Partner Violence	Afrikaans	365	-	62.5% partnered		
	isiXhosa	73			7.11	10.4
	Afrikaans	228			5.76	12.7
General Health Questionnaire (GHQ)						
Somatic Symptoms	isiXhosa	108	7.00 – 28.00	7.00-22.00	8.85	3.04
	Afrikaans	365	7.00 – 28.00	7.00-26.00	9.50	4.11
Anxiety	isiXhosa	108	7.00 – 28.00	7.00-22.00	8.85	3.04
	Afrikaans	365	7.00 – 28.00	7.00-26.00	9.50	4.11
Social Dysfunction	isiXhosa	108	7.00 – 28.00	7.00-19.00	8.29	2.17
	Afrikaans	365	7.00 – 28.00	7.00-28.00	11.88	3.23
Depression	isiXhosa	108	7.00 – 28.00	7.00-18.00	7.44	1.34
	Afrikaans	365	7.00 – 28.00	7.00-25.00	8.43	3.24
General Health Scale Total Score	isiXhosa	108	28.00 – 112.00	28.00-66.00	32.73	6.94
	Afrikaans	365	28.00 – 112.00	28.00-88.00	39.907	11.33
Frequency of Alcohol Use	isiXhosa	108	0.00-3.00 0.00-3.00	0.00-3.00	0.167	0.69
	Afrikaans	365		0.00-3.00	1.934	1.44
Household Items	isiXhosa	108	1.00-15.00	1.00-13.00	2.74	1.22
	Afrikaans	365	1.00-15.00	1.00-14.00	7.08	2.95
Hunger	isiXhosa	108	1.00-9.00	0.00-9.00	4.935	3.06
	Afrikaans	365	1.00-9.00	0.00-9.00	1.254	1.87
Receiving food from Seven Passes	isiXhosa	108	31.5%	-	-	-
	Afrikaans	365	5.0%	-	-	-

3.1 Alabama Parenting Questionnaire

At baseline, the majority of caregivers (190; 66.2%) that completed the APQ reported spanking, slapping or hitting their child with a belt, whip or other object when they misbehaved. Caregivers reported high levels of corporal punishment (Afrikaans caregivers: $M = 4.46$; $SD = 0.65$; isiXhosa caregivers $M = 3.77$; $SD = 0.96$), and moderate parental involvement scores (Afrikaans caregivers: $M = 3.95$; $SD = 0.81$; isiXhosa caregivers $M = 3.39$; $SD = 0.89$). Nevertheless, we see a significant inverse relationship between corporal punishment and warm, positive parenting ($r = -.17$, $p = .004$); and corporal punishment and parental involvement ($r = -.18$, $p = .002$). This relationship suggests that corporal punishment is not seen as inconsistent with warm, positive parenting according to Touwsrante community norms. Descriptive statistics broken down by language group can be found in Table 4. Distributions of the APQ responses for the different language groups at baseline and at wave 2 are shown in Figure 5.

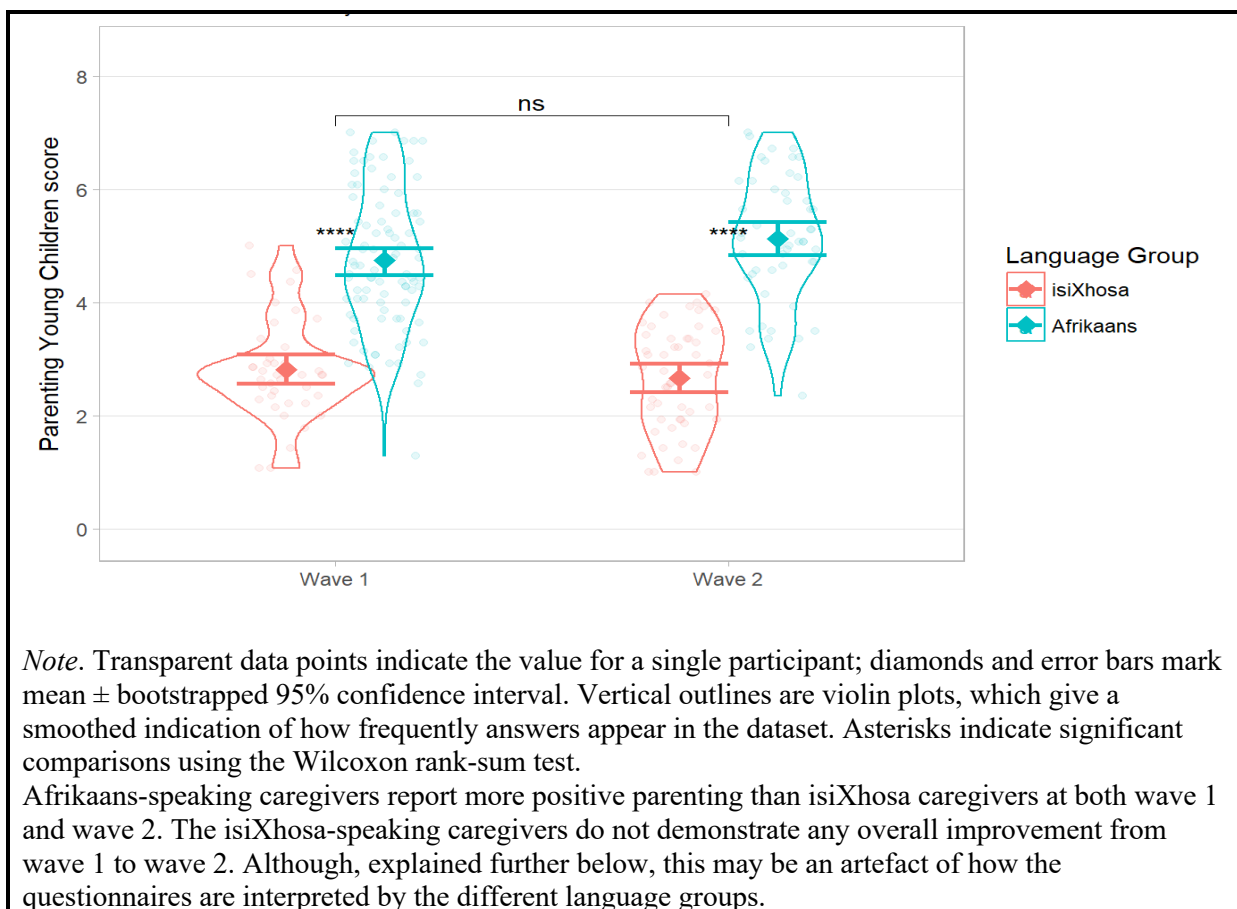
Figure 5. Alabama Parenting Questionnaire scores by wave and language group



3.1.1 Parenting Young Children Scale

Caregivers ($n = 135$) were interviewed about children aged 1½-5, using the Parenting of Young Children Scale (PARYC). Two subscales were used to provide an assessment of parenting in the areas of supporting good behaviour and setting limits. The majority of caregivers reported supporting positive behaviour and setting limits three or more times in the past month (see Table 4, Figure 6).

Figure 6. Parenting Young Children Scale scores by wave and language group



3.1.1.1 Child Behaviour Checklist.

At baseline, caregivers completed the Child Behaviour Checklist for 287 children in the 6-18 age group. The possible range of scores was between 0.00 – 64.00 on externalising subscales (i.e., rule-breaking and aggressive behaviour), and between 0.00 – 74.00 on the internalising subscales (i.e., anxious/depressed, withdrawn/depressed and somatic complaints; Table 5). The actual scores reported for externalising behaviour ranged from 0.00 – 38.00 ($M = 6.6$; $SD = 5.6$), and from 0.00 – 35.00 for internalising behaviour ($M = 5.6$; $SD = 6.1$).

Caregivers' responses were categorised by child age group, gender and severity of problematic

behaviour reported: 17 older children (5.9%) and 14 younger children (10.4%) met the borderline or clinical diagnostic criteria for either internalising or externalising behaviour.

Table 5

Children's internalising and externalising symptoms

	Possible range of scores	Range of reported scores	μ (σ)	Number of cases (%)
Children aged 6 - 18				
<i>Externalising:</i>				
Girls ($n = 151$)	0 – 64	0 – 36	6.2 (7.5)	Borderline clinical: 7 (4.6% of girls) Clinical: 8 (5.3% of girls)
Boys ($n = 136$)	0 – 64	0 - 38	7.0 (7.8)	Borderline clinical: 7 (5.1% of boys) Clinical: 6 (4.4% of boys)
Total externalising ($n = 287$)	0 – 64	0 - 38	6.6 (5.6)	Borderline clinical: 14 (4.9%) Clinical: 14 (4.9%)
<i>Internalising:</i>				
Girls ($n = 151$)	0 – 74	0 - 27	5.8 (5.8)	Borderline clinical: 11 (7.3% of girls) Clinical: 4 (2.6% of girls)
Boys ($n = 136$)	0 – 74	0 - 35	5.3 (6.4)	Borderline clinical: 10 (7.4% of boys) Clinical: 7 (5.1% of boys)
Total internalising ($n = 287$)	0 – 74	0 - 35	5.6 (6.1)	Borderline clinical: 21 (7.3%) Clinical: 11 (3.8%)
<i>Total Problems:</i>				
Total mental health ($n = 287$)	0 – 228	0 - 94	21.9 (21.4)	44 (15.3%)
Children aged 1½ - 5				
<i>Externalising:</i>				
Girls ($n = 61$)	0 – 48	0-29	9.8 (7.4)	Borderline clinical: 6 (9.8% of girls) Clinical: 1 (1.6% of girls)
Boys ($n = 74$)	0 – 48	0-36	9.8 (7.9)	Borderline clinical: 5 (6.8% of boys) Clinical: 3 (4.1% of boys)
Total externalising ($n = 135$)	0 – 48	0-36	9.7 (7.6)	Borderline clinical: 11 (8.1%) Clinical: 4 (3.0%)
<i>Internalising:</i>				
Girls ($n = 61$)	0 – 72	0-33	10.8 (8.7)	Borderline clinical: 6 (9.8 % of girls) Clinical: 15 (24.6% of girls)
Boys ($n = 74$)	0 – 72	0-40	10.3 (9.5)	Borderline clinical: 15 (20.3% of boys) Clinical: 8 (10.8% of boys)
Total internalising ($n = 135$)	0 – 72	0-40	10.6 (9.1)	Borderline clinical: 21 (15.6%) Clinical: 23 (17.0%)
<i>Total:</i>				
Total mental health ($n = 135$)	0 - 198	0-92	33.2 (24.7)	45 (33.3%)

3.1.2 Risk factor questionnaires.

3.1.2.1 Parenting Stress Questionnaire.

All caregivers experience some parenting stress, irrespective of socio-economic background, social support, and experience (Yu & Kim, 2016). At baseline, caregivers in this sample reported high parental stress levels, with 192 (45.6%) falling within the clinical range (Table 4; Figure 7; Figure 8). Of the caregivers with children between 1½ and 18 years old, 136 (32.3%) reported having severely dysfunctional interactions with their children, in the range where abusive behaviour was found to be directed towards children (Haskett et al., 2006).

Figure 7. Parent Stress Index scores, by wave and language group

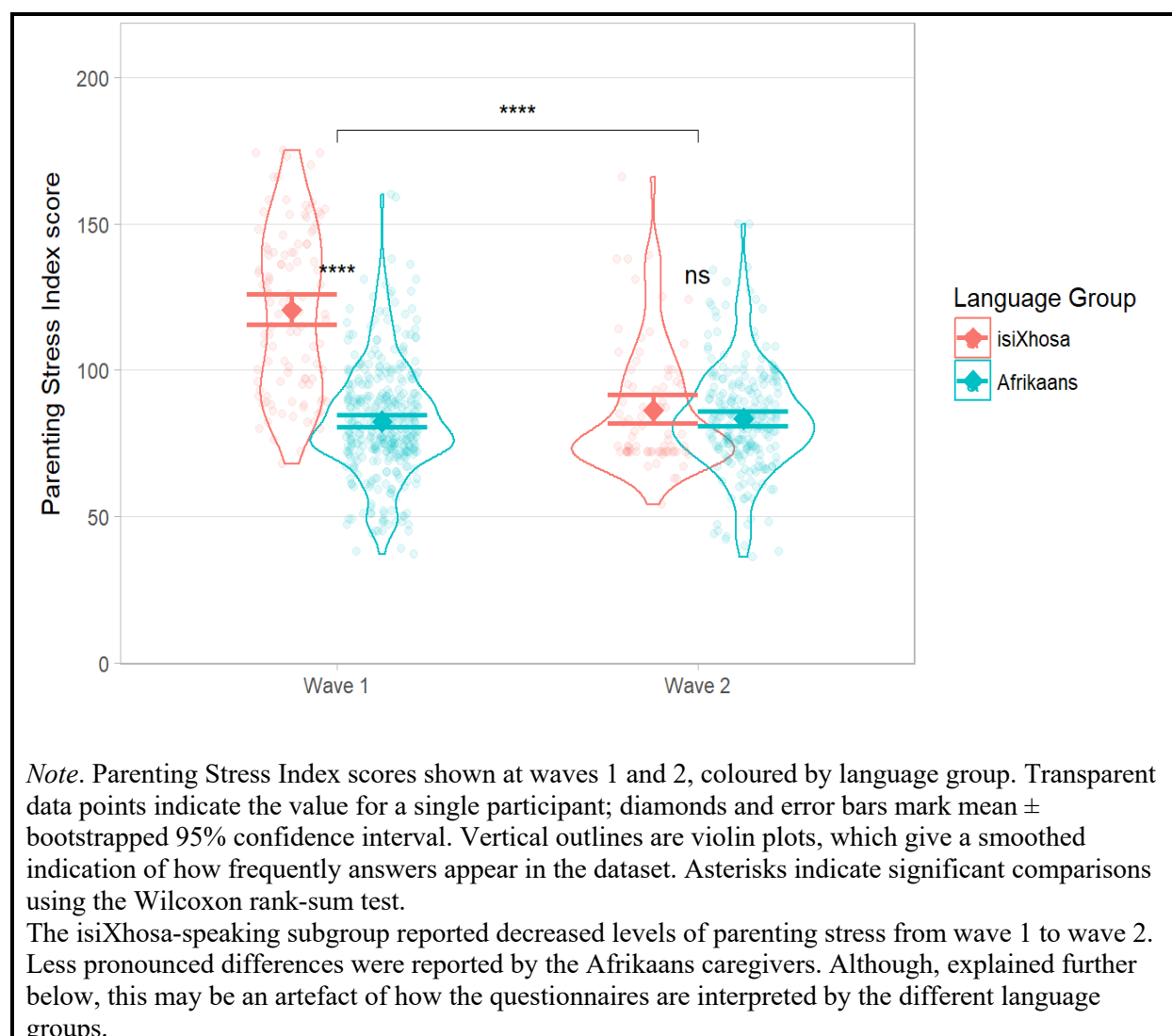
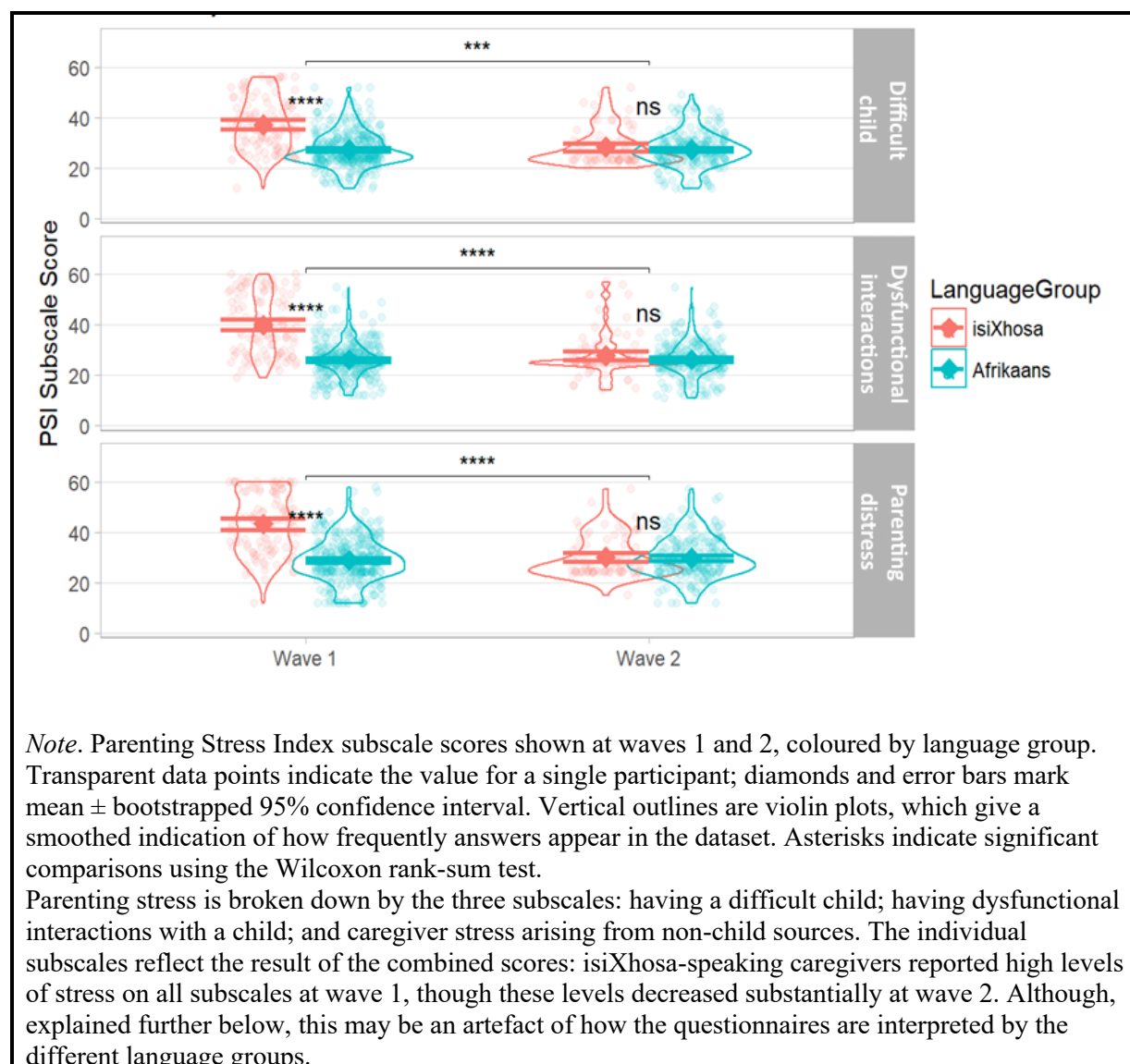


Figure 8. Parent Stress Index subscale scores



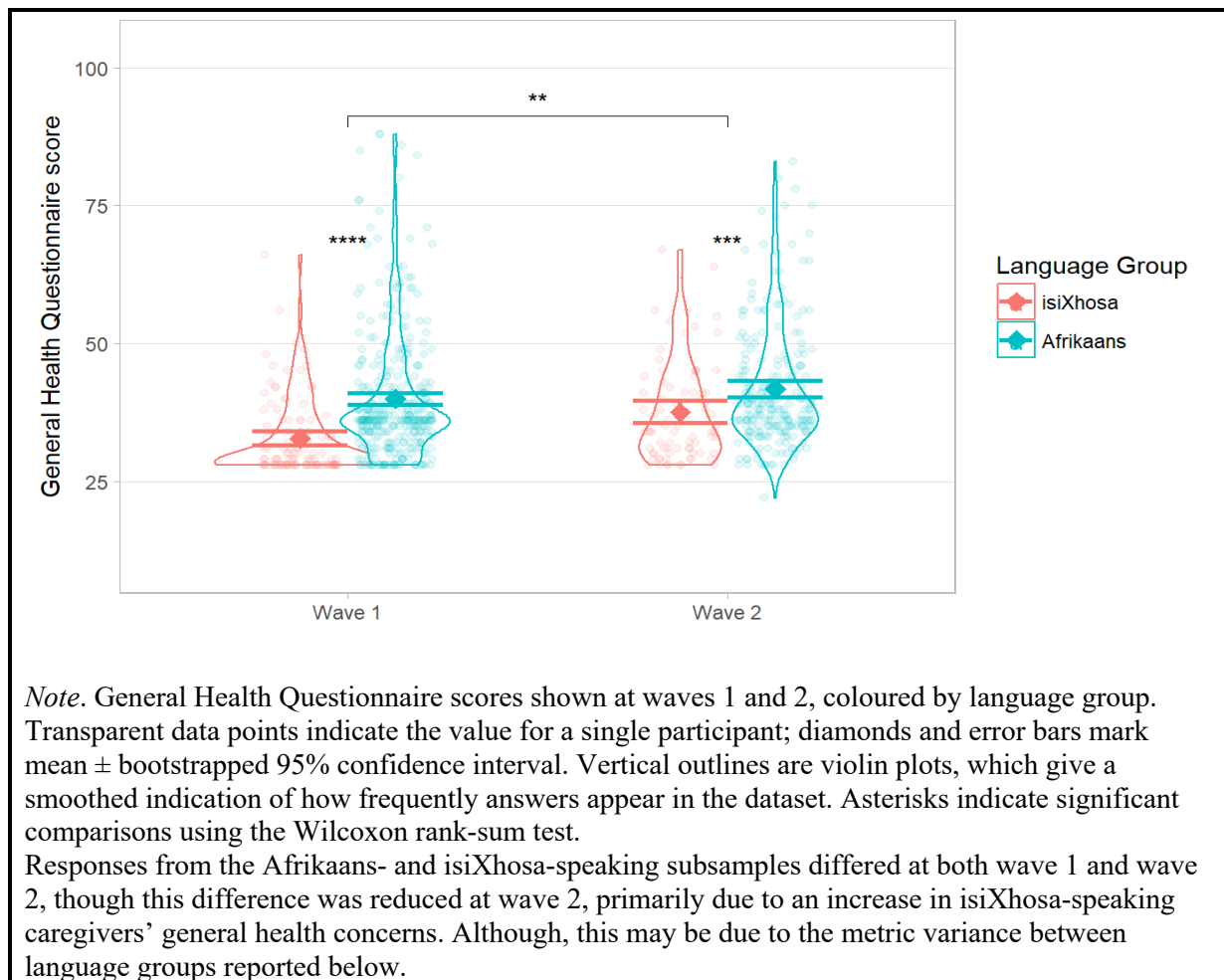
Note. Parenting Stress Index subscale scores shown at waves 1 and 2, coloured by language group. Transparent data points indicate the value for a single participant; diamonds and error bars mark mean \pm bootstrapped 95% confidence interval. Vertical outlines are violin plots, which give a smoothed indication of how frequently answers appear in the dataset. Asterisks indicate significant comparisons using the Wilcoxon rank-sum test.

Parenting stress is broken down by the three subscales: having a difficult child; having dysfunctional interactions with a child; and caregiver stress arising from non-child sources. The individual subscales reflect the result of the combined scores: isiXhosa-speaking caregivers reported high levels of stress on all subscales at wave 1, though these levels decreased substantially at wave 2. Although, explained further below, this may be an artefact of how the questionnaires are interpreted by the different language groups.

3.1.2.2 General Health Questionnaire.

At baseline, most caregivers of older children reported good mental health on the 28-item General Health Questionnaire, but 42 (14.7%) scored above the clinical cut-off of four (Goldberg & Hillier, 1979). A substantial number of caregivers of younger children (29; 21.5%) reported mental health symptoms at the level where a professional would be likely to make a diagnosis of a clinical disorder. There was a significant difference in GHQ responses between language groups, with the Afrikaans-speaking caregivers scoring substantially higher at both waves (Table 4; Figure 9).

Figure 9. General Health Questionnaire scores by wave and language group



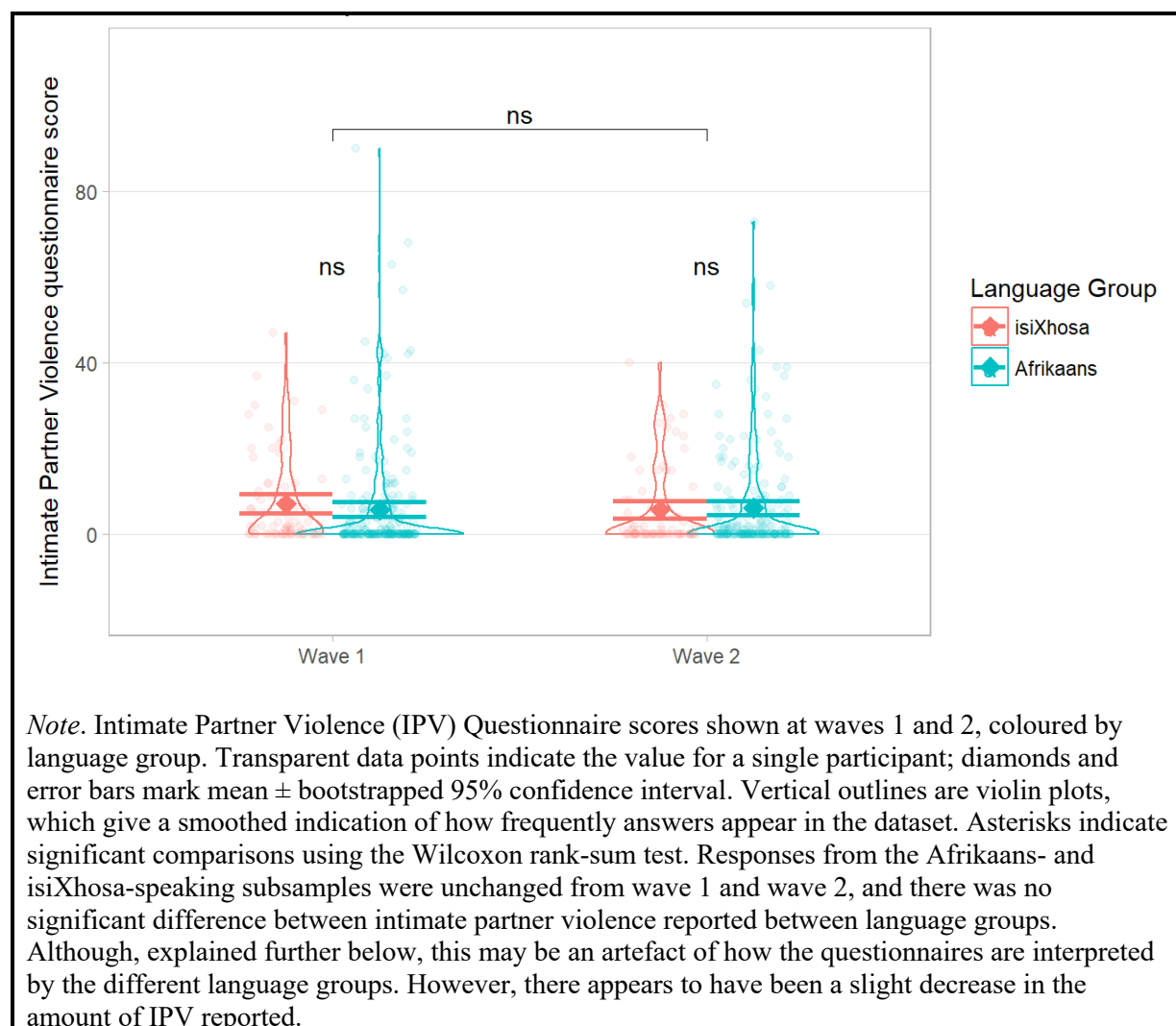
3.1.2.3 Other risk factors.

The following contextual variables were analysed to assess their influence on behavioural outcomes of the younger and older children: caregivers' reports of intimate partner violence, and caregivers' reports of substance misuse.

At baseline, the majority of partnered caregivers with children in the older age group (113; 60.4%) reported being in a non-violent relationship, although a substantial minority (74; 39.6%) reported experiencing intimate partner violence. Verbal and emotional abuse were the most commonly reported forms of violence (e.g., insulting or swearing: 45, 60.8%; yelling: 42; 56.0%). However, more severe forms of physical violence were reported such as being threatened with a knife or a gun (7; 9.4%; slapping: 20, 27.0%; punching: 15, 20.3%; beating the other up: 13, 17.6%; choking: 9; 12.2%). Furthermore, nearly half of the partnered caregivers (45; 56.2%) with children in the younger age group reported some level of violence between themselves and their partners. Distributions of the key outcome measures for the two language groups at waves 1 and 2 are shown in Figure 10. Of the 422 caregivers with children

between 1½ and 18 who reported alcohol use, 82 (19.4%) reported using it at the risky levels which are likely to be associated with difficulties in parenting (Ward et al., 2015). However, previous focus group discussions have indicated that caregivers in this community are inclined to under-report on their use of physical chastisement when punishing their children, alcohol dependence, and experiences of intimate partner violence (Ward et al., 2015). This should be borne in mind when looking at these figures.

Figure 10. Intimate Partner Violence scores by wave and language group



3.2 Factorial Invariance Testing

Stability was assessed using configural invariance to test whether the same items loaded onto the same factors across groups at baseline. If configural invariance was established, measurement invariance was used to assess whether the items in the measure loaded onto the factors in the same way across groups (Gregorich, 2006). Invariance tests were conducted across language groups on three key measurement instruments for which the ratio of the

number of observations to variance was sufficient for analysis: the General Health Questionnaire, the Parenting Stress Index, and the Parenting Young Child Scale. The measurement invariance tests for the Alabama Parenting Questionnaire could not be conducted for this reason. The 28-item General Health Questionnaire was explored based on the prescribed 4-factor structure model (GHQ; Goldberg & Hillier, 1979), the 36-item Parenting Stress Index-Short Form (PSI-SF) on the prescribed 3-factor structure (Abidin, 1995), and the Parenting Young Child Scale (PARYC) on the prescribed 2-factor structure (McEachern et al., 2012).

3.2.1 Confirmatory Factor Analysis results.

3.2.1.1 General Health Questionnaire.

A CFA was conducted to determine whether the common model specified for both groups fitted them independently. The CFA model with the constrained factor loadings and intercepts and precise factor loadings for all groups is shown in Appendix E.

Three CFAs were conducted: for both groups combined ($\chi^2 = 1235.53$; $p < .001$, CFI = 0.883; TLI = 0.872; RMSEA = 0.074), the Afrikaans-speaking group ($\chi^2 = 1026.45$; $p < .001$, CFI = 0.884; TLI = 0.873; RMSEA = 0.075), and the isiXhosa-speaking group ($\chi^2 = 1439.24$; $p < .001$, CFI = 0.463; TLI = 0.413; RMSEA = 0.172). The suggested factor structure of the GHQ fitted the isiXhosa group poorly (see Table 6 for the fit indices). As expected from this poor fit, the change in CFI from configural invariance to the more restricted measurement invariance ($\chi^2 = 2591.36$; $p < .001$, CFI = 0.762; TLI = 0.750; RMSEA = 0.107, Δ CFI = 0.299) indicated that the factor loadings were not the same across language groups. These results suggest that the questions are not linked in the same way to each latent variable, indicating that the groups are measurement variant and should not be compared on this measurement construct. The CFA results for the Afrikaans-speaking group indicated that these caregivers were interpreting the questionnaire more similarly to the reference group from whom the suggested factor structure was obtained.

3.2.1.2 Parenting Young Child Scale.

Three CFAs were conducted, for both language groups combined ($\chi^2 = 169.09$; $p < .001$, CFI = 0.907; TLI = 0.88; RMSEA = 0.096), the Afrikaans-speaking group ($\chi^2 = 129.66$; $p < .001$, CFI = 0.874; TLI = 0.85; RMSEA = 0.089), and the isiXhosa-speaking group ($\chi^2 = 167.43$; $p < .001$, CFI = 0.748; TLI = 0.69; RMSEA = 0.173). The CFA model with the constrained factor loadings and intercepts can be found in Appendix E. Configural invariance fit statistics missed the threshold of a reasonable fit by a substantial amount thereby indicating a poor configural model fit across language ($\chi^2 = 297.09$; $p < .001$, CFI = 0.816; TLI = 0.777;

RMSEA = 0.121). The change in CFI when moving to measurement invariance ($\chi^2 = 322.597$; $p < .001$, CFI = 0.801; TLI = 0.777; RMSEA = 0.121), $\Delta CFI = -0.015$, was greater in magnitude than .01, indicating that the factor loadings are not the same across groups. I conclude that the questions are not linked in the same way to each latent variable, indicating that the groups should not be compared on the two-factor structure of the PARYC scale.

3.2.1.3 Parent Stress Index.

Three CFAs were conducted, for both groups combined ($\chi^2 = 2353.12$; $p < .001$, CFI = 0.812; TLI = 0.80; RMSEA = 0.079), the Afrikaans-speaking group ($\chi^2 = 1861.37$; $p < .001$, CFI = 0.715; TLI = 0.70; RMSEA = 0.077), and the isiXhosa-speaking group ($\chi^2 = 1526.04$; $p < .001$, CFI = 0.694; TLI = 0.67; RMSEA = 0.122). Precise factor loadings for both groups are presented in Appendix C. Results from the configural invariance ($\chi^2 = 3387.414$; $p < .001$, CFI = 0.707; TLI = 0.687; RMSEA = 0.089) and measurement invariance tests ($\chi^2 = 3570.368$; $p < .001$, CFI = 0.687; TLI = 0.676; RMSEA = 0.090) for the three factor PSI-SF measure indicate that the groups are not comparable on the measure ($|\Delta CFI| = |-0.020| > .01$).

3.2.1.4 Exploratory Factor Analysis.

To investigate the poor GHQ model fit for the isiXhosa group, exploratory factor analysis was conducted on each construct with all the items that met the criteria for normality (using IBM SPSS, with Maximum Likelihood extraction and direct oblimin rotation on the groups separately). Minimum factor loadings were set to .40 and items were sorted by size of factor loadings. No items correlated above $r = .90$ were present in the inter-item correlation matrix, suggesting no multicollinearity. Since the factor analysis was being run on different groups, it was important to ensure that the latent constructs were measured using the same items for both groups, specifically, four subscales: somatic symptoms (items 1-7), social dysfunction (items 15-21), severe depression (items 22-28), and anxiety or insomnia (items 8-14). Importantly, contrasting scree plots were produced when testing the Afrikaans and isiXhosa language groups, suggesting five and seven factors recommended for extraction, respectively. As such, it became evident at the dimension reduction phase that different numbers of factors underlay the data for the two groups. In light of the poorly fitted model for the isiXhosa-speaking group, it was not possible to compare the groups. It is important that a more culturally sensitive measure be developed which will allow such comparisons, but, for present purposes, only the Afrikaans-speaking female caregivers could be included in the analytic sample.

Table 6

Model fit indices for confirmatory factor analysis

Model	χ^2 (df)	<i>p</i>	CFI	TLI	RMSEA	SRMR	BIC	AIC	Δ CFI	Decision
GHQ										
All Groups (n = 473)	1235.53 (346.00)	< .001	0.883	0.872	0.074	0.070	1979	1942	-	-
Afrikaans (n = 365)	1026.45 (346)	< .001	0.884	0.873	0.075	0.068	1548	1514	-	-
isiXhosa (n = 108)	1439.24 (346)	< .001	0.463	0.413	0.172	0.181	2798	2563	-	-
Configural Invariance	2465.69 (692)	< .001	0.775	0.754	0.106	0.094	1843	9708	-	-
Metric Invariance	2591.36 (719)	< .001	0.762	0.750	0.107	0.114	1840	1778	0.02	Reject
PARYC										
All Groups (n = 135)	169.085 (75)	< .001	0.907	0.888	0.096	0.078	7384	7256	-	-
Afrikaans (n = 94)	129.656 (75)	< .001	0.874	0.847	0.089	0.098	5274	5163	-	-
isiXhosa (n = 41)	167.431 (75)	< .001	0.748	0.694	0.173	0.131	1781	1706	-	-
Configural Invariance	297.087 (150)	< .001	0.816	0.777	0.121	0.108	7123	6869	-	-
Metric Invariance	322.597 (163)	< .001	0.801	0.777	0.121	0.137	7085	6869	0.02	Reject
PSI										
All Groups (n = 473)	2353.12 (591)	< .001	0.812	0.799	0.079	0.066	4820	4774	-	-
Afrikaans (n = 365)	1861.37 (591)	< .001	0.715	0.697	0.077	0.075	3616	3573	-	-
isiXhosa (n = 108)	1526.04 (591)	< .001	0.694	0.674	0.122	0.105	1105	1075	-	-
Configural Invariance	3387.41 (1182)	< .001	0.707	0.687	0.089	0.082	4741	4648	-	-
Metric Invariance	3570.37 (1217)	< .001	0.687	0.676	0.090	0.095	4737	4660	0.02	Reject

3.2.1.5 Note. CFI, Comparative Fit Index; TLI, Tucker Lewis Index; RMSEA, Root Mean Square Error of Approximation; SRMR, Standardised Root Mean Square Residual; BIC, Bayes Information Criterion; AIC, Akaike Information Criterion.

3.2.1.6 Exclusion of isiXhosa caregivers.

Various factors led to the decision not to include the isiXhosa data in the analytic sample. Firstly, as shown by the results of the CFA tests indicating measurement variance across language groups, the language groups could not be compared on the GHQ, PARYC and

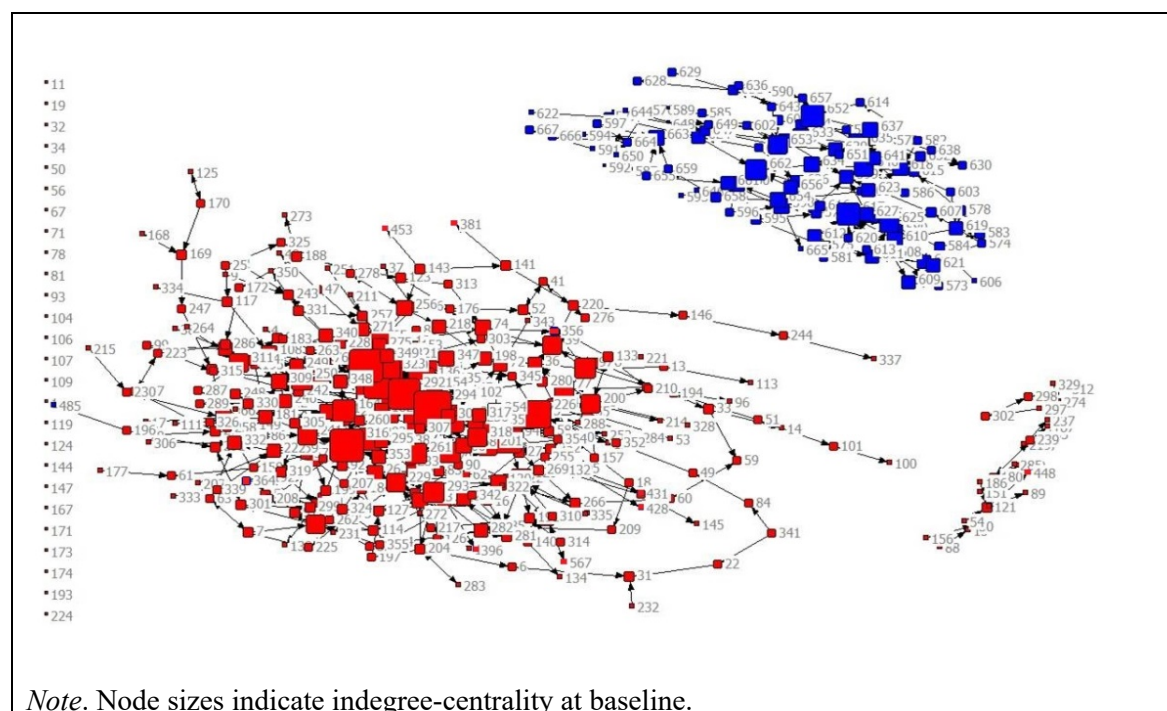
PSI-SF scales. Secondly, inspection of nomination data indicated that perfect segregation existed between the subgroups in the community caregiver contact network. This latter finding suggested that language groups should be treated separately in all analyses, as social influence processes would be unlikely to affect community members from different subsamples (see Figure 11 and Figure 12 for a visual depiction of segregated caregiver communication networks, based on language, at wave 1). Thirdly, no isiXhosa-speaking caregivers attended the parenting programmes, which made it analytically impossible to evaluate the success of the intervention within their separate communication network. Henceforth, when reference is made in the analysis to “caregivers” this denotes only Afrikaans-speaking caregivers in the analytic sample.

Figure 11. Aerial View of the Community of Touwsranten



Note. The white dotted area demarcates where the isiXhosa-speaking community members reside. The other homes have Afrikaans-speaking inhabitants. The Seven Passes Initiative is marked with the pink circle, while the Touwsranten Primary School is marked with the green circle.

Figure 12. Afrikaans (red) and isiXhosa-speaking (blue) caregiver networks



3.3 Attrition in the Afrikaans-Speaking Sample

Network data were collected from 343 caregivers at wave 1. Of these, 108 were coded as dropouts for not returning data at wave 2. The logistic regression analyses indicated that no variables were associated with dropping out of the study at wave 2, other than attending a parenting skills training program, which was negatively associated with dropping out ($\chi^2(11) = 47.74, p < .001$; follow-up $\chi^2(1) = 7.20, p < .05$; 17.5% of attendees and 34.9% of non-attendees; see Table 7). Consequently, attendees were over-represented in the analytic sample. This is not considered a major flaw because attendees are small in number ($n = 51$), substantially fewer in number than non-attendees ($n = 184$), and differ from non-attendees only in that they have undergone direct, intentional exposure to the parenting programme portion of the intervention, as indicated by selection bias analysis below. None of the other variables predicted dropout (all $\chi^2 < .093$), and there were no significant differences between those who dropped out and those who stayed in, in terms of means (Wilk's lambda $\Lambda = .628, F(11, 332) = 1.00, p = .630$, partial $\eta^2 = .026$), or variances (all Levene's test for equality of variance comparisons $p > .28$). The differences between the analytic sample and the wider community were thus limited and deemed non-critical.

Table 7

Dropping out of the study between waves 1 and 2

Coefficients:	Dropout	Remain	Estimate	SE	Wald	p
	μ (σ)	μ (σ)				
(Intercept)			-1.61	1.18	-1.37	.170
Parent Age	34.31 (10.16)	35.92 (12.05)	-.01	.003	-2.11	.063
Child Age	9.25(4.92)	9.21 (4.63)	-0.02	0.03	-0.58	.561
Parent Stress	84.06 (20.23)	83.05 (18.95)	0.00	0.01	0.03	.974
Alcohol Severity	7.93 (9.67)	7.82 (8.86)	0.04	0.28	0.13	.894
Psychiatric Morbidity	40.21 (11.45)	39.98 (10.98)	-0.01	0.01	-0.72	.474
Parenting Summary Statistic	-0.08 (1.10)	0.04 (0.95)	-0.08	0.13	-0.61	.540
Programme Attendance ^a	.00 (.00)	.21 (.41)	-0.40	.072	-0.02	.997
<i>Network Centrality Parameters</i>						
Indegree						
Outdegree	1.50 (1.31)	1.51 (0.82)	-0.12	0.13	-0.98	.328
Betweenness	485.21 (1181.67)	452.80 (1005.63)	0.00	0.00	0.38	.701
Closeness	10.42 (1.81)	10.17 (1.82)	0.16	0.09	1.88	.060
(Intercept)			-1.61	1.18	-1.37	.170
χ^2	47.74, <i>df</i> = 11, <i>p</i> < .001					
<i>Nagelkerke Pseudo R</i> ²	0.22					

Note. *Dropout* refers to caregivers that dropped out of the analytic sample at wave 2; while *Remain* refers to caregivers that form part of the analytic sample.

^a Coded as “1” male and “2” female.

^b Coded as “0” non-attende and “1” attendee.

3.4 Description of the Afrikaans-speaking Caregiver Sample

Baseline socio-demographics and risk factors for abuse for the remaining 235 Afrikaans-speaking female caregivers (who were present at both wave 1 and wave 2) are presented in Table 8. The analytic sample consists only of caregivers that remain in the sample at wave 2.

Table 8

Baseline demographics of the analytic sample

Socio-demographic and risk factors	<i>n</i>	Percent	Possible Range	Range Reported	μ (σ)
Parent age	235	-	-	17 -76yr	35.92 (12.05)
Child age	235	-	< 18yr	0yr 7mo- 17yr	9.24 (4.63)
Female	123	51.9%	-	1yr 3mo – 17yr	9.54 (4.67)
Male	112	48.0%	-	0yr 7mo- 17yr	8.91 (4.62)
<i>Intimate Partner Violence</i>	146	62.1%	0.00 - 96	0.00 – 90.00	7.06 (13.99)
<i>Caregiver-Child Relationship</i>					
Biological status	208	88.5%	-	-	-
Step-parent	1	0.4%	-	-	-
Adoptive parent	5	2.1%	-	-	-
Grandparent	15	6.4%	-	-	-
Foster parent	3	1.3%	-	-	-
Other	3	1.3%	-	-	-
<i>Average Household Size</i>	235	-	1.00 – 16.00	2.00 s– 16.00	4.87 (1.80)
<i>Education</i>					
Some primary schooling	49	20.9%	-	-	-
Completed primary schooling	29	12.3%	-	-	-
Some high school	106	45.1%	-	-	-
Completed high school	42	17.9%	-	-	-
Post-matric qualification	8	3.4%	-	-	-
Post-graduate training	1	0.4%	-	-	-
Unemployed caregivers	112	47.7%	-	-	-
<i>Government Grants</i>					
No grant	55	23.4%	-	-	-
One grant	131	55.7%	-	-	-
Two grant Grants	44	18.7%	-	-	-
Three grant Grants	5	2.1%	-	-	-
<i>Parenting Behaviour</i>	227	96.6%	-	-	-
Parenting Young Children Scale Total (PARYC)	57	25.1%	1.00 - 7.00	2.71 – 6.86	4.79 (1.10)
Alabama Parenting Questionnaire Total (APQ)	170	74.8%	1.00 - 5.00	2.14 – 4.77	3.66 (.56)
Corporal Punishment: caregiver report	170	74.8%	1.00 - 5.00	1.00 – 4.33	1.92 (.76)
Corporal Punishment: child report	88	-	1.00 - 5.00	1.37 – 3.67	1.68 (.677)
Below average parenting reported at W1	1031	43.8%		0.00 – 93.00	22.26 (.49)
	70	72.7%			
<i>Older Child Behaviour</i>					
Above average parenting reported at W1	1241	52.8%	--	--	--
Internalising Borderline	3	7.6%			
Parenting Improved	1274	59.9%	--	--	--
Internalising Clinical		2.3%			
Externalising Borderline	9	3.8%	-	-	-
Internalising Clinical	8	3.4%	-	-	-
<i>Younger Child Behaviour</i>	57	24.3%		0.00 - 89.00	34.88 (25.19)
Externalising Borderline	9	3.8%	-	-	-
Internalising Clinical	8	3.4%	-	-	-
<i>Younger Child Behaviour</i>	57	24.3%		0.00 - 89.00	34.88 (25.19)

Internalising Borderline	3	5.3%	-	-	-
Internalising Clinical	16	28.1%	-	-	-
Externalising Borderline	5	2.1%	-	-	-
Internalising Clinical	2	1.3%	-	-	-
Parental Stress	235	-	36.00 -180.00	37.00 - 160.00	83.05 (20.36)
General Health	235	-	28.00 – 112.00	28.00 – 88.00	39.98 (10.98)
Somatic Symptoms	235	-	7.00 – 28.00	7.00 – 25.00	9.63 (4.11)
Anxiety/Insomnia	235	-	7.00 – 28.00	7.00 – 25.00	11.78 (3.27)
Social Dysfunction	235	-	7.00 – 28.00	7.00 – 28.00	8.57 (3.51)
Severe Depression	235	-	7.00 – 28.00	7.00 – 25.00	10.38 (4.04)
Clinical Caseness (> 4)	49	20.9%	-	-	-
Alcohol Use Severity	148	62.9%	-	0.00 – 32.00	7.82 (8.86)
Low risk	90	38.3%	-	-	-
Moderate risk	52	22.1%	-	-	-
High risk	6	2.6%	-	-	-
Hunger	235	-	0.00 - 9.00	0.00 - 9.00	1.32 (1.92)
Receive food at SPI	98	41.7%	-	-	-
Household Items	235	-	1.00 – 15.00	1.00– 14.00	8.75 (2.80)
Social Activation Dose	235	-	0 - 16	0 - 16	6.58 (4.08)
Total Attendees	51	22.5%	-	-	-
Attendees with younger children	10	26.9%	-	0.00 – 12.00 Sessions	1.98 (4.10)
Attendees with older children	37	73.0%	-	0.00 – 30.00 Sessions	2.12 (4.84)
Living with Attendee	39	16.6%	-	-	-
Caregivers that nominate attendees at W1	61	26.0%	-	-	-
Caregivers that nominate attendees at W2	79	33.6%	-	-	-
Caregivers that nominate non-attendees W1	197	83.8%	-	-	-
Caregivers that nominate non-attendees W2	196	83.0%	-	-	-

3.4.1 Programme attendance selection bias.

All the Afrikaans-speaking caregivers who completed a survey at wave 1 were made aware of, and invited to participate in, the parenting programmes; some caregivers chose to attend, and others not to. This raises the possibility of selection bias (in the sense of systematic differences between these two naturally occurring groups), and therefore a logistic regression analysis was conducted to determine whether systematic differences existed between attendees and non-attendees. At baseline, there were no group differences on the outcomes and covariates used in further hypothesis testing: parenting behaviour, parental stress, general health, alcohol use, child age, and the four centrality parameters ($\chi^2(11) = 12.12, p = .277$; see Table 9 for the corresponding group differences). The fact that no differences were found in the analytic sample is encouraging for the generalisability of the results, to the Touwsranteen population in general, in light of the attrition between attendees and non-attendees.

Table 9

Descriptive statistics for attendees and non-attendees at baseline

Coefficients:	Attendees	Non-attendee	Estimate	SE	Wald	p
	μ (σ)	μ (σ)				
(Intercept)			-3.12	1.67	-1.87	.062
Parent Age	34.31 (10.16)	35.92 (12.05)	-.006	.003	-2.11	.063
Child Age	8.91 (3.93)	9.99 (4.62)	-0.07	0.04	-1.71	.087
Child Gender ^a	1.50 (.51)	1.54 (.50)	-0.01	0.34	-0.04	.966
Parent Stress	83.92 (1.82)	82.18 (19.23)	0.01	0.01	0.84	.400
Alcohol Severity	8.12 (9.83)	7.57 (9.42)	0.09	0.13	0.68	.494
Psychiatric Morbidity	40.54 (11.96)	39.41 (11.55)	0.01	0.02	0.91	.362
Parenting Summary	0.12 (0.14)	-0.02 (0.71)	0.40	0.21	1.93	.069
Statistic						
<i>Network Centrality Parameters</i>						
Indegree	1.50 (1.20)	1.51 (1.22)	-0.05	0.13	-0.37	.713
Outdegree	1.49 (1.15)	1.54 (1.40)	-0.20	0.19	-1.04	.298
Betweenness	519.32 (1136.53)	386.28 (1004.2)	0.00	0.00	1.29	.199
Closeness	10.32 (1.82)	10.02 (1.84)	0.13	0.11	1.17	.242
χ^2	12.12, $df = 11$, $p = .277$					
<i>Nagelkerk Pseudo R²</i>	0.12					

Note. The dependent variable has been coded as “0” non-attendee and “1” attendee.

^a Coded as “1” male and “2” female.

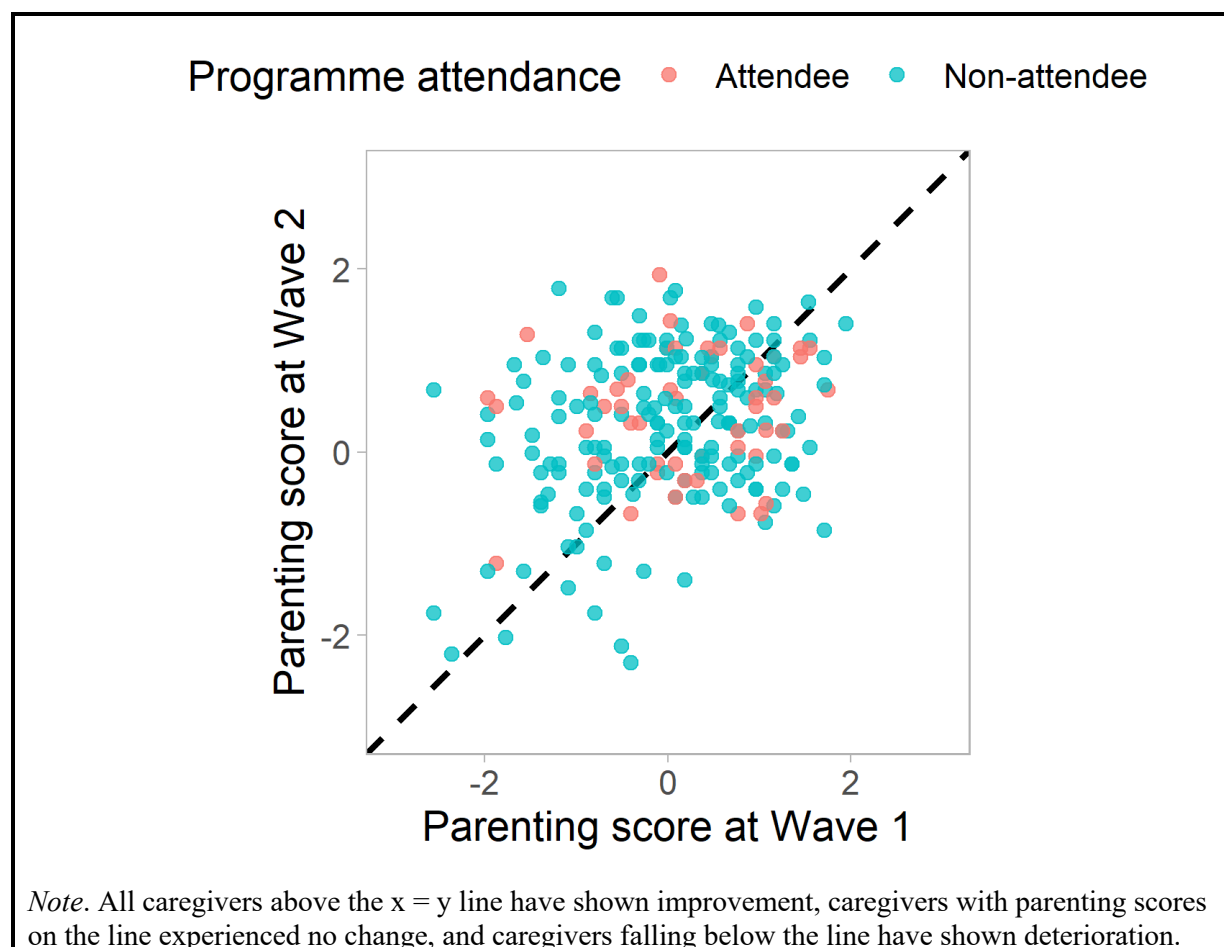
3.5 Intervention Outcomes: Tests of Hypotheses 1a-c

3.5.1 Hypothesis 1a. The intervention will be associated with improved scores when tested on all female caregivers in the community.

Increases in positive parenting behaviour, based on caregivers’ self-reports, were explored for the whole community combined, irrespective of programme attendance. The intervention was designed to teach caregivers warmer, more positive alternatives to discipline and to test whether community-wide improvement in parenting behaviour occurred. To assess whether this improvement occurred, a one-sample *t*-test was conducted using the parenting change scores (ΔZP), whose mean was tested against 0, which would represent no change. The results indicated a small but significant effect ($M_{\Delta ZP} = 0.30$ [95% bias-corrected, accelerated confidence interval - 0.163, 0.446], $t(211) = 4.24$, $p < .001$, $d = 0.29$; see Figure 13). Thus, indicating that Hypothesis 1a is confirmed; a particularly positive outcome given that less than a quarter of the analytic sample (52 women; 22.1%) directly attended a programme.

A post-hoc power analysis was conducted which showed that the power of the analysis used to detect the community-wide change in parenting behaviour was .992 using a sample size of 212 (caregivers in the analytic sample with consistent child data), an observed mean difference of 0.3, standard deviation of 1.0, an alpha level of 0.05, and using a one-sample two-tailed equality test (Chow et al., 2018; *Power and Sample Size Calculators* | HyLown, n.d.).

Figure 13. A graphical depiction of improvement in parenting from waves 1 to 2



Caregivers that scored above the average on the Parenting Summary Statistic (‘warm, positive parents’, based on baseline scores) were more likely to report decreased parenting scores at wave 2, while caregivers that scored below the average (‘harsh, cold parents’) reported greater improvements on parenting behaviour ($\chi^2(1, n = 212) = 57.22, p < .001$, probability of improving as a warm, positive parent = .331, as a harsh, cold parent = .859; see Table 10).

Table 10

Contingency table for parenting change

Parenting Change	Baseline Parent		Total
	Below average	Above average	
Improved	85	42	127
Deteriorated	12	73	85
Total	97	115	212

3.5.2 Hypothesis 1b. The intervention will be associated with improved parenting scores, especially for caregivers who attend a parenting programme.

The programme sessions were designed to equip caregivers with knowledge and skills helpful to improve their parenting, while the social activation component was intended to be associated with favourable attitudes towards warm, positive parenting to facilitate the spread of related information throughout the community. To examine the association between programme session attendance on improvement in parenting skills, a 2 (attending vs not attending a programme) x 2 (wave 1 vs wave 2) mixed-model ANOVA, with the second factor within-subjects, was run. There was no main effect of attendance ($F(1,225) = 3.36; p = .068; \eta_p^2 = .015$), but there was a main effect of wave for parenting behaviour ($F(1,225) = 16.21; p < .001; \eta_p^2 = .067$) with parenting scores improving from wave 1 to wave 2 ($M_{w1} = 0.02$ [95% bias-corrected, accelerated confidence interval - 0.10, 0.15], $M_{w2} = 0.33$ [0.20, 0.46]; $d = 0.35$). There was no interaction between attendance and wave ($F(1,225) = 0.101; p = .750; \eta_p^2 < .001$). These findings are consistent with the result above that parenting improves in the sample as a whole, but offer no support for the hypothesis that attendance at the programme sessions are associated with greater improvements; thus, they provide only partial support for Hypothesis 1b.

3.5.2.1 Robustness check.

When the data are split by child age, the above result remains consistent for caregivers with younger children (aged 1½-5): there was a main effect of wave for the weighted total scores for the caregivers with younger children ($F(1,40) = 4.72; p = .036; \eta_p^2 = .11$), with parenting scores improving from wave 1 to wave 2 ($M_{w1} = 4.70$ [95% bias-corrected, accelerated confidence interval - 4.34, 5.07], $M_{w2} = 5.21$ [4.93, 5.47]; $d = 0.49$); there was no effect of programme attendance ($F(1,40) = 0.04; p = .848; \eta_p^2 = .001$) or interaction effect of wave and programme attendance ($F(1,40) = 0.14; p = .711; \eta_p^2 = .003$). However, for caregivers with older children (aged 6-18) there was no main effect of wave for the weighted total scores ($F(1,168) = 2.97; p = .087; \eta_p^2 = .000; M_{w1} = 3.66$ [3.57, 3.76], $M_{w2} = 3.74$ [3.66, 3.82]; $d = 0.15$). There was an effect of programme attendance ($F(1,168) = 4.02; p = .047; \eta_p^2 = .023$), but no interaction effect between wave and programme attendance ($F(1,168) = 0.025; p = .876; \eta_p^2 = .000$; see Figure 14 and Figure 15). The main effect of programme attendance indicates an association between caregivers in the attendance group with older children and greater improvements than non-attendees, while caregivers with younger children reported

improvements at the same rate as non-attendees. These findings provide further support for Hypothesis 1a and provide only partial support for Hypothesis 1b.

Figure 14. Improvement in parenting behaviour

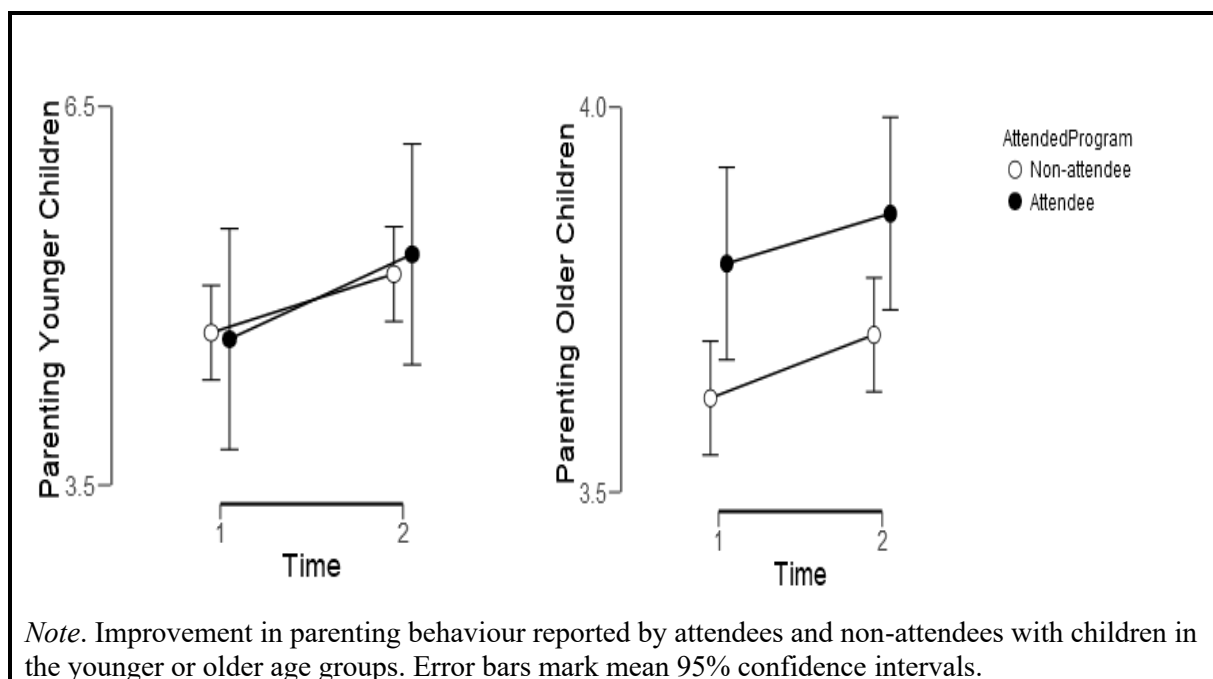
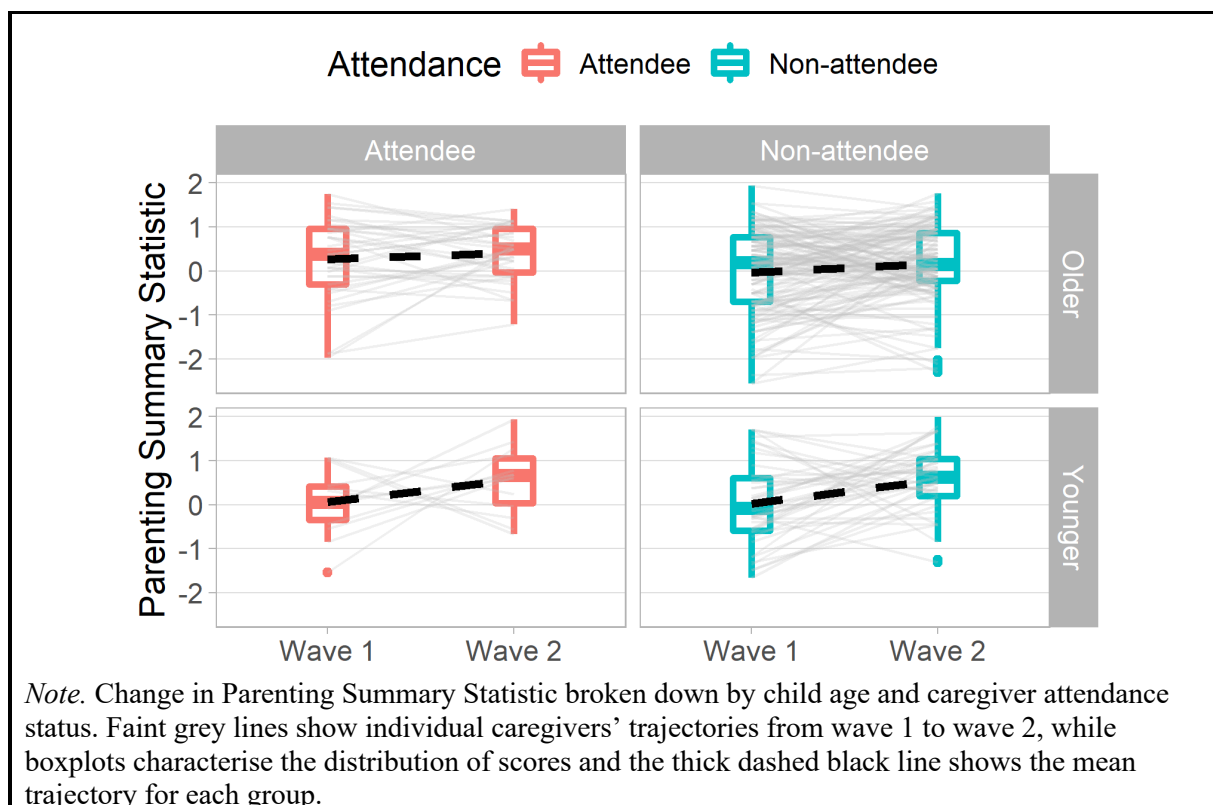


Figure 15. Breakdown of change in parenting behaviour



3.5.2.1.1 Corporal punishment.

The intervention is focused on long-term violence reduction, and corporal punishment is a form of violence (Ward et al., 2015). I therefore examined the association between programme session attendance and reductions in the use of corporal punishment as a disciplinary method. A 2 (attending vs not attending a programme) x 2 (wave 1 vs wave 2) mixed-model ANOVA, with the second factor within-subjects, was run on each of the items from the APQ corporal punishment subscale. There were main effects of wave for: spanking ($F(1,169) = 15.19; p < .001; \eta_p^2 = .083; M_{w1} = 2.93$ [95% Bias-corrected, accelerated Confidence Interval – 2.69, 3.16], $M_{w2} = 2.30$ [2.12, 2.49]; $d = 0.42$), slapping ($F(1,168) = 4.07; p = .045; \eta_p^2 = .024; M_{w1} = 1.24$ [1.14, 1.34], $M_{w2} = 1.14$ [1.07, 1.22]; $d = 0.16$), and hitting ($F(1,168) = 4.64; p = .033; \eta_p^2 = .027; M_{w1} = 1.62$ [1.44, 2.12], $M_{w2} = 1.31$ [1.20, 1.42]; $d = 0.31$). There was no main effect of programme attendance, or interaction between programme attendance and Wave, for spanking, slapping, or hitting behaviour (all F s < 8.3 ; all p 's $> .363$; see Table 11). The reduction in the use of corporal punishment across wave indicates that the caregivers reported significantly reduced use of corporal punishment as a disciplinary method irrespective of whether they attended a parenting programme or not. As such, the main aim of the intervention, which was to shift the behaviour associated with warm, positive parenting practices amongst all individuals in a community appears to have been successful, specifically with respect to corporal punishment. These positive behavioural shifts could be associated with shifts towards increasingly warm, positive parenting norms over a prolonged period.

Table 11

APQ corporal punishment subscale

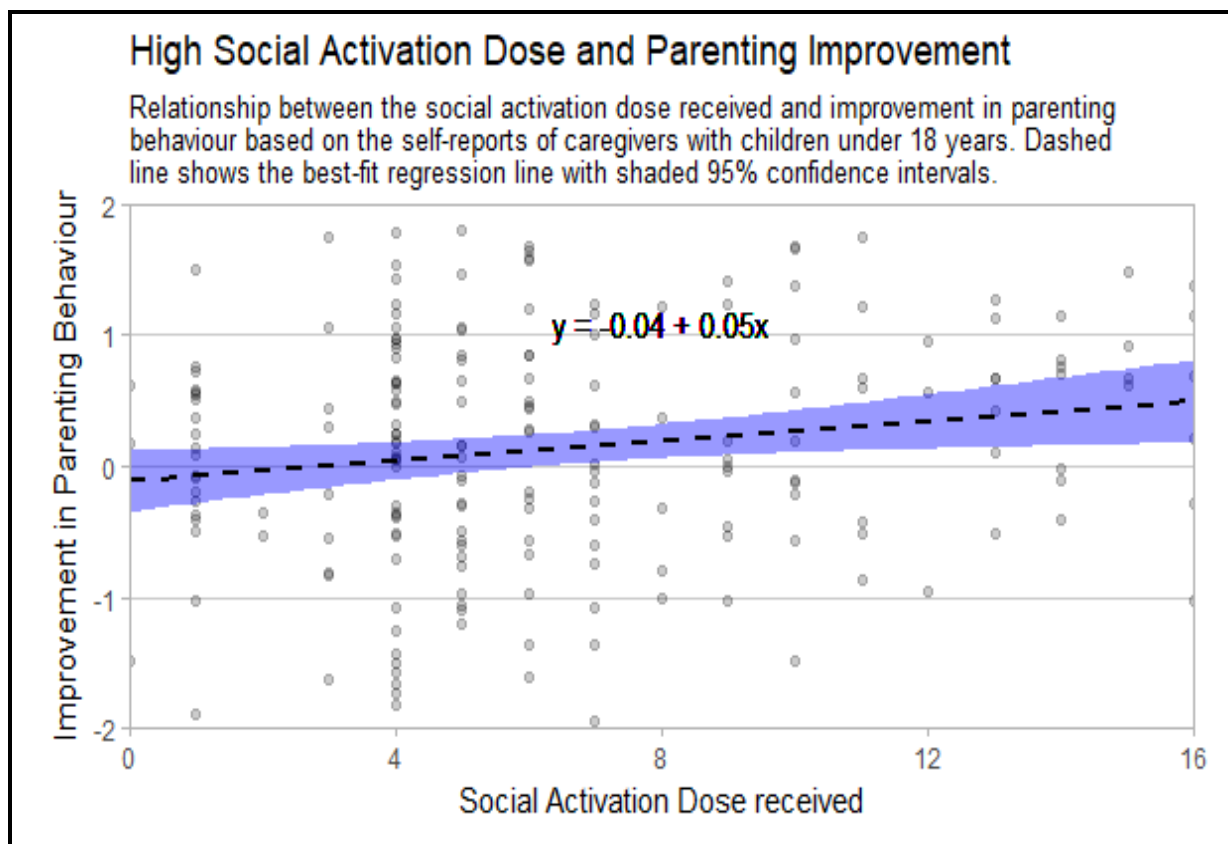
Variable			Means		Wave		Group: Attendance			Interaction			
			wave 1 μ (σ)	wave 2 μ (σ)	F	p	η_p^2	F	p	η_p^2	F	p	η_p^2
Positive Parenting Behaviour	Total Sample	Non-attendees ($n = 176$)	- 0.014 (0.96)	0.282 (0.84)	16.21	< .001	0.067	3.36	.068	0.015	0.10	.750	0.000
		Attendees ($n = 51$)	0.216 (0.90)	0.46 (0.66)									
	Older Children	Non-attendees ($n = 133$)	3.62 (0.56)	3.70 (0.54)	2.97	.087	0.00	4.02	.047	0.023	0.03	.876	0.000
		Attendees ($n = 37$)	3.80 (0.56)	3.86 (0.39)									
	Younger Children	Non-attendees ($n = 32$)	4.71 (1.26)	5.172 (0.91)	4.72	.036	0.105	0.037	.848	0.001	0.14	.711	0.003
		Attendees ($n = 10$)	4.66 (1.01)	5.33 (0.99)									
Corporal Punishment	Spanking Child	Non-attendees ($n = 133$)	2.96 (1.57)	2.31 (1.34)	15.19	< .001	0.083	.086	.958	0.000	0.20	.656	0.001
		Attendees ($n = 37$)	2.94 (1.51)	2.17 (1.31)									
		Total ($n = 170$)	2.92 (1.55)	2.31 (1.35)									
	Slapping Child	Non-attendees ($n = 133$)	1.22 (.63)	1.13 (.55)	4.07	.045	0.024	.000	.988	0.000	0.83	.363	0.005
		Attendees ($n = 37$)	1.29 (.87)	1.05 (.34)									
		Total ($n = 170$)	1.24 (.68)	1.14 (.59)									
	Hitting Child	Non-attendees ($n = 133$)	1.65 (1.24)	1.28 (.73)	4.64	.033	0.027	.337	.562	0.002	0.58	.446	0.003
		Attendees ($n = 37$)	1.47 (1.10)	1.29 (.71)									
		Total ($n = 170$)	1.62 (1.21)	1.31 (.78)									

Note. The corporal punishment subscale items were treated as single items, rather than a scale, because of the low internal consistency of the scales.

3.5.3 Hypothesis 1c. The intervention will be associated with improved parenting scores especially for caregivers that received a higher “dose” of the social activation process.

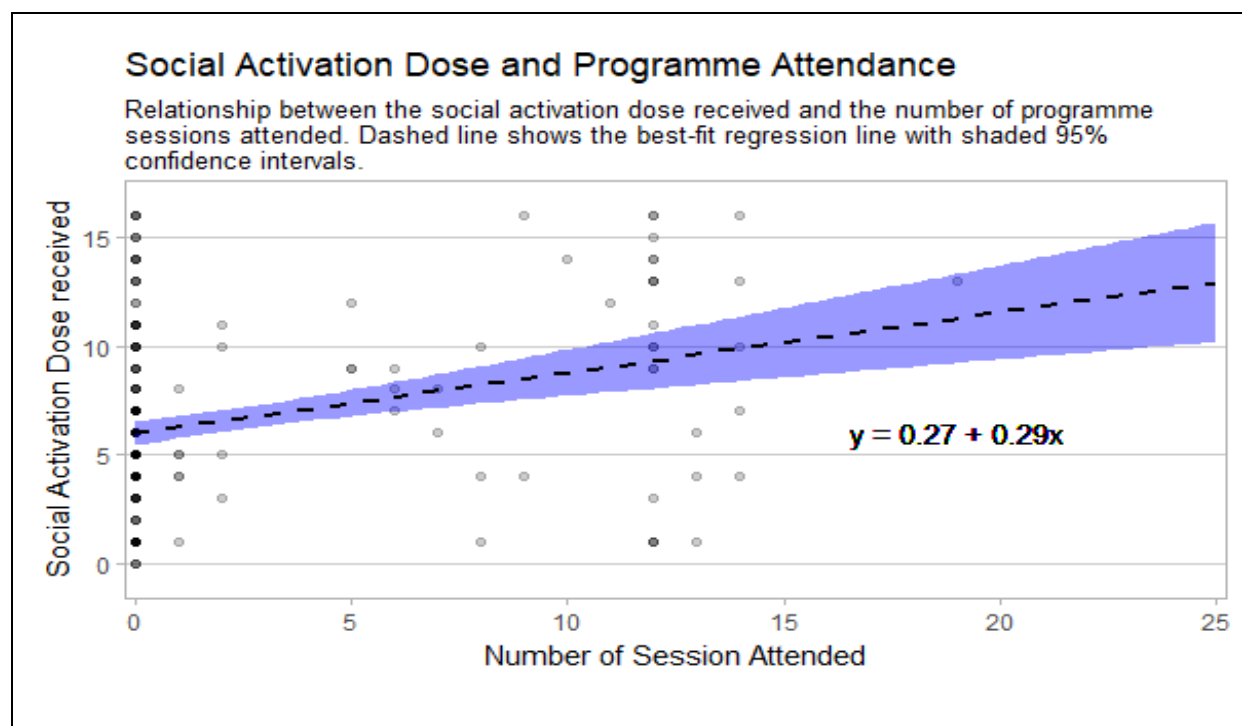
In addition to the parenting programme sessions the intervention included a social activation component. As anticipated, a positive association was found between social activation dose and parenting improvement providing support for Hypothesis 1c ($\beta = 0.05$, $p = .003$, $R_{adj}^2 = .038$; Figure 16).

Figure 16. Social activation dose and parenting improvement



Additionally, there was overlap between programme attendance (measured as a binary variable: 0 = non-attendeer and 1 = attendee; or a continuous variable: the number of programme sessions attended) and self-reported exposure to the social activation process (measured as a continuous variable). This resulted in a significantly positive relationship between attendance and social activation dose received (binary attendance and social activation: $r = .257$, $p < .001$, and continuous attendance and social activation: $r = .326$, $p < .001$, respectively; Figure 17).

Figure 17. Social activation dose and programme attendance



I therefore used a hierarchical regression approach in which the number of programme sessions attended (continuous measure) was included as a predictor of parenting change alongside social activation dose received; child age and gender, parental stress, and general health were included as controls. The initial control model was significant ($F(4, 206) = 3.71, p = .006, R_{adj}^2 = .049$). Introducing the attendance predictor had no discernible effect on the second model ($\Delta F(1, 205) = 0.07, p = .079, \Delta R^2 < .001, R_{adj}^2 = .045$; Figure 18; Table 12). Including social activation dose in the third model explained an additional 6.0% of the variance ($\Delta F(1, 204) = 13.53, p < .001, \Delta R^2 < .058, R_{adj}^2 = .100$). Finally, the interaction between attendance and social activation dose was found to add no useful contribution to the model's explanatory power ($\Delta F(1, 203) = 0.02, p = .888, \Delta R^2 < .001, R_{adj}^2 = .095$). This analysis demonstrates that social activation dose is a stronger predictor of parenting improvement than the number of parenting programme sessions attended.

Figure 18. Programme attendance and parenting improvement

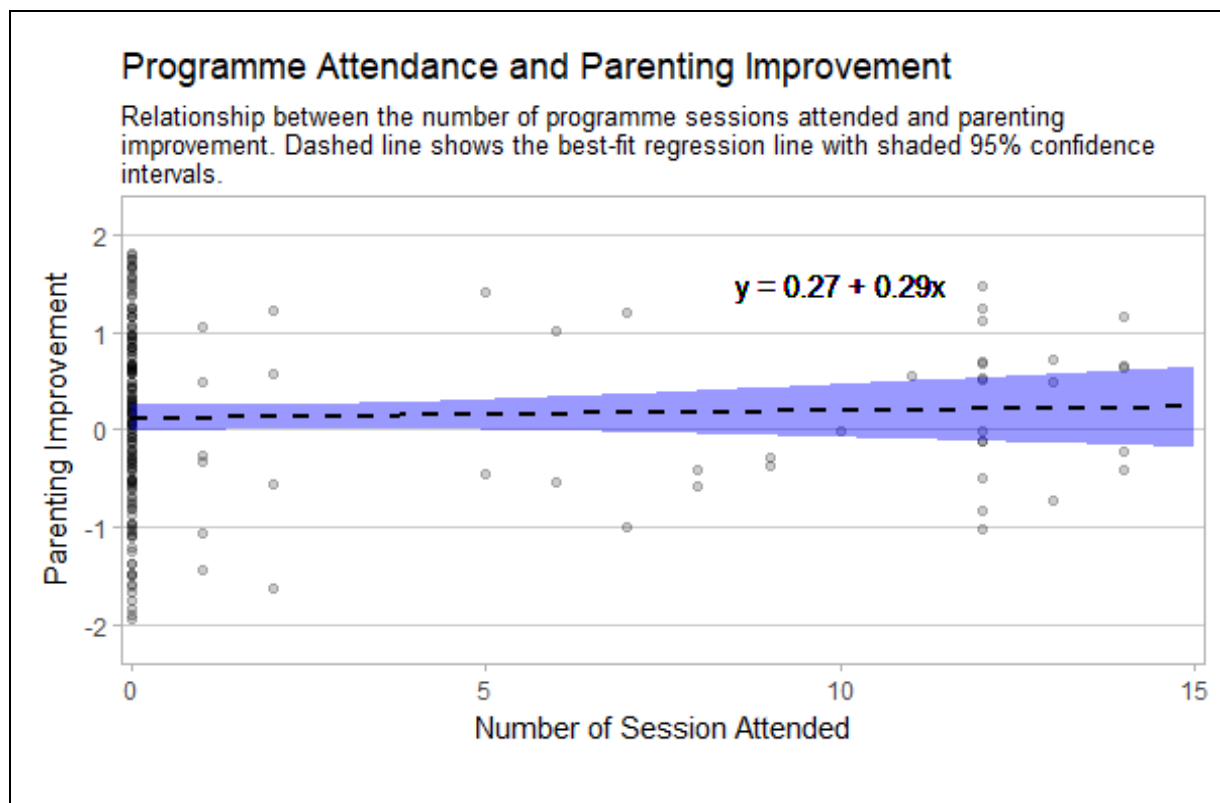


Table 12

Parenting improvement predictors

	Covariates			Attendance			Social Activation		
	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Constant	-0.36	0.49	-	-0.35	0.49	-	-0.68	0.49	-
GHQ	0.02	0.01	0.25***	0.02	0.01	0.25***	0.02	0.01	0.26
Parenting Stress	<	<	0.01	<	<	0.01	< 0.01	<	0.03
	0.01	0.01		0.01	0.01			0.01	
Child Age	< -	0.01	-0.01	-0.01	0.02	-0.02	-0.02	0.02	-0.06
	0.01								
Child Gender	-0.17	0.14	-0.08	-0.17	0.14	-0.01	-0.22	0.14	-0.11
Sessions Attended	-	-	-	-0.05	0.18	-0.02	-0.19	0.76	-0.073
Social Activation Dose	-	-	-	-	-	-	0.065	0.02	0.25
ΔR^2	.067			.000			.058		
$\Delta F(df1, df2)$	3.71** (4, 206)			0.07 (1, 205)			13.53 (1, 204)		
R^2_{adj}	.049			.045			.095		

Note. GHQ, General Health Questionnaire; The interaction between parenting programme attendance and social activation dose was added to a fourth model but did not significantly improve the model: $\Delta F(1, 203) = 0.02$, $\Delta R^2 < .001$, $R^2_{adj} = .095$; $N = 235$; * $p < .05$, ** $p < .01$, *** $p < .001$.

3.6 Network Characterisation

The network consisted of the 235 caregivers, of which a small number ($n = 51$; 21.7%) attended at least one parenting programme. Since only two caregivers at wave 1 (0.9%) and three caregivers at wave 2 (1.3%) made more than five nominations of other network members they spoke to about parenting; only the first five were retained in the analyses to make the model more computationally tractable. The baseline network as reported in the wave 1 responses consisted of 676 nominations, resulting in an average degree (i.e., the mean number of ingoing and outgoing ties for each caregiver in the network) of 2.88 ($SD = 1.72$) per caregiver. In wave 2, 746 nominations were made with an average degree of 3.17 ($SD = 1.92$). The tendency of caregivers to make nominations provides a measure of the network density (the ratio of the number of existing connections in the network to the maximum number of connections possible). There was thus an increase in network density from wave 1 (.0123; 58% of the theoretical maximum density) to wave 2 (.0131; 64% of the theoretical maximum density): over time, caregivers reported communicating more often about parenting behaviour with each other.

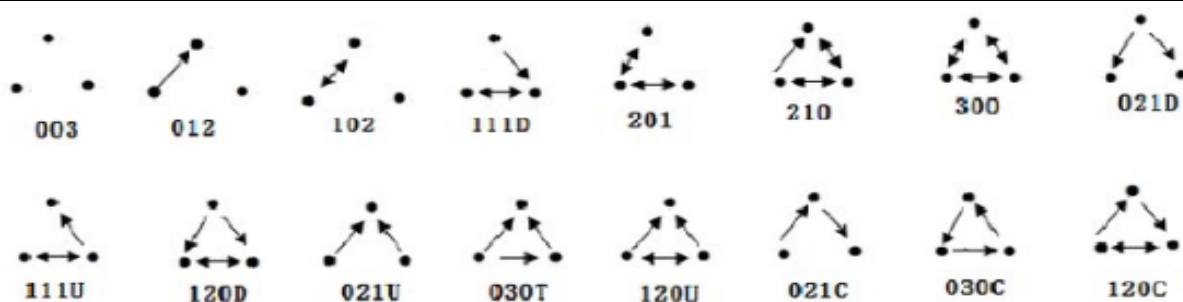
The structural properties of a network as a whole are influenced by dyadic and triadic configurations, local connectivity patterns between two or three individuals in the network, respectively. The reciprocity of the network (i.e., the probability that a reciprocal nomination existed for each nomination) was 0.31 at wave 1 and 0.17 at wave 2. Thus, the majority of ties were asymmetric at wave 1 (69%) and wave 2 (83%). Of the 164 connections that survive from wave 1 to wave 2, 84 (51%) were reciprocal at wave 1 and 71 (43%) remain reciprocal at wave 2. Of the 582 new connections formed at wave 2, 535 (92%) were unidirectional ties and 47 (8%) were reciprocated ties. According to Simmel (2010), triad analysis is fundamental to understanding social networks: any set of three nodes must be in one of 16 possible connectivity configurations, and the relative frequencies of these basic building blocks over all possible triads within the network can be indicative of the general structure of the network (Wasserman & Faust, 1994). As such, the triad analyses have been used to characterise and elucidate any underlying patterns of connectivity in the caregiver network prior to conducting the hypothesised network analyses. Table 13 shows the change in the relative frequencies of these 16 triad structures from wave 1 to wave 2. The main triadic structural mechanism of interest, transitivity, changed from 0.087 at wave 1 to 0.126 at wave 2. This might imply that new connections in the network are partly produced through mutual third parties. The decrease in empty triads (triad code 003), wherein no one member connects to any other, indicates that the increase in the density of the network is relatively homogenous rather than being focused on increased connectivity within

isolated clusters. A decrease in empty triads/homogeneity is counter to the generally-expected pattern of social network expansion, whereby those nodes with greater connectivity are most likely to develop new connections.

Table 13

Changes in relative frequencies for all triad configurations

Triad ID	Triad Code ¹	Triad Count	
		wave 1	wave 2
1	003	2086507	2070479
2	012	39553	58085
3	102	8947	6163
4	021D	66	118
5	021U	89	216
6	021C	145	248
7	111D	71	70
8	111U	37	42
9	030T	8	13
10	030C	1	1
11	201	10	2
12	120D	4	2
13	120U	5	2
14	120C	1	1
15	210	1	2
16	300	0	1



Note. ¹Triad code specifies the arrangement of connections in a triad as illustrated in the bottom part of the table. The three numbers give the count of mutual, asymmetric, and null connections in the triad; the letters indicate the orientation of those connections ‘Up’ (U), ‘Down’ (D), ‘Cyclical’ (C), or ‘Transitive’ (T).

3.6.1 Change in centrality parameters.

As noted earlier, there are four centrality parameters (i.e., indegree, outdegree, betweenness, and closeness). A paired samples *t*-test indicated a significant increase in outdegree: $t(1, 234) = 2.045, p = .042$, Cohen’s $d = -0.133$ [95% CI for Cohen’s d : -0.262, -0.005]; betweenness: $t(1, 234) = 4.618, p < .001$, Cohen’s $d = -0.191$ [95% CI for Cohen’s d : -0.320, -0.062]; and closeness: $t(1, 234) = 2.924, p < .001$, Cohen’s $d = -0.301$ [95% CI for Cohen’s d : -0.432, -0.170]. However, there appeared to be no significant increase in indegree between waves ($t(1, 234) = 1.192, p = .234$, Cohen’s $d = -0.078$ [95% CI for Cohen’s d : -0.206,

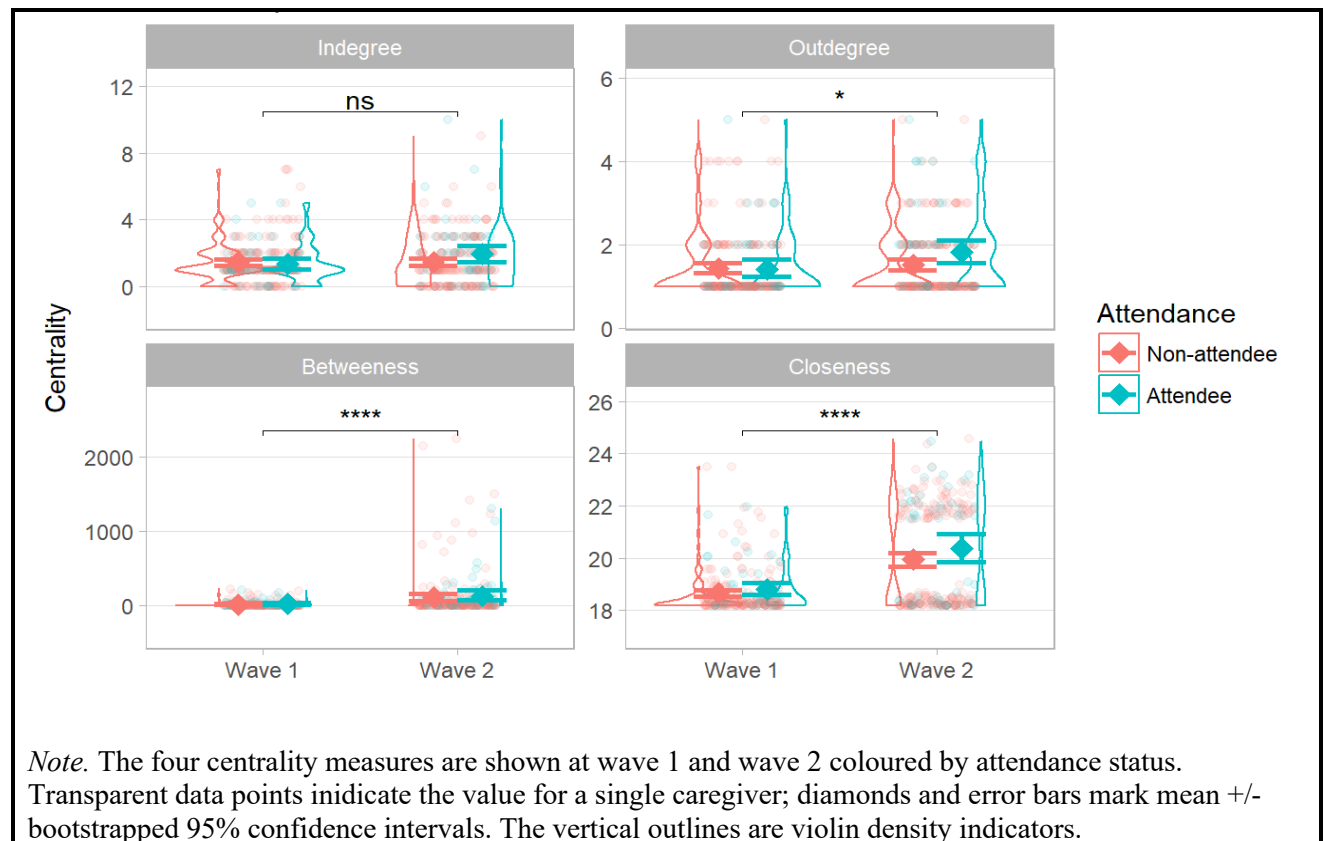
0.050]). Increased out degree centrality is indicative of an expanding caregiver discussion network within the community; and increases in betweenness and closeness indicate that more caregivers are playing a linking role?? in the community that could in turn speed up the flow of information through the caregiver network. In addition, there was a significant increase in the number of attendees nominated from wave 1 to wave 2 ($t(1, 234) = 2.846, p = .005$, Cohen's $d = -0.186$ [95% CI for Cohen's d : -0.314, -0.056]), but no increase in the nominations made to non-attendees ($t(1, 234) = -0.367, p = .714$, Cohen's $d = -0.024$ [95% CI for Cohen's d : -0.152, 0.104]; Table 14; Figure 19). This result indicates that programme attendees have more opportunities to share information and possibly influence caregivers in their discussion networks.

Table 14

Centrality statistic change

	Wave	μ	σ	t	df	p	Cohen's d	Cohen's d 95% CI	
								Lower	Upper
Indegree	1	1.51	1.28	1.19	234	.234	-0.078	-0.206	0.050
	2	1.65	1.61						
Outdegree	1	1.50	0.82	2.05	234	.042	-0.133	-0.262	-0.005
	2	1.65	0.88						
Betweenness	1	15.09	36.99	4.62	234	<	-0.301	-0.432	-0.170
	2	109.80	312.63			.001			
Closeness	1	18.69	0.88	9.78	234	<	-0.638	-0.778	-0.497
	2	20.04	1.96			.001			
Attendees Nominated	1	1.15	0.82	2.85	234	.005	-0.186	-0.314	-0.056
	2	1.18	0.86						
Non-Attendees Nominated	1	1.59	1.61	0.37	234	.714	-0.024	-0.152	0.104
	2	1.44	1.28						

Figure 19. Centrality statistics



3.7 Hypothesis 2. Caregivers who do not attend programmes will be associated with greater improvements in parenting behaviour if they become more (a) central to the caregiver network, and (b) connected to caregivers attending programmes.

Hierarchical regression models were used to analyse the indirect association between the change in parenting attitudes of caregivers, and the two intervention components as well as the change in network structure. To investigate the association between indirect exposure to the parenting programmes and Parenting Improvement, only data for those caregivers who did not attend a programme session ($n = 164$) were included. Social activation was entered at step 1 of the regression to control for any association between the intervention and Parenting Improvement. Step 2 added the degree centrality measures (i.e., indegree and outdegree; refer to Table 3 for descriptions of network parameters, and Figure 19 for centrality statistics) to determine whether there was an association between caregiver engagement with the communication network at wave 1 and greater improvement in parenting. The association between connectivity to an attendee at baseline and Parenting Improvement was investigated at step 3. Indegree and outdegree centrality change at wave 2 were entered at step 4 in order to determine whether shifts in a caregiver's position in the network were associated with greater

improvement in parenting behaviour. The change in the measure of bidirectional connections to and from attendees at wave 2 was entered at step 5 (Table 15).

The hierarchical multiple regression revealed that at step 1, Social Activation contributed significantly to the regression model ($F(1, 163) = 3.71, p = .009$), and accounted for 4.1% of the variation in Parenting Improvement. Adding the centrality parameters (indegree and outdegree) at wave 1 did not improve model 2 ($\Delta F(2, 161) = 0.60, p = .552, \Delta R^2 = .007, R^2_{adj} = .030$). Adding Attendee engagement (i.e., the number of ties with a programme attendee) at wave 1 to the regression model also explained no additional variance in Parenting Improvement ($\Delta F(1, 160) = 0.06, p = .809, \Delta R^2 < .001, R^2_{adj} = .025$). However, the addition of the wave 2 change in network engagement variables, particularly outdegree centrality, explained an additional 2.3% of the variation in parenting improvement ($\Delta F(2, 158) = 0.60, p = .145, \Delta R^2 = .023, R^2_{adj} = .036$). The final step added Attendee engagement at wave 2, which accounted for significantly more of the variance (3.9%) in the Parenting Improvement scores of non-attendees ($\Delta F(1, 157) = 5.56, p = .020, \Delta R^2 = .032, R^2_{adj} = .063$). The most important predictors of Parenting Improvement, in the final seven-factor model (accounting for 10.3% of the variance), were Social Activation Dose, change in Outdegree centrality at wave 2 (providing support for Hypothesis 2a), and the number of attendees caregivers were connected to (providing support for Hypothesis 2b).

Table 15

Indirect intervention effects

		wave 1				Change					
		Model 1		Model 2		Model 3		Model 4		Model 5	
		Social Activation		Network engagement		Attendee engagement		Network engagement		Attendee engagement	
		<i>B</i> (<i>SE</i>)	β	<i>B</i> (<i>SE</i>)	β	<i>B</i> (<i>SE</i>)	β	<i>B</i> (<i>SE</i>)	β	<i>B</i> (<i>SE</i>)	β
	Constant	-0.04 (0.15)	-	0.12 (0.22)	-	0.13 (0.22)	-	-0.13 (0.25)	-	-0.17 (0.25)	-
	Social Activation Dose	0.06 (0.02)	0.20 **	0.06 (0.02)	0.20*	0.05 (0.02)	2.50 *	0.05 (0.02)	0.18 *	0.05 (0.02)	0.19*
wave 1	Indegree			-0.01 (0.07)	-0.01	-0.01 (0.07)	- 0.01	< 0.01 (0.07)	0.01	-0.03 (0.07)	-0.03
	Outdegree			-0.01 (0.10)	-0.08	-0.11 (0.11)	- 0.09	-0.15 (0.11)	-0.12	-0.16 (0.11)	-0.13
	Attendee Connection					0.03 (0.12)	0.02	> -0.01 (0.12)	> - 0.01	0.11 (0.13)	0.08

Change	Indegree				0.03 (0.06)	0.04	0.07 (0.06)	0.10
	Outdegree				0.19 (0.10)	0.15 [†]	0.26 (0.10)	0.20*
	Attendee Connection						0.26 (0.11)	0.22*
	ΔR^2	.041	.007	< .001	.023		.032	
	$\Delta F(df1,$ $df2)$	6.95** (1,163)	0.60 (2,161)	0.06 (1,160)	1.96 (2,158)		5.56* (1,157)	
	R^2_{adj}	.035	.030	.025	.036		.063	

Note. $n = 164$; [†] $p < .05^*$, $p < .01^{**}$

3.8 Hypothesis 3. Caregivers attending parenting programmes will be associated with greater network salience and potential influence in the communication network.

I predicted that, after the intervention, caregivers who were more prominently exposed to the intervention by attendance would be more salient (i.e., would increase their indegree centrality) and potentially influential (increased outdegree centrality) in the network over time.

3.8.1 Baseline network.

The main aim of the intervention was to bring about mean-level improvement in parenting scores throughout the community (Hypothesis 1). This change appears to have been associated with social connections within the caregiver community (Hypothesis 2). Interventions which rely on social connections are known to be associated with altered network connections (Gest et al., 2011), and consequently I predicted that, provided the intervention was successful (i.e., resulted in significant shifts towards warmer, more positive parenting), there would be a significant reorganisation of the social structure of the communication network around programme attendees and caregivers who reported warmer, more positive parenting (Hypothesis 3).

The significant increase in both network density and most centrality parameters across wave (see section ‘Change in centrality parameters’) supports the prediction that the intervention influenced the network structure. Thus, there was significant reorganisation of the network structure. As could be anticipated, given the specific focus of the intervention on encouraging caregivers to establish healthy support structures (and their new-found awareness of the importance of positive parenting), an increase in the number of caregiver nominations was evidenced. In order to explore this reorganisation further, the network structure at baseline and the change in network structure were examined using multivariate analyses with the four centrality parameters (indegree, outdegree, betweenness, and closeness; see Table 3 for a description) as outcome measures. Baseline network descriptives separated by attendance and

baseline parenting behaviour and univariate outcomes are reported in Table 16. Descriptives of the initial network parameters at baseline are reported, as a function of Attendance and Baseline Parenting behaviour. These group comparisons were examined using a 2 (Attendance: attending the programme vs not attending the program) x 2 (Baseline Parenting: above average vs below average parent at wave 1) between-subjects multivariate analysis of variance (MANOVA). As expected, caregivers with a score above the sample mean were more central in the caregiver network at baseline (Pillai's Trace: $F(4, 220) = 2.78, p = .027$). Additionally, programme attendance and the interaction between programme attendance and Baseline Parenting were not significant predictors of network centrality at wave 1 (Pillai's Trace Programme Attendance: $F(4, 220) = 1.61, p = .173$; Pillai's Trace Interaction: $F(4, 220) = 0.09, p = .986$).

Table 16

Wave 1 network parameters

Attendance Group	Baseline Parenting	Indegree $\mu(\sigma)$	Outdegree $\mu(\sigma)$	Betweenness $\mu(\sigma)$	Closeness $\mu(\sigma)$
Non-Attendee ^a	Above Average (<i>n</i> = 86)	1.57 (1.52)	1.59 (0.95)	17.1 (37.0)	18.8 (1.15)
	Below Average (<i>n</i> = 79)	1.33 (1.05)	1.33 (0.71)	10.4 (36.3)	18.5 (0.44)
	Total (<i>n</i> = 165)	1.45 (1.32)	1.47 (0.85)	13.9 (36.7)	18.7 (0.90)
Attendee ^b	Above Average (<i>n</i> = 29)	1.28 (1.03)	1.45 (0.91)	27.0 (43.7)	19.0 (1.01)
	Below Average (<i>n</i> = 18)	1.28 (1.27)	1.28 (0.46)	17.1 (42.4)	18.6 (0.51)
	Total (<i>n</i> = 47)	1.28 (1.12)	1.38 (0.77)	23.2 (43.0)	18.8 (0.87)
Attendance Group <i>F</i> (1, 223)		0.59	0.15	2.12	1.41
ES (Cohen's <i>d</i>)		0.15	0.00	0.09	0.08
Baseline Parenting <i>F</i> (1, 223)		0.23	0.038*	0.18	0.00***
ES (Cohen's <i>d</i>)		0.13	0.11	0.01	0.02
Attendance Group x Baseline Parenting <i>F</i> (1, 223)		0.65	0.81	0.97	0.84

Note. ^a Coded as "0" non-attendee and "1" attendee.

^b Coded as "0" below average parenting at baseline and "1" above average parenting at baseline

**p* < .05.

****p* < .001.

3.8.2 Network modifications.

To further evaluate modifications in the caregiver network, group differences regarding the change on the four centrality factors were examined with a 2 (Attendance: attending the programme vs not attending the program) x 2 (Baseline Parenting: above average vs below average parent at wave 1) x 2 (Parenting Change: improvement vs deterioration in parenting behaviour) between-subjects multivariate analysis of covariance (MANCOVA; Table 17), controlling for the baseline centrality parameters. The baseline parameters were controlled for because there is likely to be a very strong correlation between wave 1 and change (from wave 1 to wave 2) scores and, thus, the effect of any predictor with a relationship to wave 1 centrality parameters is likely to be overestimated if the contribution of those parameters is not controlled for. As expected, the group main effect revealed that the majority of network scores changed significantly in the Attendee group. This result suggests that caregivers who attended a

programme were characterized by significantly higher social influence within the network (providing support for Hypothesis 3; Pillai's Trace Attendance: $F(4, 197) = 3.89, p = .005$; see Figure 20-22). An improvement in parenting behaviour also significantly predicted the change in the network centrality parameters (Pillai's Trace Parenting Change: $F(4, 197) = 2.70, p = .032$). Thus, caregivers that reported improvements in parenting behaviour were more likely to engage with the caregiver network, thereby disseminating potentially beneficial parenting information to others and vice versa. The significant influence of improvement in parenting behaviour on outdegree centrality is clearly depicted in the change in the network structure in Figure 23. Interestingly, once Change in Parenting Behaviour was added to the model the effects of Baseline Parenting on network centrality and social influence were no longer significant (Pillai's Trace Baseline Parenting: $F(4, 197) = 2.10, p = .081$). However, this outcome was anticipated, given that caregivers with higher baseline parenting scores were less likely to evidence improvements in parenting behaviour (see Hypothesis 1a). Furthermore, the interaction between Attendance and Parenting Change did not significantly predict change in network centrality parameters (Pillai's Trace Attendance*Parenting Change: $F(4, 197) = 0.29, p = .884$). The interaction terms constructed in the multivariate analyses between Attendance, Baseline Parenting and Parenting Change did not significantly modify the caregiver network (Pillai's Trace Attendance*Baseline Parenting: $F(4, 197) = 0.95, p = .436$; Pillai's Trace Parenting Change*Baseline Parenting: $F(4, 197) = 1.00, p = .410$; Pillai's Trace Attendance*Parenting Change*Baseline Parenting: $F(4, 197) = 0.95, p = .436$).

Table 17

Predictors of network change

Attendance Group	Baseline Parenting	Δ Parenting	Δ Indegree	Δ Outdegree	Δ Betweenness	Δ Closeness
			$\mu(\sigma)$	$\mu(\sigma)$	$\mu(\sigma)$	$\mu(\sigma)$
Attendee ^a	Above Average ($n = 33$)	Improved ($n = 9$)	0.56 (3.32)	0.00 (1.12)	5.00 (134.9)	1.15 (2.71)
		Deteriorated ($n = 20$)	0.30 (1.45)	0.30 (1.17)	50.7 (109.9)	1.50 (2.09)
	Below Average ($n = 18$)	Improved ($n = 15$)	1.27 (2.43)	0.80 (1.08)	116.3 (292.9)	2.07 (2.03)
		Deteriorated ($n = 3$)	0.33 (1.15)	0.00 (1.00)	218.0 (250.1)	0.59 (2.03)
	Total ($n = 51$)	Improved ($n = 24$)	1.00 (2.75)	0.50 (1.14)	74.5 (248.2)	1.73 (2.30)
	Deteriorated ($n = 23$)	0.30 (1.40)	0.26 (1.14)	72.5 (139.4)	1.38 (2.06)	
Non-attendee ^b	Above Average ($n = 91$)	Improved ($n = 53$)	0.18 (2.36)	-0.06 (0.93)	141.4 (451.9)	1.05 (2.35)
		Deteriorated ($n = 53$)	-0.02 (1.82)	-0.13 (1.23)	134.8 (417.7)	0.97 (2.12)
	Below Average ($n = 85$)	Improved ($n = 70$)	0.03 (1.62)	0.26 (1.03)	59.7 (225.6)	1.66 (2.01)
		Deteriorated ($n = 9$)	0.11 (1.69)	-0.22 (0.83)	27.3 (72.7)	1.54 (2.36)
	Total ($n = 176$)	Improved ($n = 103$)	0.08 (1.88)	0.16 (1.01)	85.9 (316.2)	1.46 (2.13)
	Deteriorated ($n = 62$)	0.00 (1.79)	-0.15 (1.17)	119.2 (388.5)	1.05 (2.14)	
Attendance Group $F(1, 200)$			5.29*	5.83***	0.22	0.55
ES (Cohen's d)			0.14	0.31	0.04	0.05
Baseline Parenting $F(1, 200)$			0.02	3.70	0.67	2.79
ES (Cohen's d)			0.04	0.12	0.04	0.02
Δ Parenting $F(1, 200)$			0.96	5.68***	0.32	0.58
ES (Cohen's d)			0.09	0.21	0.04	0.01
Attendance Group x Baseline Parenting $F(1, 200)$			1.91	1.01	2.18	0.08
Attendance Group x Δ Parenting $F(1, 200)$			1.13	0.01	0.22	0.01
Baseline Parenting x Δ Parenting $F(1, 200)$			0.08	3.75	0.02	0.61
Attendance x Baseline Parenting x Δ Parenting $F(1, 200)$			0.71	0.07	0.17	0.20

Note. ^a Coded as "0" non-attendee and "1" attendee.

^b Coded as "0" below average parenting at baseline and "1" above average parenting at baseline; Descriptives of the change in network parameters and the corresponding univariate outcomes are separated by attendees and non-attendees, based on Baseline Parenting and Parenting Change (i.e., improvement)

* $p < .05$.; *** $p < .001$.

Figure 20. Indegree centrality by programme attendance

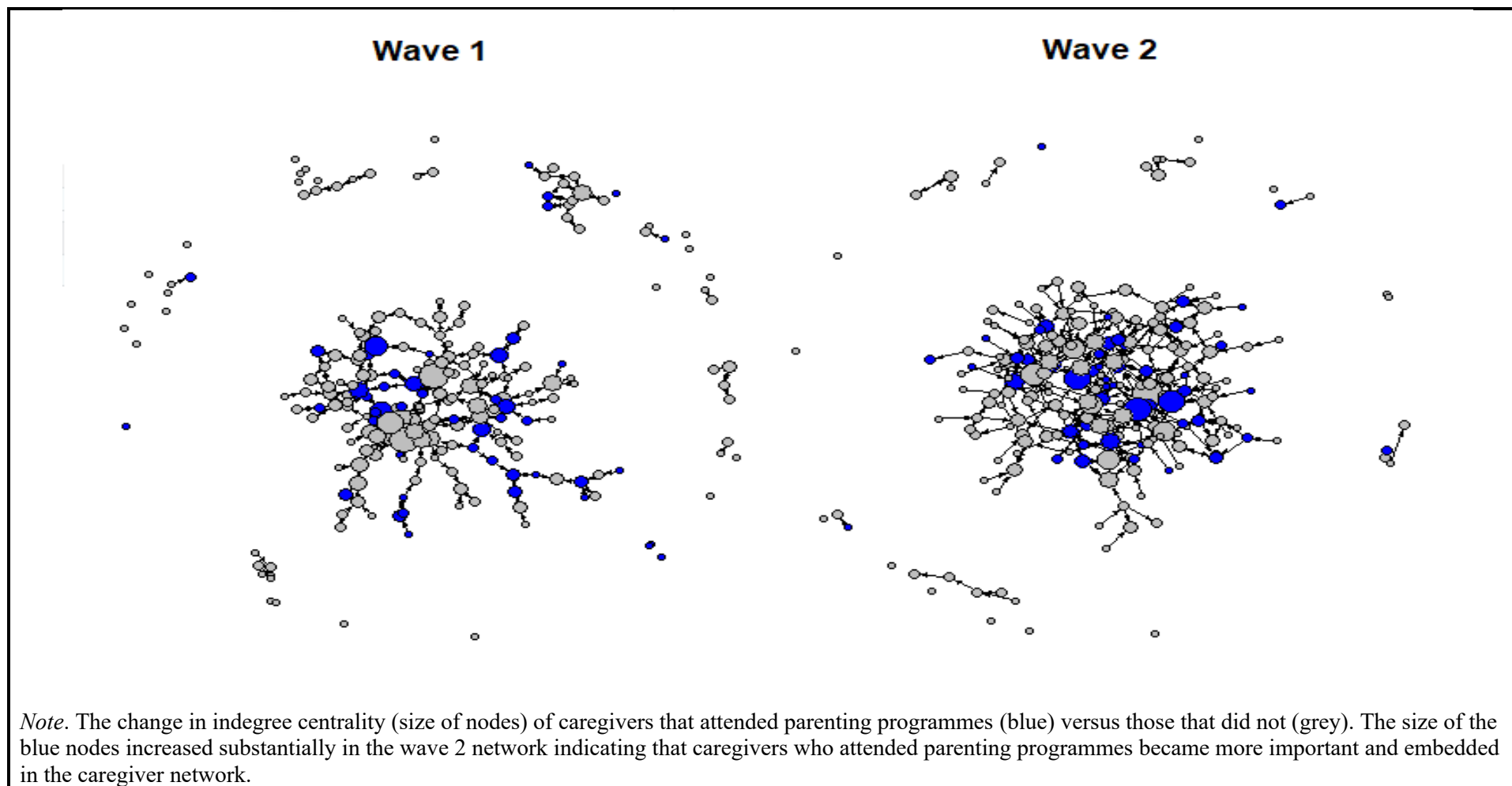


Figure 21. Outdegree centrality change.

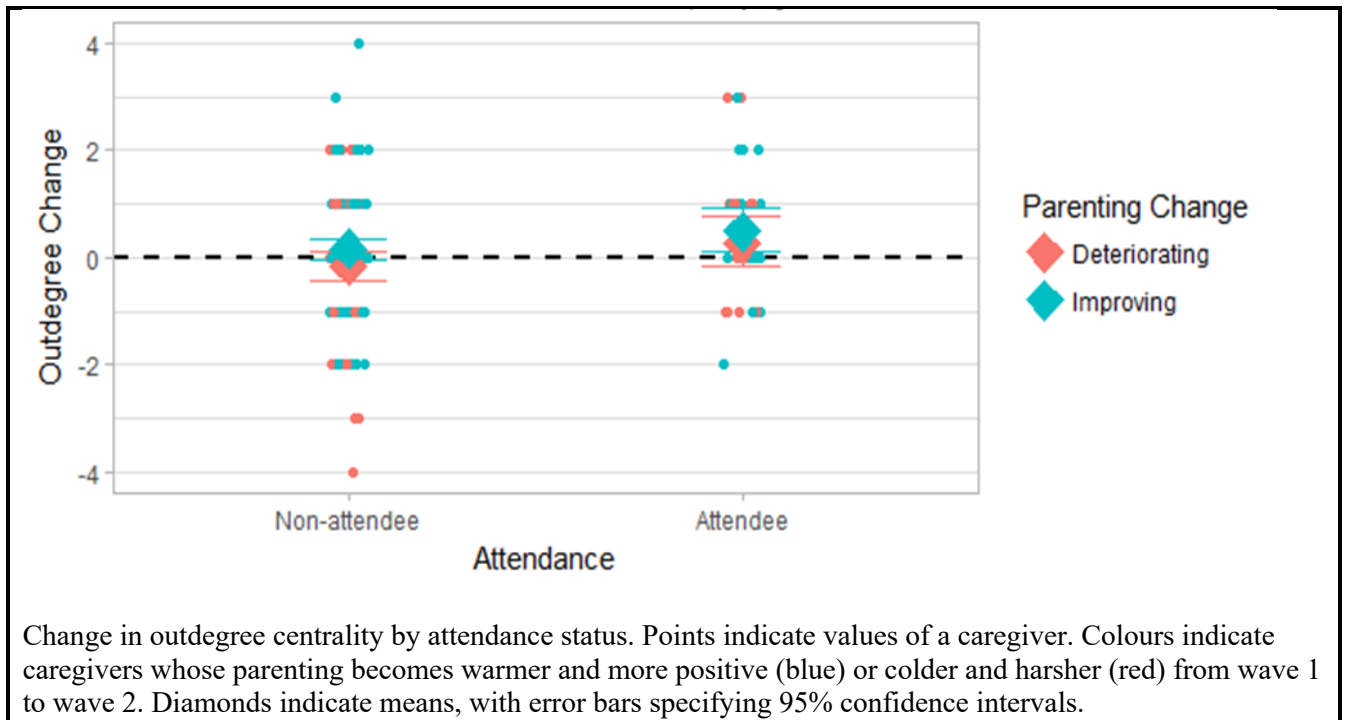


Figure 22. Outdegree centrality change by programme attendance.

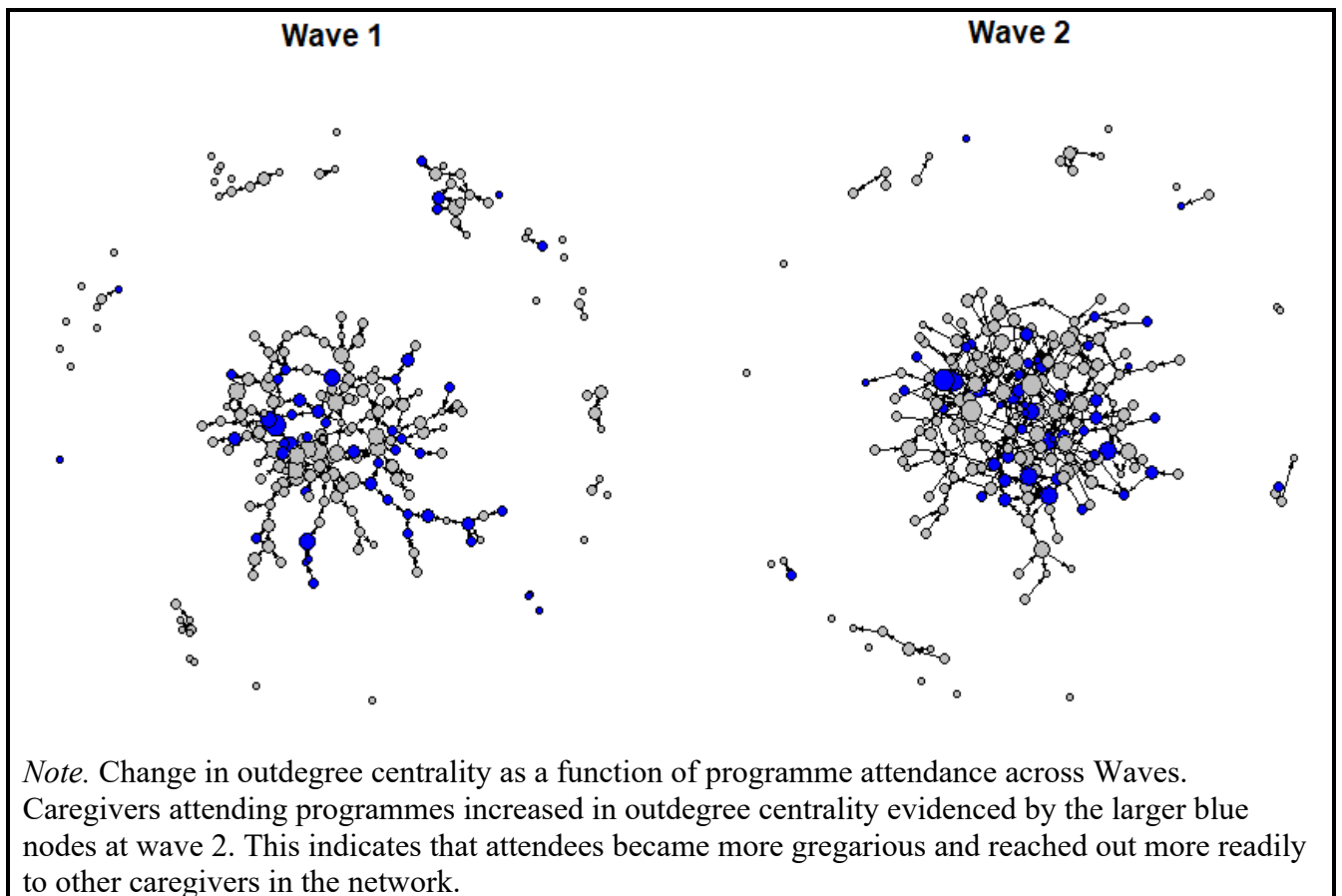
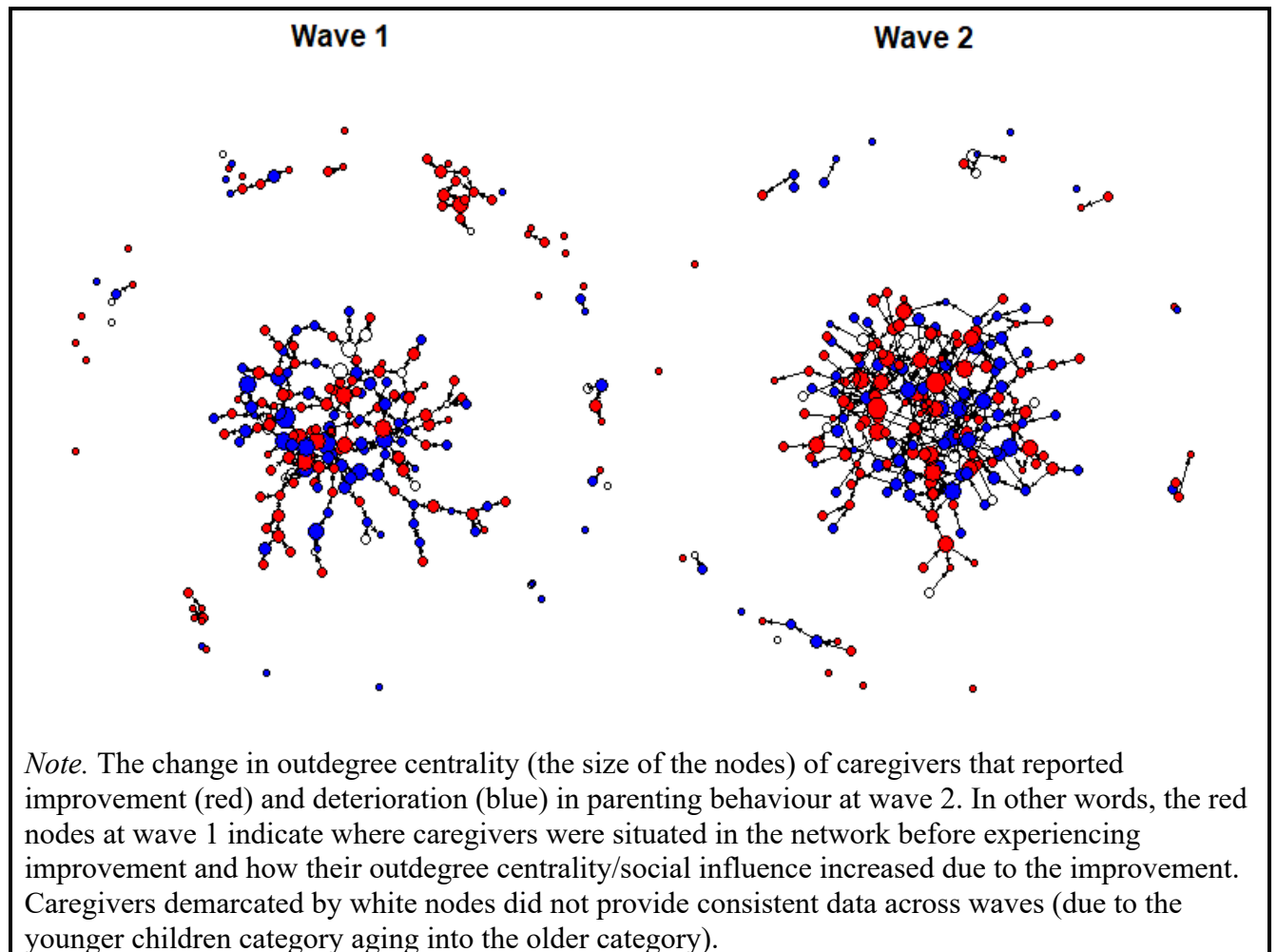


Figure 23. Outdegree centrality change by parenting change



3.8.3 Network effects.

The SIENA software was used to determine whether the intervention was significantly associated with the formation and maintenance of caregiver connections. In SIENA, the effects exogenous to the network (such as programme attendance) are included as covariates, while endogenous network structural and dynamic properties are included as network effects. The covariate effects, which model the features of interest, can only be understood in the context of the properties of the network, so these properties are presented first.

3.8.3.1 Network structure.

The structural network effects included in the model were: (1) outdegree (density) which indicates the probability of forming a tie in the network at random; (2) reciprocal tie formation; (3) balance within the structure of the network as a closed triadic network effect; (4) betweenness effects, which test the role of brokerage in network tie formation (Veenstra et al., 2013). In addition, the specific attributes of caregivers within the network were explored to determine their association with network evolution.

3.8.3.2 *Network dynamics.*

It is important to determine whether the network is both sufficiently stable and dynamic to submit to the iterative simulation approach used by SIENA. To this end, the rate parameter was evaluated to determine the estimated number of opportunities that each node in the network had to make changes to their own local network environment between wave 1 and wave 2. The rate parameter indicated that significant network changes between the waves enabled caregivers to alter their network and that the model was interpretable ($e^{6.04} = 419.89$; Table 18). SIENA parameters are expressed as logged odds of the evaluation parameters: in other words, the odds that a connection is formed. The actors (i.e., caregivers) were more likely to form ties with other actors in the network with whom they already shared a common tie (indicating a level of familiarity or closeness within the network structure; $e^{-3.24} = 25.53$). Furthermore, the maximum convergence ratio of the model is satisfactory at $< .25$. The t -ratios for individual parameters also achieved a satisfactory convergence of below $.10$ (Ripley et al., 2011). As such, the model is satisfactory for interpretation of the structural and covariate effects.

3.8.3.3 *Covariate effects.*

Specific attributes associated with individuals in a network structure have the potential to modify their social influence. To establish what characteristics motivated caregivers to become more embedded in the network the covariate alter, ego, and similarity effects were explored. The selection effects were modelled to capture the extent to which programme attendance affected the structure of the network while controlling for caregivers' general health, parental stress, alcohol use, and their child's age.

Attending parenting programme sessions offered in the intervention significantly predicted change in the communication networks, indicating the spread of social influence through the network. This is due to the small subset of caregivers attending one or more sessions of a parenting programme showing greater activity (i.e., covariate ego effect; $e^{0.07} = 1.07$) and potential influence (i.e., covariate alter effect; $e^{0.02} = 1.02$) within the network compared to caregivers who did not attend any programme sessions. This subset of caregivers more readily reached out to speak to caregivers about matters related to caregiving, and both sought and received social support from other caregivers.

Other significant predictors of network evolution in the SIENA model were: outdegree (i.e., caregivers are more inclined to make connections non-randomly), reciprocity (i.e., in favour of reciprocal connections), balance (i.e., a tendency to have ties with others that make similar network choices), and child age similarity (i.e., if their children were a similar age, they were more inclined to speak to each other about parenting practices). Because the intervention's programmes were age-specific, this finding is even more promising for the effect of the intervention on the structure of the

network because it may serve as an indicator of caregivers forming ties to exchange age-appropriate child rearing advice. Attending a programme remained a significant predictor of network evolution whether using the binary or continuous variable (and irrespective of other covariates added to the model). This result remained the same when controlling for general health, parenting stress, and alcohol use (none of which influenced the structure of the network). This finding, in light of the previous results, indicates that the social network reorganised around attendees.

Table 18

SIENA parameters

	Estimate ^a	Standard Error	t-Value ^b
General Network Change			
Rate Parameter	6.04	0.48	12.66*
Structural Network Effects			
Outdegree (Density)	-3.24	0.12	26.00*
Reciprocity	2.08	0.24	8.79*
Balance	-0.10	0.03	2.95*
Betweenness	-0.33	0.18	1.85
Covariate Ego Effects			
General Health	0.01	0.01	1.00
Parenting Stress	-0.00	0.00	-0.85
Alcohol Misuse	0.00	0.01	0.62
Child's Age	0.02	0.01	2.00*
Programme Attendance	0.07	0.02	4.54*
Covariate Alter Effects			
General Health	-0.00	0.00	0.23
Parenting Stress	0.00	0.00	0.64
Alcohol Misuse	-0.00	0.00	0.48
Child's Age	0.02	0.01	2.06*
Programme Attendance	0.03	0.01	2.23*
Covariate Similarity Effects			
General Health	0.23	0.31	0.73
Parenting Stress	0.10	0.35	0.29
Alcohol Misuse	-0.28	0.20	1.40
Child's Age	0.70	0.23	3.24*
Programme Attendance	0.33	0.41	0.79

Note: ^aParameter estimates are log-odds of (P(form new connection) + P(maintain existing connection)) / (P(sever connection) + P(maintain non-connection)).

^bReported as absolute values.

* $p < .05$

3.9 Discussion

The Seven Passes Parenting Intervention was implemented in an attempt to address South Africa's need for cost-effective, early violence prevention strategies. This is the first known parenting intervention that incorporates both four age-specific parenting programmes and a social activation component with the aim of improving parenting in an entire community. Moreover, social network analysis was used to explore the mechanisms by which the intervention may have achieved its effects. Below, I present a summary and discussion of the individual results at the midpoint of the study (at the second wave of data collection), organised around the three key findings: (1) There is a community-wide shift towards warmer, more positive parenting; (2) The benefits of parenting programme attendance diffused through the caregiver communication network; and (3) The caregiver communication network reorganised around parenting programme attendees. The discussion of each main outcome will include: plausible explanations, integration of findings with relevant literature, specific limitations, and future research ideas to strengthen and clarify findings.

3.9.1 Summary of Findings

The caregivers' reports, one-year post implementation, indicated that their parenting improved, on average, across the entire community with a small yet meaningful effect size of $d = 0.29$ (providing evidence in support of H1a). As such, the intervention was successful in changing reported positive parenting behaviours and norms in the community. Interestingly, caregivers who scored below the mean of parenting behaviour at baseline reported significantly greater improvements in parenting behaviour at wave 2. Moreover, the intervention was particularly effective at reducing the parent-reported use of corporal punishment. Caregivers attending parenting programmes showed greater improvements in parenting behaviour than non-attendees among caregivers with children in the older age group (providing partial support for H1b). However, there was a main effect of Wave for the full analytic sample, suggesting that attendees and non-attendees improved at the same rate (providing no support for H1b). The main driver for improvement in parenting behaviour appears to have been the social activation dose received (providing evidence in support of H1c). Furthermore, the benefits of the intervention appeared to diffuse along social connections in two ways. Firstly, the indirect effects of the intervention were evidenced by the change in outdegree centrality (providing support for H2a) and number of attendees nominated (providing support for H2b), resulting in improvements in reported parenting behaviour. Secondly, the caregivers who attended parenting programmes and responded most positively to the intervention appeared to become more central in the community (providing support for H3; indicated by the change in size and position of the nodes in Figure 20, Figure 21, Figure 22, and Figure 23).

3.9.2 Effects of the Intervention on Parenting Behaviour

Findings indicated that there were improvements in parenting behaviour throughout the caregiver community. Attending a parenting programme did not result in significantly greater improvements in parenting behaviour than non-attendance – plausibly due to rapid diffusion of the intervention’s effects. Two specific groups were identified who improved the most: caregivers who received a higher dose of the social activation process showed greater improvement on parenting behaviour; and those who had lower parenting scores at baseline were most likely to improve (I consider, below, possible explanations of this effect, including regression to the mean).

Caregivers across the community as a whole reported more positive parenting behaviour (i.e., improved their parenting) after the intervention. The closest comparable study in the literature, a parenting intervention in South Carolina, USA, successfully produced community-wide reductions in child maltreatment (Prinz et al., 2009). While the parenting intervention in South Carolina used community-level measures to quantify success (substantiated Child Protective Service reports, fostering records, and maltreatment-related hospital visits), it did not specifically aim to bring about improvements in the whole community of caregivers, nor did it measure parenting behaviour. The South Carolina intervention specifically targeted high-risk members of the population and sought to prevent only the most severe forms of maltreatment, which may explain why it produced a larger effect size ($d = 1.22$) than the present study ($d = 0.29$), though this discrepancy may possibly also be explained by numerous other factors (e.g., the different nature of the outcome measures used in the two studies, their different national settings, etc).

The surprising lack of difference in parenting improvement between attendees and non-attendees may appear to indicate that the parenting programmes themselves conferred no benefit. However, the discrepancy can simply be explained by the effects of the parenting intervention diffusing rapidly throughout the caregivers’ social networks (see also Latkin & Knowlton, 2015; Paluck et al., 2016); and this, along with the more widespread social activation component of the intervention, would mean that differences between attendees and non-attendees were less pronounced than they would have been in an intervention with a randomised controlled design (e.g., Cluver et al., 2018). Thus, if the benefits of parenting programme attendance spread widely throughout the community there would be a general improvement but no difference specifically between attendees and non-attendees, precisely the pattern observed in the data. Furthermore, analysis of the effects of social ties to programme attendees (below) demonstrated that (a) social ties to programme attendees were associated with improvements in parenting, and (b) these improvements increased as the number of ties to attendees increased. These influence effects suggest that the programmes were effective, and support the contention that their effects are masked by diffusion through the community.

These findings demonstrate that parenting improved in the sample as a whole, but offer no support for Hypothesis 1b that attendance at the programme sessions produces greater improvements. In light of the results of previous studies, this may be due to the benefits of attending parenting programmes being shared, indirectly, by attendees with non-attendees, thus attenuating any differences between these two subgroups. A Sinovuyo parenting intervention (for parents and teens) conducted by Cluver et al. (2018) in South Africa showed an attenuated difference between the intervention and control groups, which the authors explained by some communities having high setting-level diffusion rates. The cluster randomised controlled design utilised by the study was introduced precisely because of the anticipated diffusion effects, allowing people to disseminate information as they liked within villages (clusters), while minimising contact across villages (so contamination was reduced; Cluver et al., 2016, 2017, 2018). The lack of segregation between attendees and non-attendees, together with the presence of the community-wide social activation process in this present study, means that it is impossible to reliably differentiate rapid diffusion of the benefits of the parenting programmes from inefficacy of the programmes in the first place.

A notable challenge to this explanation comes from the evidence base for the parenting programmes themselves, in which differences arising from programme attendance were detectable even within a single community. Outcome evaluations of implementations of the age-specific parenting programmes in low-income communities in South Africa have consistently demonstrated improvements in: positive parenting behaviour (Cluver et al., 2016, 2018; Lachman et al., 2014); mother-child attachment (Cooper et al., 2009); and child language and attention (Vally et al., 2015) for those randomised to receive the intervention as compared to control groups who received no intervention. It remains plausible, however, that diffusion provides at least a partial explanation in the present study where it was not an appreciable effect in these others because this intervention included a social activation component which was specifically designed to amplify the dissemination of information taught at parenting programmes.

The strongest predictor of improvement in the present study was social activation dose received. This may be because social activation affected nearly everyone (98.7% selected at least one response in the multiple choice social activation dose measure), whereas programme attendance only directly affected a fifth of the sample (22.1% attended at least one programme session). There are, however, various other possible explanations for the significance of the social activation component. Firstly, it is plausible that the social activation component effectively transmitted information about positive parenting skills across the community and that caregivers reported this genuine behavioural change in self-reports. Secondly, given that the measures were based on self-reports, it is possible that they reflected attitudinal change rather than behavioural change. It is reasonable to expect that exposure to the social activation component changed caregivers' attitudes

about what it means to be a positive parent, and this increased the likelihood of caregivers' reporting their own parenting behaviour more favourably. In other words, they may have represented themselves in line with their aspirations rather than providing veridical reports (i.e., self-serving bias; Dalton & Ortegren, 2011). Thirdly, the effect may be explained by social desirability bias in responding (Lam & Bengo, 2003). This could have occurred if caregivers came to believe that others (e.g., other caregivers or the parenting facilitators) considered warm, positive parenting to be in line with the positive parenting principles, and consequently represented themselves as behaving in accordance with those principles in order to present a favourable impression of themselves. Thus, their reports may have reflected how they thought they were expected to behave, rather than being veridical, which implies that caregivers may have believed previously that researchers or other community members believed strict parenting was good. This would make both self-serving and social desirability bias appear more pronounced if, rather than being introduced by the intervention, the intervention reversed pre-existing biases.

Furthermore, these biases can work in the same direction and strengthen one another, but this is not necessarily the case. It is possible for the intervention to have changed a caregiver's perception of the prevailing general attitude regarding parenting behaviour, without having changed their private conviction. To take an extreme example, it is possible for the intervention to have incorrectly persuaded the caregivers that all of their peers have changed their attitudes regarding positive parenting and therefore go along with it, while not having changed the private convictions of any of them, a phenomenon known as pluralistic ignorance (Lam & Bengo, 2003).

Nevertheless, due to caregivers being asked to complete questionnaires in private face-to-face interactions with trained fieldworkers, ensuring enhanced cognitive engagement, the possibility of compromised self-reporting is reduced (Holbrook et al., 2003, 2007). In the following chapter of my thesis, I will address this limitation by analysing the children's reports of their caregivers' parenting behaviour which will serve as a more objective measure of parenting improvement, and a means of triangulating the present results.

Furthermore, bias relies on having shifted community norms on what constitutes good parenting, which was one of the explicit goals of the intervention. These changed attitudes towards particular parenting behaviours are an essential prerequisite for sustained behavioural changes (Valente, 2016), and will likely facilitate continual improvements, particularly if these positive parenting norms become more widely embedded in the Touwsranten community. This change in norms is explored using the third wave of data in the next chapter.

Fourthly, there is significant overlap between parent programme attendance and social activation dose received. Caregivers who were directly exposed to the parenting programmes necessarily encountered many of the elements of social activation as part of the programme (e.g., in

the final session of each programme, caregivers are introduced to the social activation group and invited to sign a positive parenting manifesto, and are provided with a “positive parenting” sticker to display on their houses). Yet the relationship between social activation dose and parenting improving also held for non-attendees. The caregivers who did not attend a programme but scored highly on social activation and experienced improvement in parenting behaviour are interesting cases. Caregivers that did not attend programmes might have been influenced by the increased awareness of positive parenting in the community. Moreover, these caregivers may have reported improvements due to being more motivated to learn from individuals that attended programmes (Cluver et al., 2018). Alternatively, increased exposure to caregivers may, due to an increase in social activity in the community, have positively influenced caregivers who derived indirect benefit from programme attendees while participating in the social activation workshops, activities or meetings.

The social activation process was initially centred around a mass-media campaign that later developed into a more sustainable community empowerment and development process. While mass-media campaigns have been shown to produce community-wide improvements in health-related behaviours (Baron et al., 2008; Wakefield et al., 2010), these campaigns are most effective when accompanied by other, more targeted programmes (Black et al., 2002; Mikton & Butchart, 2009). The social activation process is a composite of mass-media, targeted media, and community engagement. It is likely that the non-mass-media components of the intervention, including the parenting programmes, were integral to the success of the social activation process in producing improvements in parenting behaviour. The intervention thus demonstrates the applicability of findings concerning mass-media interventions, typically health-based and targeting urban, high-income communities in developed countries, to a parenting programme delivered to a deprived, rural community in South Africa. Given the stark differences between urban and rural circumstances, it is probable that the benefits of augmenting mass-media campaigns are highly generalisable across different social contexts and cultural groups.

Finally, greater improvements in parenting behaviour were evidenced among caregivers with lower baseline parenting scores. This result could be indicative of: the low-hanging fruit effect (Reynolds, 2014), regression to the mean (Nesselroade et al., 1980), or a reversal in the direction of social desirability bias in caregivers’ responses (Dalton & Ortegren, 2011; van de Mortel, 2008). Caregivers who have the lowest scores to begin with have the greatest potential for improvement, a feature which drives both natural (regression to the mean) and intentional (low-hanging fruit effect) improvements. The low-hanging fruit effect occurs because simple improvements that are easily implemented and have large effects can be taught to those caregivers with lower scores, while those with higher scores are likely to be performing these behaviours already. The low-hanging fruit

effect provides a possible explanation for some of the power of the South Carolina intervention discussed above, wherein the most severe forms of child maltreatment were greatly reduced by targeting the most at-risk families (Prinz et al., 2009). Lastly, a reversal in social desirability bias could explain why the worst caregivers improved most in the current study. If caregivers who had previously considered community norms regarding good parenting behaviour to favour harsh parenting practices came to view those norms as having shifted to the warmer parenting styles endorsed by the intervention, they could have reported a shift in response to these changed perceptions.

Caregivers' reported parenting improved overall, and improvements differed as a function of social activation exposure and baseline parenting ability. The mechanisms driving these differences in improvement were investigated using social network analysis.

3.9.3 Effects of Social Connectivity on the Efficacy of the Intervention

Investigation of non-attendees showed that, after controlling for social activation exposure and initial network position, increasing outdegree centrality and connections to attendees predicted improvement in parenting behaviour. These results are compatible with social influence theories. Specifically, that sources of influence on caregivers' parenting behaviours include the effects of dyadic interactions with other caregivers (Kempe, Kleinberg, & Tardos, 2015) as well as vicarious exposure to community norms (Christ et al., 2014).

Controlling for social activation dose was important because it seems entirely plausible that individuals more central to the community network would have more exposure to social activation processes. The change in outdegree centrality (i.e., whom a caregiver chooses to nominate) resulting in parenting improvements may be explained by various factors. One explanation may be that individuals more central to the caregiver network may receive more exposure to the intervention. Benefits derived by holding a central network position coincide with social capital theory (Ville et al., 2005). More specifically, engaging more with others results in greater exposure to more sources of advice and encouragement or general feedback which, in the context of the pervasive social activation, is more likely to be beneficial. The enhanced awareness of what constitutes a positive parent due to the social activation process may make caregivers more able to identify and incorporate warm, positive parenting traits, and thereby improve their parenting ability.

Furthermore, the parenting programmes and social activation workshops emphasise the importance of giving and receiving social support for improved parenting behaviour which may indicate that caregivers committed to improving would be more inclined to reach out to others for selfish, selfless or mutually beneficial purposes.

Nevertheless, caregivers with higher outdegree centrality experienced greater improvements in parenting and may have consequently become more confident in their parenting ability, and

therefore more willing to discuss parenting with others. Caregivers that experience improvements may find parenting more fulfilling and want to share their enthusiasm with their peers. Another explanation for caregivers' willingness to share their knowledge with others may be the tradition among some members of the community to exhibit a general concern for the safety and well-being of others' children as if they were their own, a pan-African philosophy of collective consciousness referred to as 'Ubuntu' (Kamwangamalu, 2013; Swann et al., 2012). Alternatively, caregivers already performing behaviours encouraged by the programmes may realise those practices are valued and thus find it easier to express in self-reports and in conversations with other caregivers (Kamwangamalu, 2013).

Greater exposure to attendees may result in greater improvements in parenting behaviour because caregivers with direct exposure to programmes are more likely to have better advice to impart, and this may be recognised by their contacts in the community. Alternatively, attendees might communicate demand characteristics rather than the actual behaviours. There is a middle ground between these extremes, which is that non-attendee caregivers adopt the broad concept of positive parenting and evaluate themselves in line with these new beliefs, but do not actually receive or implement the behavioural adjustments.

It is important to note, however, that the hierarchical multiple regression results explain a significant but not necessarily impressive amount of the variance in parenting improvement. Thus, this approach was complemented by the SIENA model, which analyses nuanced individual relationships which may be responsible for parenting improvement. However, it could merely be due to randomness associated with factors, such as: disturbances in control variables, caregivers being in the right mindset to engage (e.g., Prochaska, Norcross, & DiClemente, 2015), or other unmeasured influences.

3.9.4 Effects of the Intervention on the Caregiver Network

A feature of the caregiving network is that the most highly connected individuals reported higher baseline parenting scores; and, when controlling for baseline centrality parameters, the caregivers reporting improvements in parenting scores demonstrated the greatest increases in centrality. Additionally, attending a parenting programme significantly predicted change in network centrality; and attending a parenting programme made caregivers more likely to form and receive connections, thus demonstrating that attendees became more influential in the caregiver network.

3.9.4.1 Network Characterisation.

Network density increased from wave 1 to wave 2. This encouraging finding indicates that caregivers were speaking to more people about parenting within the caregiver network. This may imply that there is more information exchange overall. Interestingly, reciprocal tie formation decreased as transitivity increased. The lower reciprocity within the network may imply that the

caregiver network has diversified, producing less fragmentation and more homogenisation of caregiver connections. These results may also indicate that the exchanges of information are not equally salient for everyone in conversations (because the question asked is about giving and receiving information, caregivers should theoretically both indicate a connection even where information only flows one way). This pattern in the data may arise from ‘one-to-many’ conversations where one person speaks about how to do parenting while several other caregivers are listening to the conversation. This might in turn imply that new connections in the network are frequently produced through mutual third parties, a supposition consistent with the observation that transitivity increased between the waves.

3.9.4.2 Baseline network.

Caregivers that reported more positive parenting behaviour at baseline were more central to the caregiver network. Specifically, positive parents were more inclined to nominate others to speak to about parenting and scored more highly on closeness centrality. One explanation may be that caregivers that reported warmer, less harsh parenting behaviour are more comfortable and confident in their ability to impart meaningful information to other caregivers. These caregivers may feel they are in a better position to provide support to other caregivers in the community. Alternatively, caregivers that reach out more readily to others may be more enthusiastic and generally positive about being caregivers. A further explanation may be that caregivers committed to being warm, positive parents reach out to other caregivers that are better or more experienced, and are able to learn from them to improve their own behaviour; or they may be recognised by others as being effective caregivers, and so their opinions may be sought after.

Another plausible mechanism is that social desirability bias might be more pronounced in people who are more gregarious or socially orientated, which would lead to caregivers with high self-report scores also being the individuals with high centrality scores. For example, women show greater social desirability bias than men and the presumed argument is that women are more socialised than men (Dalton & Ortegren, 2011). If that is true for the differences between men and women it should also be true for the differences within women (who form the analytic sample) and we would expect that greater socialisation would increase outdegree centrality and possibly also the scores on parenting reports. Individual differences in socialisation may drive both the responding to the questionnaire and the social position within the caregiver network.

3.9.4.3 Network modifications.

The general rule that ‘the more positive your parenting style, the more central you are to the network’ remained true across time. Caregivers that reported greater improvements in parenting behaviour demonstrated larger increases in network centrality. Interestingly, baseline parenting behaviour did not predict increased network centrality. In addition, attending parenting programmes

was more likely to result in increased network centrality. Thus, attendance and improvement confer social status, presumably because these aspects of a caregiver's behaviour exemplify the social norms fostered by the intervention. A similar result was observed by Wölfer and Scheithauer (2014) who found that an anti-bullying intervention decreased bullies' centrality.

Possible explanations for the relationship between improvements in parenting behaviour and increased network centrality include: (a) caregivers who grow in competence also gain confidence in their parenting ability and thus become more inclined to reach out to discuss parenting; and (b) these caregivers become recognised as trusted individuals with valuable information to share and are consequently sought out. There are various explanations for why caregivers might evoke the desire of others to learn from them, namely: that they have more harmonious interactions with their children, that their children's behaviour has improved, that they endorse the behaviours taught at the programmes, and that they seem less stressed by parenting, or by other caregivers speaking about their parenting ability or improvements in parenting behaviour (i.e., word-of-mouth; Venkatramanan & Kumar, 2011). Increases in centrality, as a consequence of natural variation in network structure, may result in different levels of exposure to the intervention which might result in greater reporting in improved parenting.

The explanations above, increased confidence and peer recognition, are also applicable to the association between programme attendance and increased network centrality. However, in the case of peer recognition the premise may be different: caregivers may be inclined to engage in conversations regarding parenting with attendees purely because of their affiliation to the programme, perhaps without critically evaluating the caregivers' actual improvements in behaviour. Nevertheless, speaking to attendees is likely to provide meaningful insights into what it means to be a positive parent, irrespective of whether they model the behaviour taught, because of their direct exposure to the programme content. Additionally, a more fine-grained analysis of these effects is presented below.

3.9.4.4 Network effects.

The detailed analyses using social network measures revealed a general propensity for caregivers that attended the programmes to have higher outdegree centrality (covariate ego effect) and indegree centrality (covariate alter effect) which can be driven by a single effect or multiple different effects for different subgroups.

The programmes emphasise the value of discussing parenting with others. Consequently, caregivers attending programmes may be more inclined to reach out to other caregivers. The increasing outdegree centrality of attendees can also account for the significant alter effect due to the bidirectional nature of the question used to construct the social network: interactions between attendees and non-attendees (initiated by attendees with a desire to reach out) may be more

prominently remembered, and thus reported, by non-attendees (for whom such interactions are comparatively rare). It may be important to note that people with asymmetry with regards to indegree and outdegree centrality (i.e., nonreciprocal tie formation) may have different interpretations of their conversations regarding parenting compared to their interlocutors. For example, one caregiver may seek out another to talk about parenting concerns, while another may reach out to give parenting advice. However, in order to provide evidence for this speculation, future qualitative research methods should be employed, such as focus group discussions with participants.

Alternatively, the effects may be explained by a constellation of different partial explanations in addition to the ones presented above. The tendency of attendees to increase their connections to non-attendees may be due to attendees identifying specific non-attendees to share their parenting information with. Non-attendees may be more inclined to reach out to attendees to gain insight into what is being taught at programme sessions. Thus, the intervention reshapes the network to push caregivers more towards the centre. Furthermore, attending parenting programmes allows for relationships to develop between attendees on the basis of both propinquity (bringing people into the same physical space) and homophily (an expression of a shared interest that brought caregivers to the programmes; Wölfer et al., 2015).

Previous studies have made use of social network analysis to reveal the efficacy of specific intervention programmes to bring about wide-scale improvements in targeted behaviours, especially in school behaviours (e.g., Paluck et al., 2016; Paluck & Shepherd, 2012; Wölfer & Scheithauer, 2014), health behaviours (e.g., Christakis & Fowler, 2007; Gesell et al., 2012; Mercken et al., 2010; Schaefer et al., 2013), and political discussions (e.g., Choi et al., 2018). These interventions often target individuals high in social capital (e.g., Cenker-Özek, 2019) and use these individuals as vectors via whom the benefits of the intervention can be delivered to the wider community. In the present study, attendees were self-selecting, and were no more likely to have higher social influence than non-attendees prior to the intervention. Importantly, attendees became more socially influential after the intervention, suggesting that individuals who can act as effective social vectors can be made rather than found. This, in turn, suggests that the time and expertise typically required to identify these individuals prior to conducting an intervention is potentially unnecessary, allowing interventions to be deployed more rapidly.

In summary, community-wide increases in warm, positive parenting behaviour and decreases in cold, harsh parenting behaviour were evident 18 months after the implementation of the Seven Passes Intervention. The main drivers of change were more exposure to the social activation component, increased contact with programme attendees, and increased network centrality. In the next chapter, I present analysis of a third wave of data collected 18 months after

the wave 2 data which indicates that these changes are attenuated over time. I also use this extended longitudinal data to conduct a more detailed analysis of the interdependent processes of network selection and socialisation effects that may help to explain changes in parenting behaviour.

4

Results: Waves 1 to 3

The previous chapters focused on analysing the immediate impact of the intervention and illustrated the responsiveness of social networks to changes in individuals' attitudes and behaviours. In this chapter I take a longer view, using data collected 18 months after wave 2. I use this longer-term perspective, comprising three longitudinal data points, in two key ways: to assess whether the impact of the parenting intervention on caregiving behaviour was sustained after the positive effect of the initial intervention period; and to model both the effect of caregiver attributes on their social network (*selection*) and the influence of the caregivers' social network on their parenting behaviour (*socialisation*) simultaneously. For the first question I employ Growth Curve Modelling (GCM), a longitudinal statistical technique, to report on the trajectory of parenting scores over the entire 36-month intervention period. The second question again makes use of the SIENA social-network analysis technique, using more advanced model specifications to disentangle selection and socialisation effects and characterise their influences on intervention outcomes. The chapter unfolds as follows: firstly, with attrition analyses to determine possible systematic differences associated with dropping out of the study at wave 3; secondly, with a detailed description of the analytic sample containing complete data across three waves of data; thirdly, by reporting results pertaining to exact hypotheses in the order in which they have been introduced. Broadly speaking, the hypotheses tested whether: improvements in mean positive parenting scores were evidenced across time (Hypothesis 4), the intervention altered the social network (*selection effects*; Hypothesis 5), and the caregivers social networks influenced their parenting behaviour (*socialisation*; Hypothesis 6).

4.1 Attrition Analyses

The correlation matrix presented in Figure 24 was constructed to provide an indication of which variables might predict dropping out of the study between waves 2 and 3. There were no significant correlations between any of the variables. Moreover, the logistic regression analyses conducted indicated that no variables in the data predicted dropping out of the study at wave 3 ($\chi^2(12) = 13.69, p = .321$; see Table 19). Thus, there were no systematic differences between caregivers that remained in the study and those that dropped out. This in turn supports the generalisability of the findings in the analytic caregiver sample for the present study.

Figure 24. Correlation matrix between bivariate dropout and key variables.

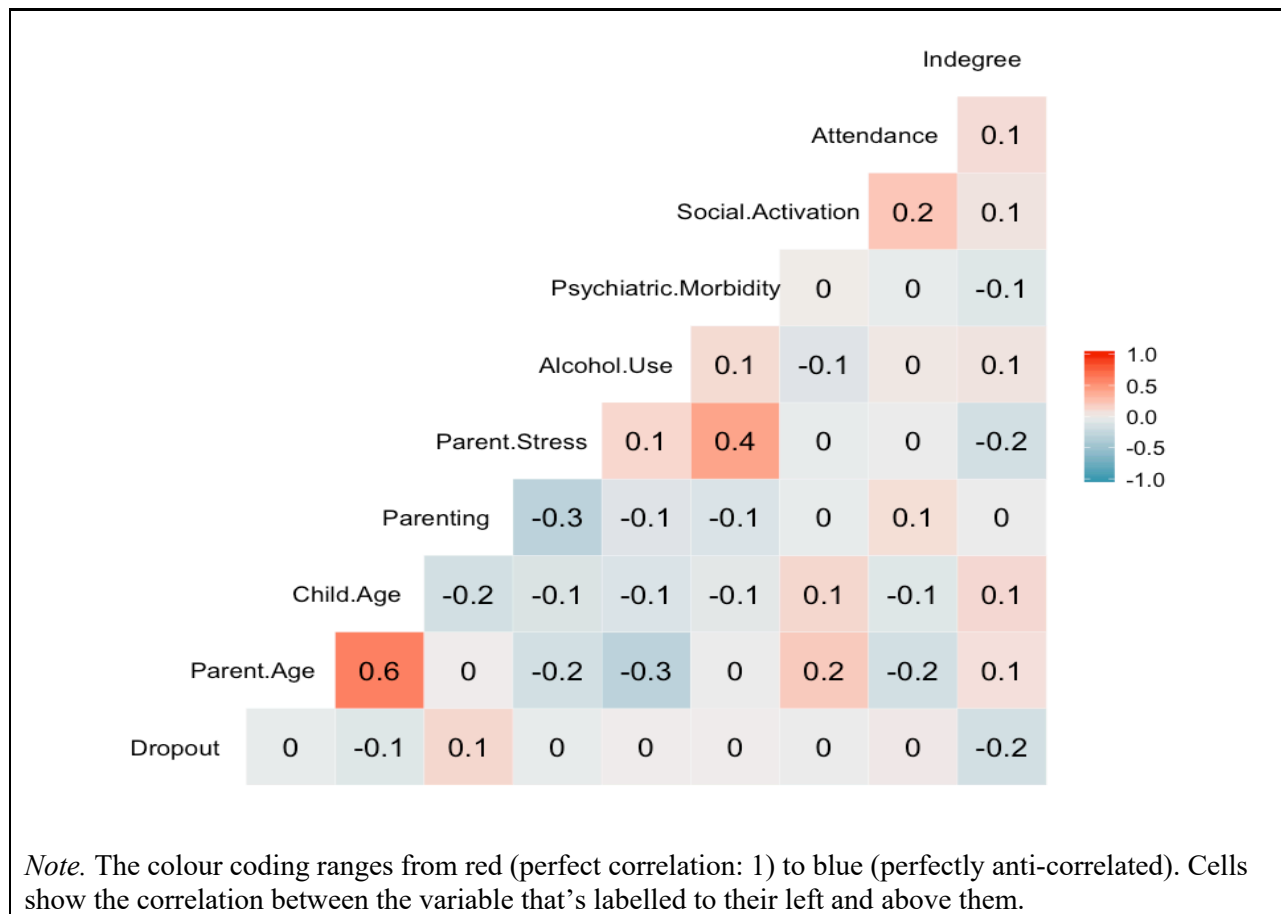


Table 19

Dropping out of the study between waves 2 and 3

Coefficients:	Estimate	SE	Wald	p
(Intercept)	-1.92	3.50	-0.55	0.58
Parent Age	0.01	0.02	0.25	0.80
Child Age	-0.03	0.06	-0.44	0.66
Parenting Summary Statistic	0.01	0.01	0.59	0.55
Parent Stress	0.11	0.19	0.61	0.54
Alcohol Severity	0.00	0.02	0.03	0.98
Psychiatric Morbidity	-0.02	0.06	-0.30	0.76
Social Activation Dose	0.40	0.57	0.71	0.48
Programme Attendance ^a	-0.01	0.19	-0.03	0.98
<i>Centrality Parameters</i>				
Indegree	0.14	0.26	0.54	0.59
Outdegree	-0.01	0.01	-1.43	0.15
Betweenness	-0.14	0.35	-0.41	0.69
Closeness	-1.92	3.50	-0.55	0.58
χ^2	13.69, <i>df</i> = 12, <i>p</i> = .321			
<i>Nagelkerk Pseudo R²</i>	0.12			

Note. The dependent variable in this analysis is coded as “0” remain (caregivers that form part of the analytic sample) and “1” dropout at wave 3. ^a Coded as “0” non-attende and “1” attendee.

4.2 Description of the Analytic Sample

In the present results chapter, caregivers included in the analytic sample (203; 81.3% of caregivers that formed part of the analytic sample between waves 1 and 2) were those who had provided data at all three waves of data collection. Mean child age at the start of data collection was 9.43 years, and there was roughly an even gender split in the children (105; 51.8% female). The vast majority of caregivers were women (191; 9% female), with an average age of 35.6 at baseline.

Most children had adult supervision at home (132, 65.0% wave 1; 151, 74.3% wave 2), and most caregivers had caregiving support from other adults (137, 67.7% at wave 1; 163, 80.5% at wave 2). Households contained an average of 4.24 people, with 2.29 of them being adult caregivers (including the respondent), of whom 1.33 had some form of employment.

The modal education level was secondary school (81; 40.1%), followed by primary school (118; 58.0%), and beyond secondary (4; 1.9%). Employment levels varied over the data collection period at around half the sample (110, 54.0% wave 1; 49.0% wave 2; 125, 62.0% wave 3), although large numbers of caregivers reported getting food from the Seven Passes Institute (71, 35.0% wave 1; 84, 41.6% wave 2). Very few caregivers (4, 2.0%) reported having no source of income. Households were reasonably well equipped with amenities (mean Household Inventory score: 8.46 wave 1; 8.39 wave 2).

Questionnaire responses are presented below. Table 20 shows the scores for each instrument at each of the three waves of data. Figures are presented throughout showing mean responses across all three waves of collected data, separated by attendance and non-attendance.

Table 20

The mean scores for each instrument at all three Waves

			wave 1			wave 2			wave 3					
Variable Name			<i>N</i>	Possible Range	95% Bootstrapped CI			95% Bootstrapped CI			95% Bootstrapped CI			
					<i>M</i>	Low	High	<i>M</i>	Low	High	<i>M</i>	Low	High	
Demographics	Parent Age		203	-	35.68	34.47	36.98	37.72	36.11	39.37	39.49	38.14	40.74	
	Child Age		191	< 18 years	9.43	8.91	9.94	10.34	9.73	10.94	13.60	13.13	14.07	
Risk Factors	Parent Stress		203	36 - 180	82.49	80.52	84.66	83.46	81.22	85.91	74.46	71.39	77.60	
	Psychiatric Morbidity		199	28 - 112	39.98	38.89	41.23	41.83	40.44	43.21	38.69	37.46	39.88	
	Alcohol Use		191	0-32	9.88	8.72	11.02	7.86	6.81	8.90	9.35	8.07	10.53	
Parenting*	Analytic Caregiver Sample		191	z-score	0.16	0.03	0.28	0.28	0.16	0.40	0.19	0.09	0.29	
	Overall Caregiver Sample		222	z-score	0.02	-0.10	0.15	0.18	0.07	0.30	0.19	0.10	0.29	
APQ	Total Score		145	1 – 5	3.64	3.57	3.72	3.74	3.67	3.81	3.68	3.63	3.73	
	Inconsistent Discipline		148	1 – 5	2.8	2.72	2.90	2.63	2.50	2.74	2.77	2.65	2.88	
	Involvement		148	1 – 5	3.94	3.84	4.04	3.84	3.73	3.95	3.84	3.73	3.93	
	Positive Parenting		148	1 – 5	4.44	4.36	4.53	4.37	4.26	4.48	4.26	4.16	4.35	
	Poor Monitoring and Supervision		148	1 – 5	1.89	1.80	1.98	1.76	1.66	1.85	2.80	2.72	2.89	
	Corporal Punishment	Spank		144	1 – 5	2.76	2.57	2.98	2.40	2.20	2.58	2.14	1.98	2.30
		Slap		143	1 – 5	1.24	1.15	1.33	1.13	1.05	1.22	1.28	1.18	1.41
Hit with Belt			143	1 – 5	1.63	1.48	1.79	1.30	1.19	1.43	1.35	1.23	1.48	
PARYC	Total Score		17	1 – 7	4.75	4.50	5.02	5.09	4.76	5.42	5.44	5.16	5.71	
	Setting Limits		17	1 – 7	4.47	4.14	4.79	4.92	4.55	5.28	5.25	4.89	5.61	
	Supporting Positive Behaviour		17	1 – 7	5.03	4.76	5.29	5.27	4.94	5.58	5.64	5.31	5.95	

Note. *Parenting refers to the standardised parenting behaviour total scores. APQ: Alabama Parenting Questionnaire; PARYC: Parenting Young Children Scale

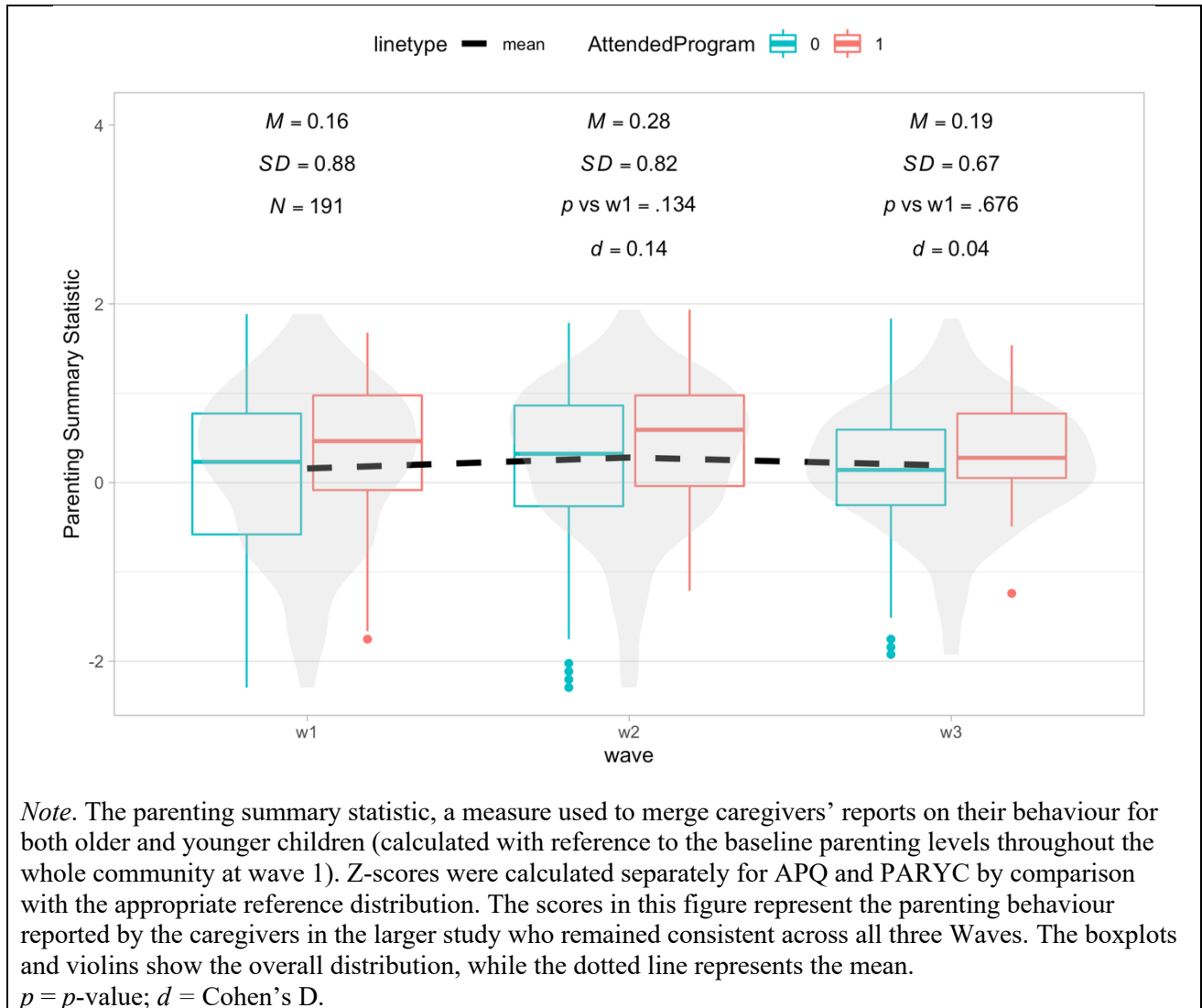
4.2.1 Parenting Behaviour.

The pattern of parenting behaviour change was assessed using three different samples: (a) caregivers who remained consistent across all three waves of data and provided social network data (*analytic caregivers sample*); (b) the largest possible sample of consistent caregivers including those who did not provide social network data (*overall caregivers sample*); and (c) the caregivers who formed part of the *overall caregivers sample* but not the *analytic caregivers sample* (*excluded caregiver sample*).

4.2.1.1 Analytic caregiver sample.

The main outcome of interest for the intervention was the parenting summary statistic (i.e., the measure of overall parenting behaviour; see Figure 25). The reference population for the Parenting Summary Statistic is those caregivers consistent across the first two waves of data (i.e., the reference population used in the previous results chapter). The mean parenting score of the analytic caregiver sample at baseline was .16 ($SD = 0.88$). A Bayesian one-sample t -test was used as a sensitivity test to explore whether the overall caregiver sample was typical of the caregivers interviewed in the community as a whole (i.e., that the analytic caregiver sample mean was equivalent to 0, the mean imposed by definition on the reference sample: the overall caregiver sample at baseline). The result was inconclusive (Bayes Factor vs $mean=0 = 1.54$ with default priors from the BayesFactor package in R; Morey & Rouder, 2018). Thus, there is no conclusive evidence to suggest that people who remain part of the study across all three waves score higher on average than those who only formed part of the study between waves 1 and 2. Parenting in the analytic sample became more positive at wave 2 compared to wave 1 ($M = .28$; $SD = .82$), although not significantly so ($p = .134$; $d = 0.14$). Parenting scores in the analytic sample were slightly lower at wave 3, yet the difference was not significant when compared to wave 1 ($M = .19$; $SD = .67$; $p = .683$; $d = 0.04$). As such, it can be said that no significant change in parenting behaviour was evidenced across the three wave intervention period in the subsample for which network data was collected.

Figure 25. Parenting behaviour reported by caregivers in the analytic sample.



A visual representation of the measures that make up the total parenting score - the Parenting Young Children scale (PARYC; 1.5 – 6 years) and the Alabama Parenting Questionnaire (APQ; 6 - 18 years) - can be seen in Figure 26 and Figure 27. The scores on the PARYC improved from baseline ($M = 4.50$; $SD = 1.19$) to wave 2 ($M = 5.13$; $SD = .98$; $p = .128$; $d = 0.57$), and significantly so from baseline to wave 3 ($M = 5.55$; $SD = .85$; $p = .006$; $d = 1.01$). No significant change was evidenced in the APQ scores from baseline ($M = 3.65$, $SD = .58$) to wave 2 ($M = 3.71$; $SD = .52$; $p = .301$; $d = 0.11$), or to wave 3 ($M = 3.66$; $SD = .40$; $p = .732$; $d = 0.029$).

A Welch two-sample t -test was conducted to determine whether there were significant differences in the rate of improvement (from wave 1 – wave 3) between caregivers in the younger (PARYC) versus older (APQ) age groups (see). The results indicate that caregivers with children in the younger age group improved at a greater rate (M improvement = 1.13; $SD = 1.04$) than caregivers with children in the older age group (M improvement = 0.06; $SD = 1.08$; $t(40.12) = -5.04$, $p < .001$). Moreover, robustness checks, conducted with Bayes Factor analysis, looking at the difference in rates of improvement between caregivers with children in the older and younger age

group, echo the results above (Bayes Factor = 6715.09 with default priors from the BayesFactor package in R; Morey & Rouder, 2018). Thus, the pattern observed in the data suggests that the intervention may have been particularly effective for caregivers with children in the younger age group (see Figure 28).

Further exploration sought to determine whether there were significant differences between the rates of improvement (from wave 1 – wave 3) amongst caregivers that completed the APQ for children above and below the median age (i.e., 11 years old; see Figure 29). The mean rate of improvement for caregivers with children in the 6 - 11 year-old age group was numerically higher ($M = 0.16$; $SD = 1.06$) than that of caregivers with children in the 12 - 18 year-old age group ($M = -0.04$), although not significantly so: $t(154.81) = -1.10$, $p < .23$. However, Bayes factor analyses indicate that the evidence in favour of there being no differences between the younger and older APQ groups is inconclusive (Bayes Factor = .33 with default priors from the BayesFactor package in R; Morey & Rouder, 2018). This provides further evidence in favour of the benefit that the parenting intervention has for caregivers of children in the younger age group.

An investigation into the distribution of data in the overall caregiver sample (which includes the parenting data of caregivers that did not provide social network data) showed that the trends remained fairly consistent with that of caregivers in the analytic sample (see Figure 30 to Figure 32). These data will be discussed in more detail below.

Figure 26. Mean item scores on the PARYC questionnaire.

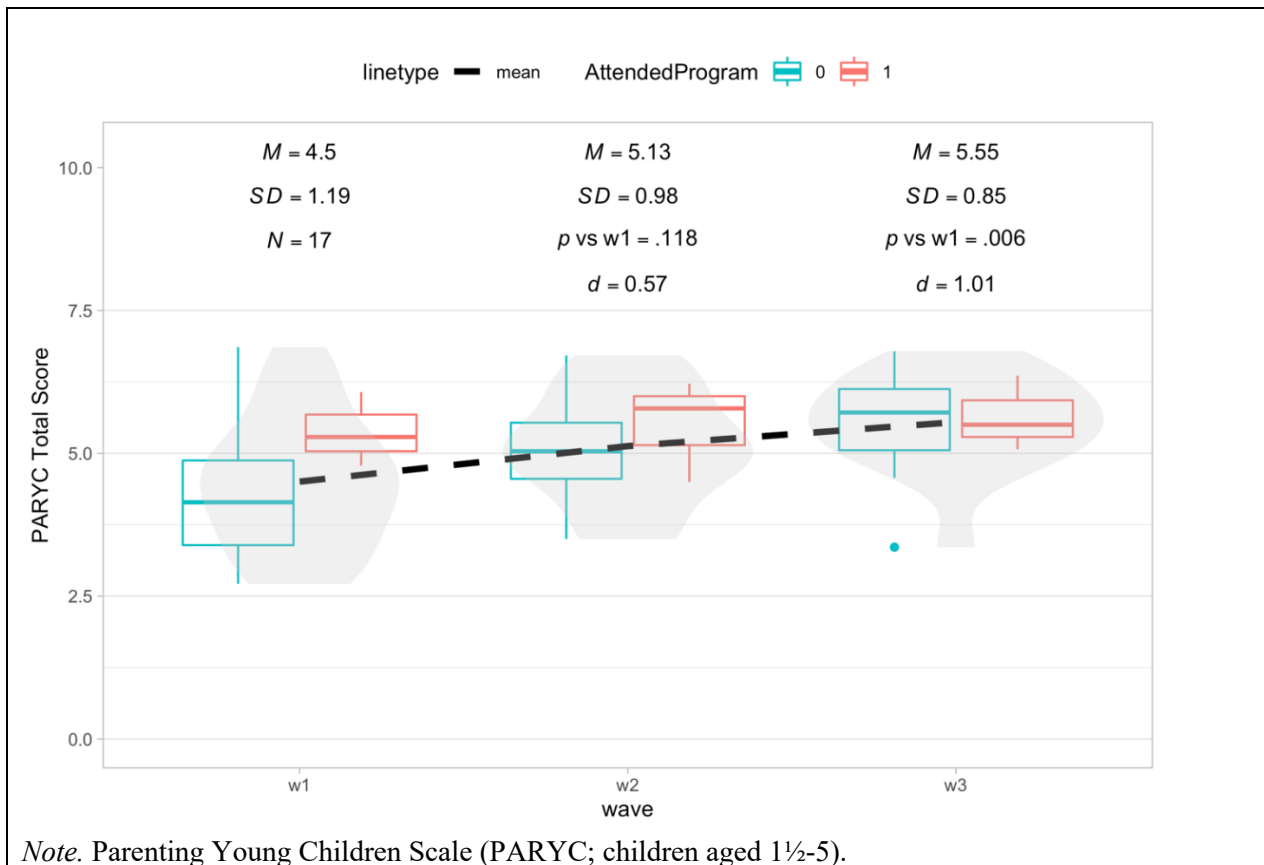


Figure 27. Mean item scores on the APQ for caregivers.

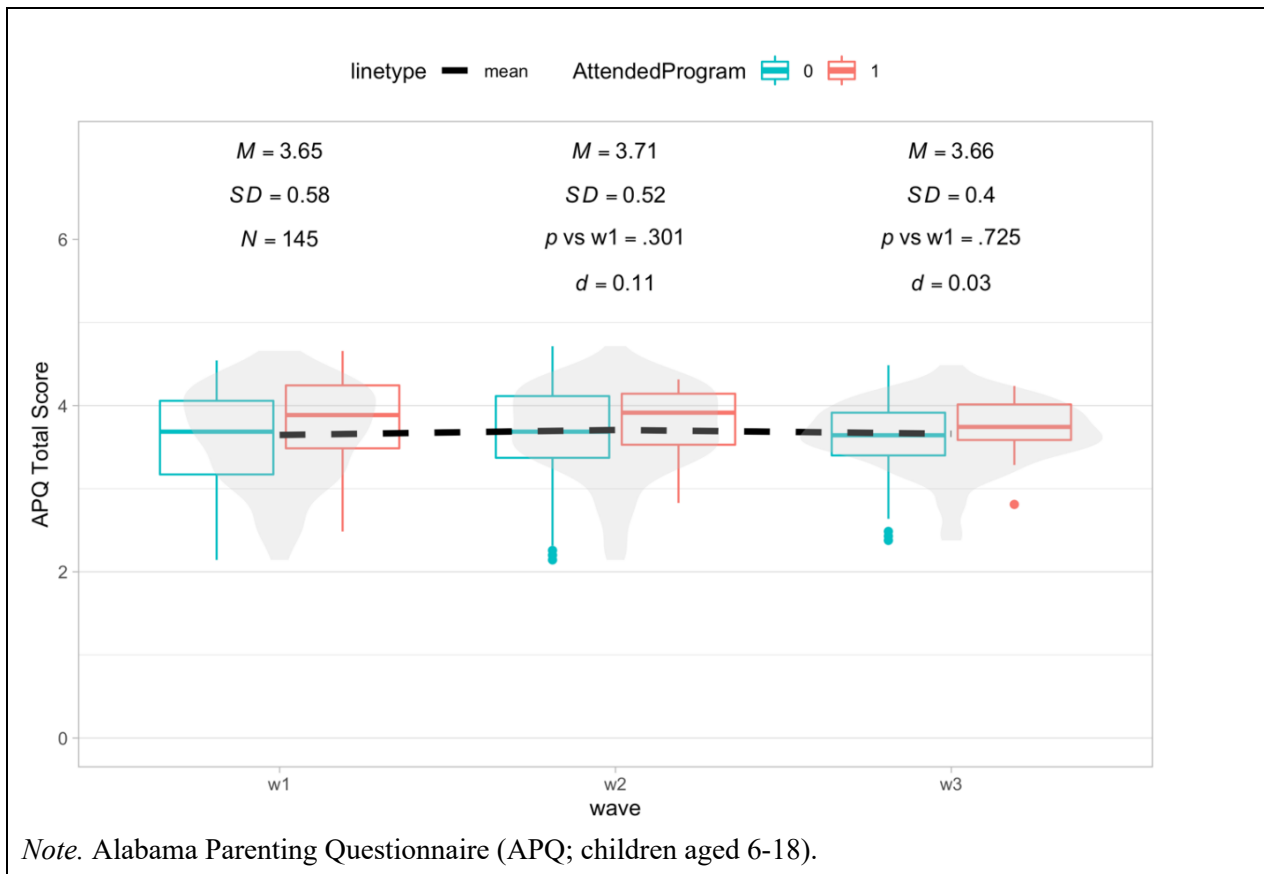


Figure 28. Parenting change by child age.

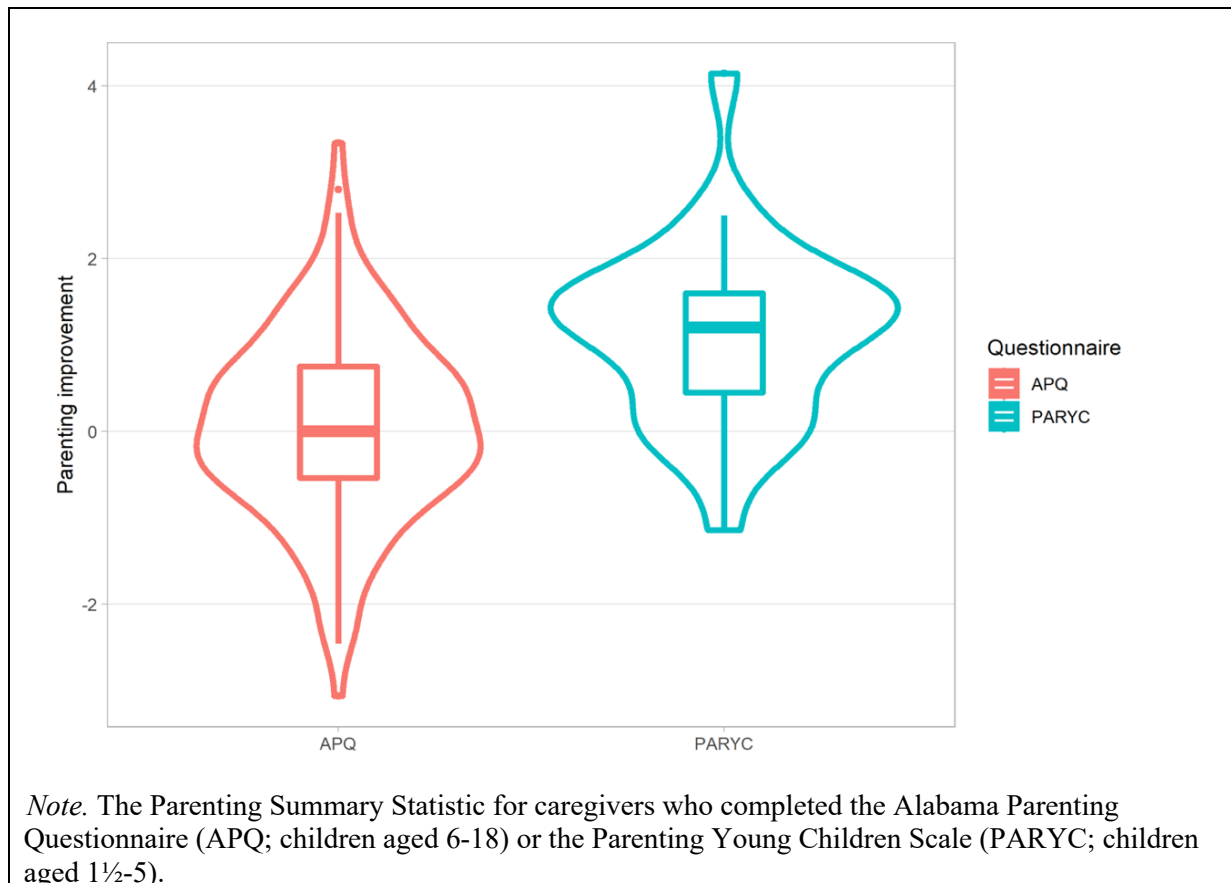
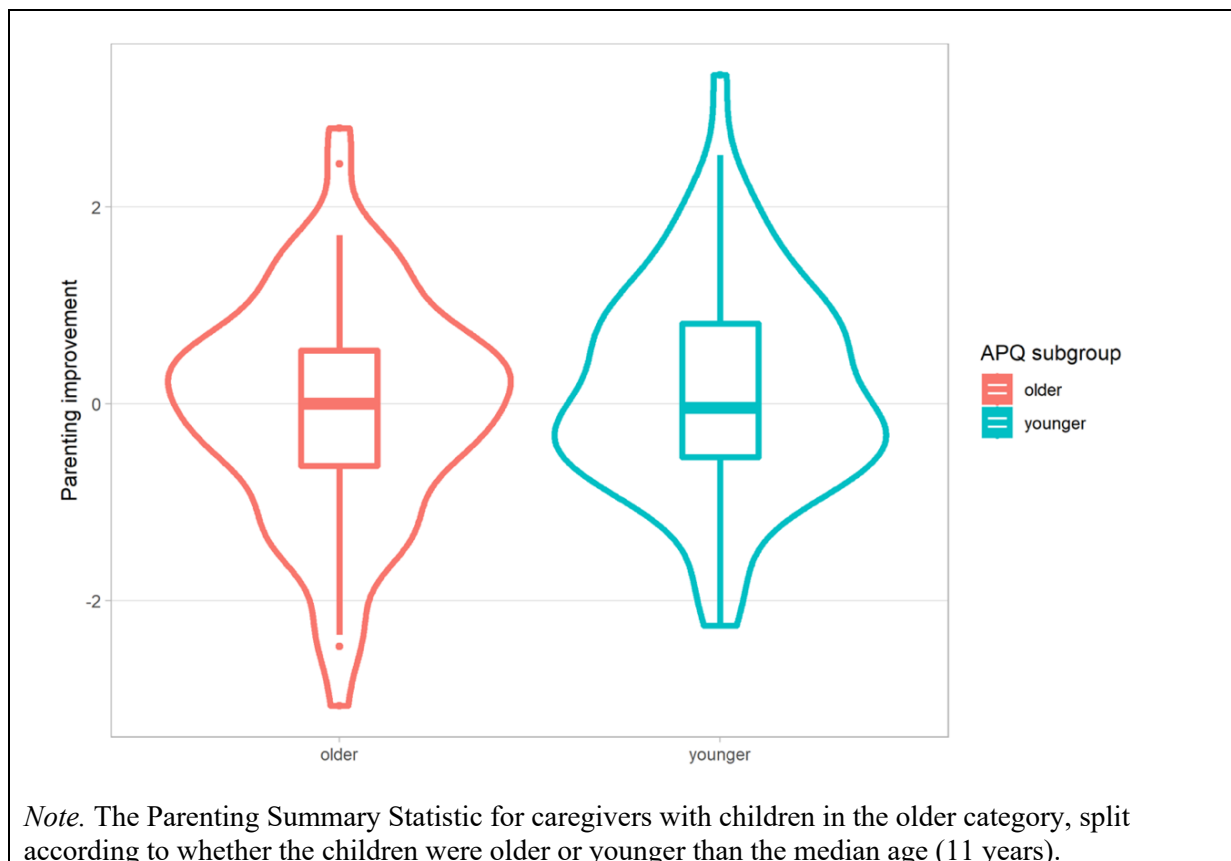


Figure 29. Parenting change by child age in older children.



4.2.1.2 Overall caregiver sample.

The pattern of improvement was different in the overall caregiver sample (for whom network data was not available) despite the attrition analyses not revealing systematic differences between the samples. The mean parenting score at baseline was .02 ($SD = .95$; see Figure 30). A Bayesian one-sample t -test showed that parenting in the analytic sample at baseline was typical of the caregivers interviewed in the community as a whole (Bayes Factor vs $M = 0 = 0.079$ with default priors from the BayesFactor package in R; (Morey & Rouder, 2018; Rouder, Morey, Speckman, & Province, 2012)). Similar to the analytic caregiver sample, parenting in the overall caregiver sample became more positive at wave 2 ($M = .18$; $SD = .88$), although not significantly so ($p = .051$; $d = 0.18$). However, parenting in the overall caregiver sample was even more positive at wave 3, ($M = .20$; $SD = .69$), this time representing a significant improvement from wave 1 scores ($p = .032$; $d = 0.21$). The distribution of data based on the Parenting Young Children scales followed a similar pattern to that of the analytic caregiver sample and an identical pattern based on the Alabama Parenting Questionnaire. The scores on the PARYC improved from baseline ($M = 3.70$; $SD = 1.41$) to wave 2 ($M = 4.30$; $SD = 1.37$; $p = .031$; $d = 0.43$), and significantly so from baseline to wave 3 ($M = 5.31$; $SD = 0.92$; $p < .001$; $d = 1.36$; see Figure 31). No change was evidenced in the APQ scores from baseline ($M = 3.61$, $SD = .61$) to wave 2 ($M = 3.70$; $SD = .54$; $p = .159$; $d = 0.12$), or to wave 3 ($M = 3.65$; $SD = .41$; $p = .465$; $d = 0.08$; see Figure 32).

Figure 30. Parenting behaviour for caregivers in the analytic sample.

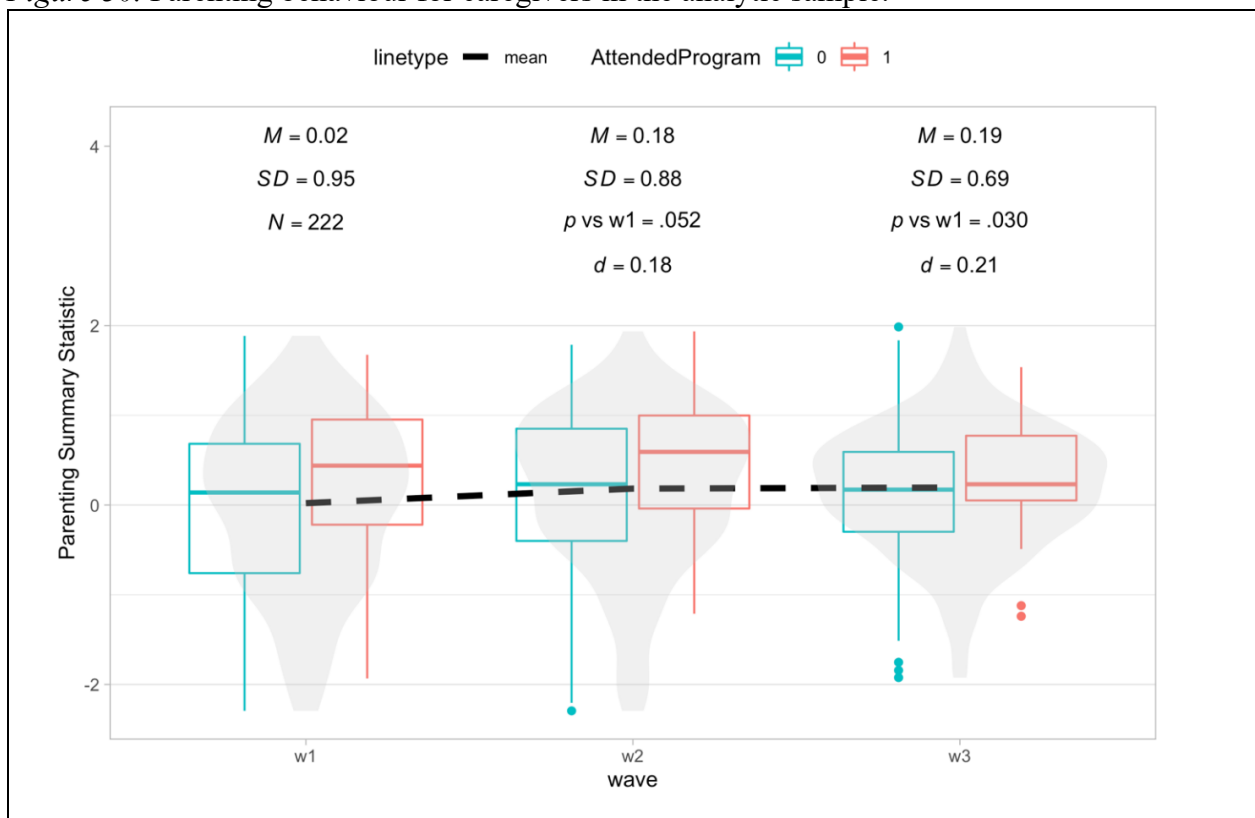


Figure 31. PARYC scores for caregivers in the larger community sample

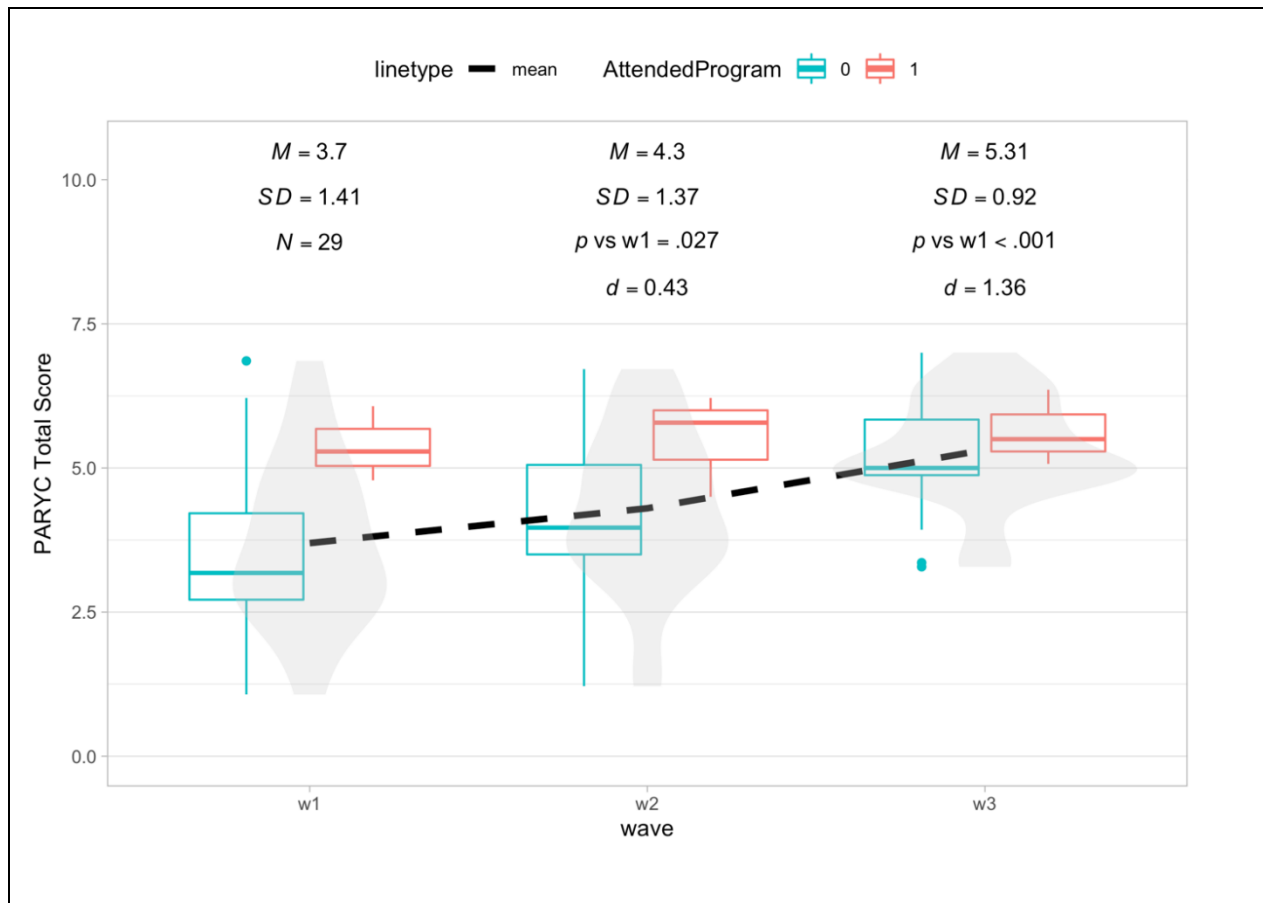
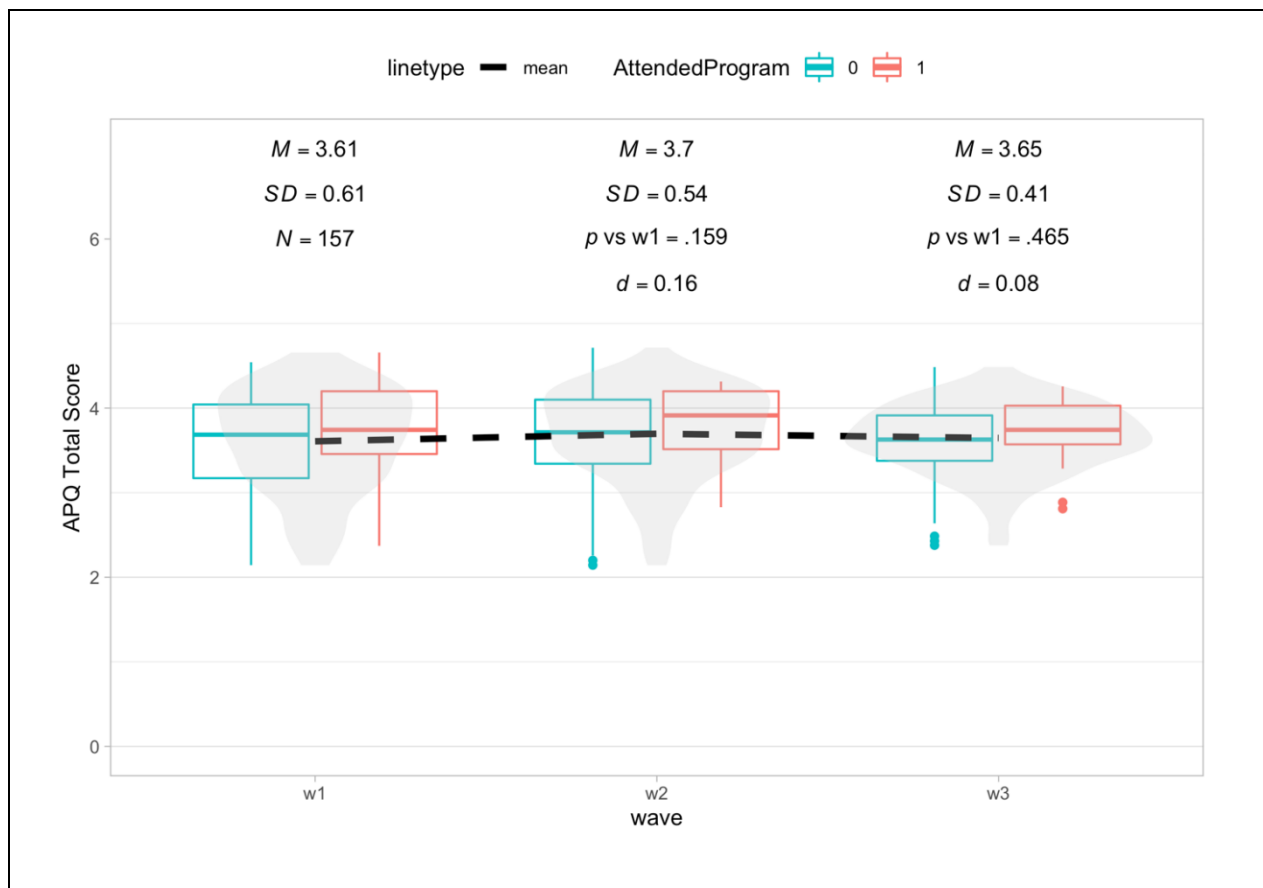


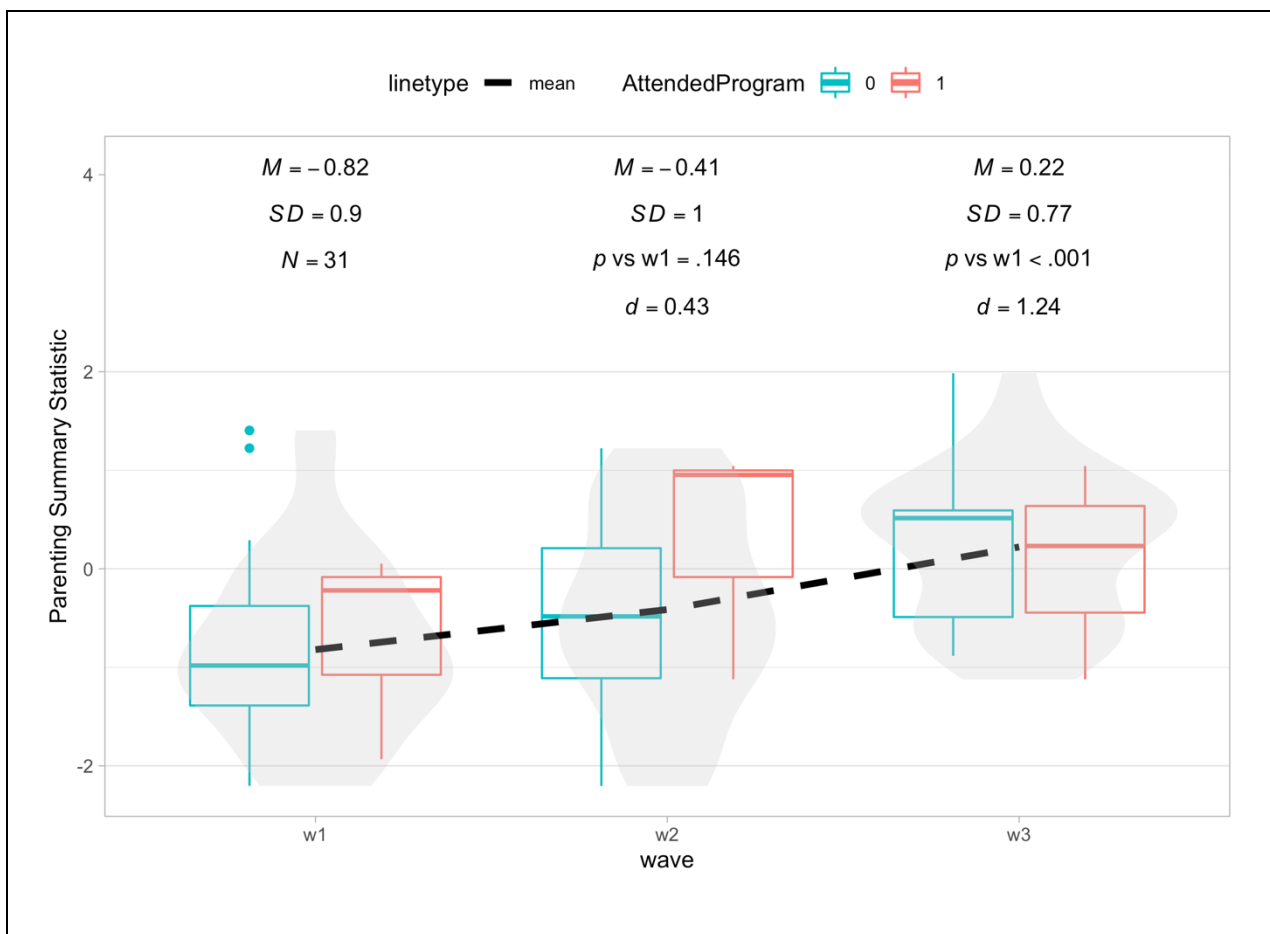
Figure 32. APQ scores for caregivers in the larger community sample



4.2.1.3 Excluded caregiver sample.

Further analyses were conducted to explore the trajectory of parenting behaviour, over the course of the intervention period, for the caregivers who formed part of the overall study but not the analytic caregiver sample. These caregivers have been excluded from the main analyses because they are either male or isiXhosa-speaking. Bayesian analysis of the results presented in Figure 33 showed strong evidence that the baseline scores of the excluded caregiver sample were below average (Bayes Factor vs $M = 0 = 1128.80$ with default priors from the BayesFactor package in R; Morey & Rouder, 2018). Nevertheless, these scores gradually improved numerically from baseline ($M = -0.82$; $SD = 0.90$) to wave 2 ($M = -0.41$; $SD = 1.00$; $p = .152$; $d = 0.43$), and significantly from baseline to wave 3 ($M = 0.22$; $SD = 0.77$; $p < .001$; $d = 1.24$). This improvement contributes substantially to the improvement shown in the overall caregiver sample. This means that we see statistically significant improvement in the overall sample (shown in Figure 30) and not the analytic sample (shown in Figure 25).

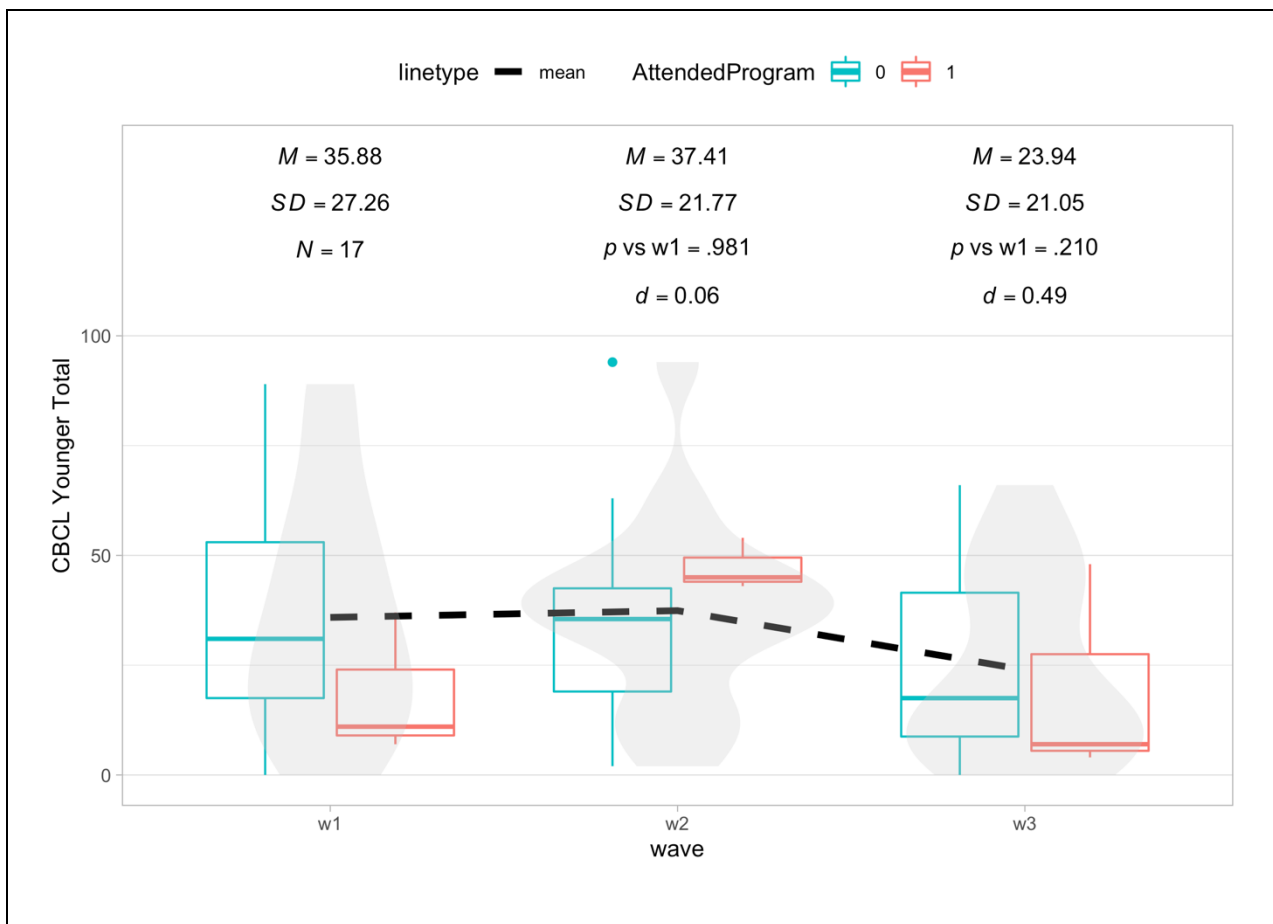
Figure 33. The parenting summary statistic of the excluded caregiver sample.



4.2.2 Child Behaviour Checklist.

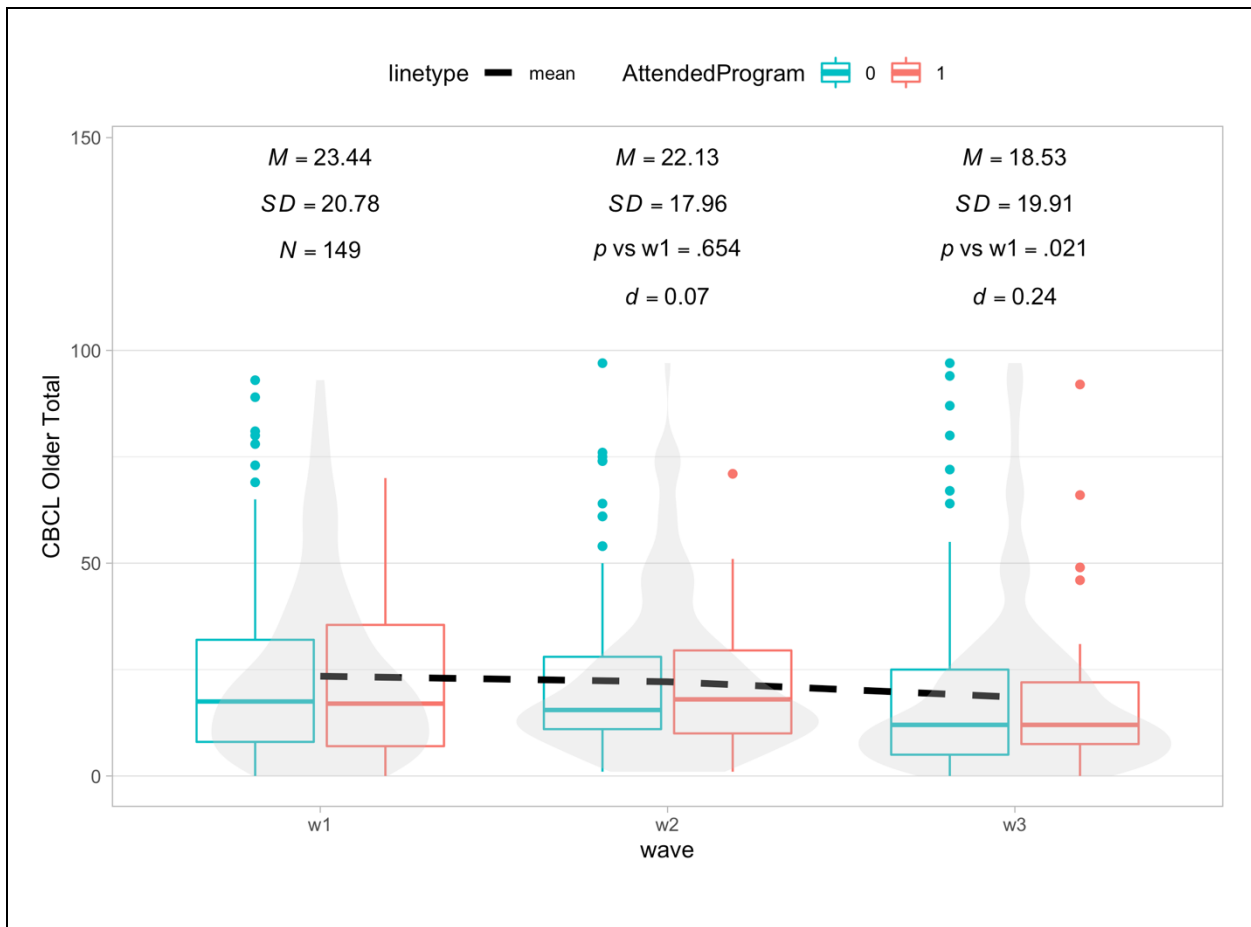
The Child Behaviour Checklist indicates children’s behavioural problems based on caregiver reports. For the children in the younger age group (Figure 34), behavioural problems increased numerically by a small amount, 1.53 (4.3%) from baseline ($M = 35.88$; $SD = 27.27$) to wave 2 ($M = 37.41$; $SD = 21.76$; $p = .981$; $d = 0.06$), but then decreased by 11.94 (33.3%) from baseline to wave 3 ($M = 23.94$; $SD = 21.06$; $p = .210$; $d = 0.49$). For the children in the older age group (Figure 35), there was a sustained decline from baseline ($M = 23.45$; $SD = 20.78$) to wave 2 ($M = 22.13$; $SD = 17.96$) of 1.30 (1.6%) and to wave 3 ($M = 18.53$; $SD = 19.91$) by 4.91 (20.9%), which was statistically significant over the duration of the study ($p = .021$, $d = 0.24$).

Figure 34. Child Behaviour Checklist scores for younger children.



Note. Higher scores indicate more behavioural problems.

Figure 35. Child Behaviour Checklist scores for older children.

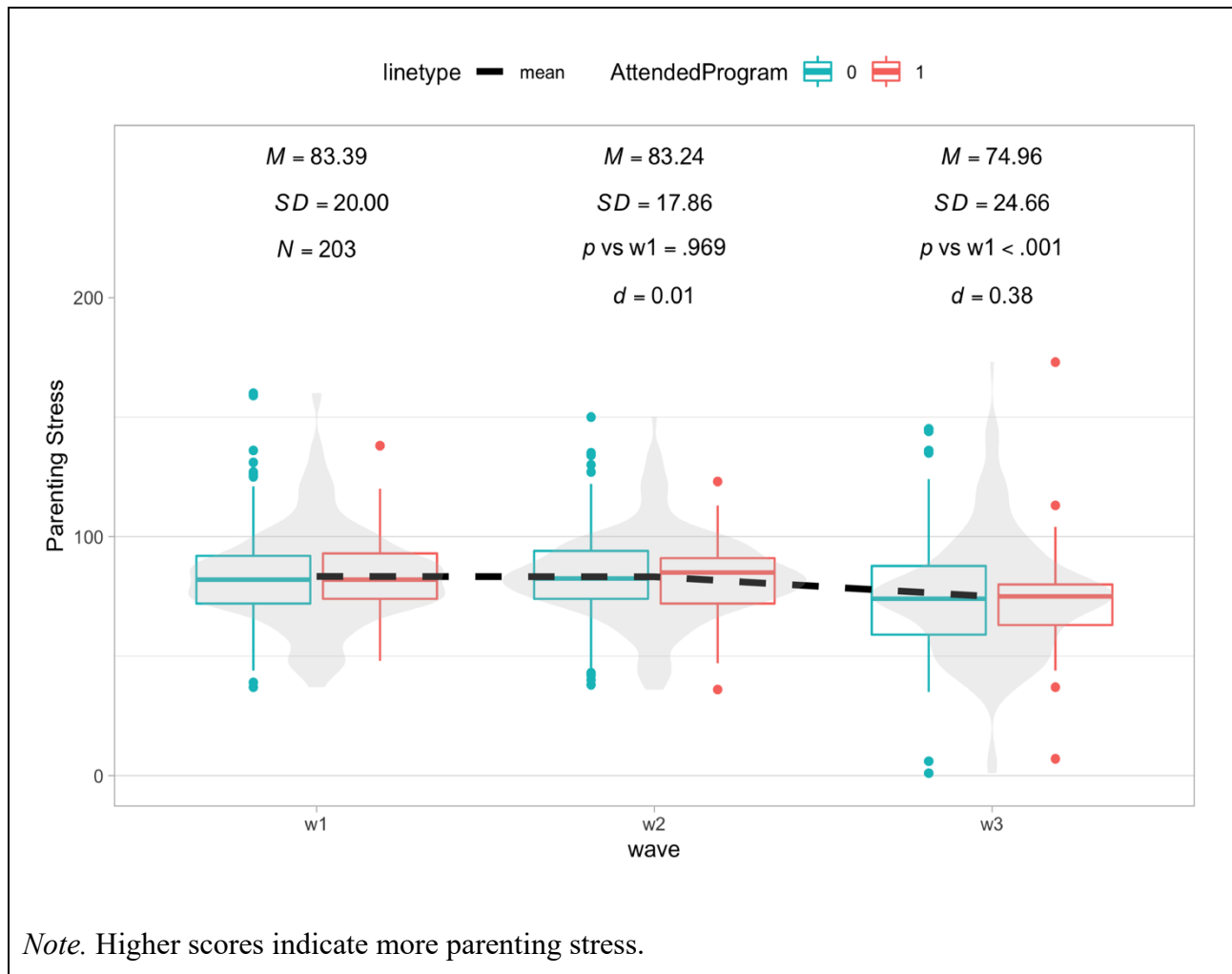


Note. Higher scores indicate more behavioural problems.

4.2.3 Parenting Stress Index.

Higher scores on the Parenting Stress Index indicate greater stress and difficulty. The scores on the Parenting Stress Index (Figure 36) decreased numerically by 0.15 (0.2%) from baseline ($M = 83.39$; $SD = 20.00$) to wave 2 ($M = 83.24$; $SD = 17.86$), and decreased significantly by 8.43 (10.1%) from baseline to wave 3 ($M = 74.96$; $SD = 24.66$; $p < .001$, $d = 0.38$). The percentage of caregivers that fall into the clinically stressed range decreased from baseline (14.0%) to wave 2 (5.5%) and wave 3 (4.9%).

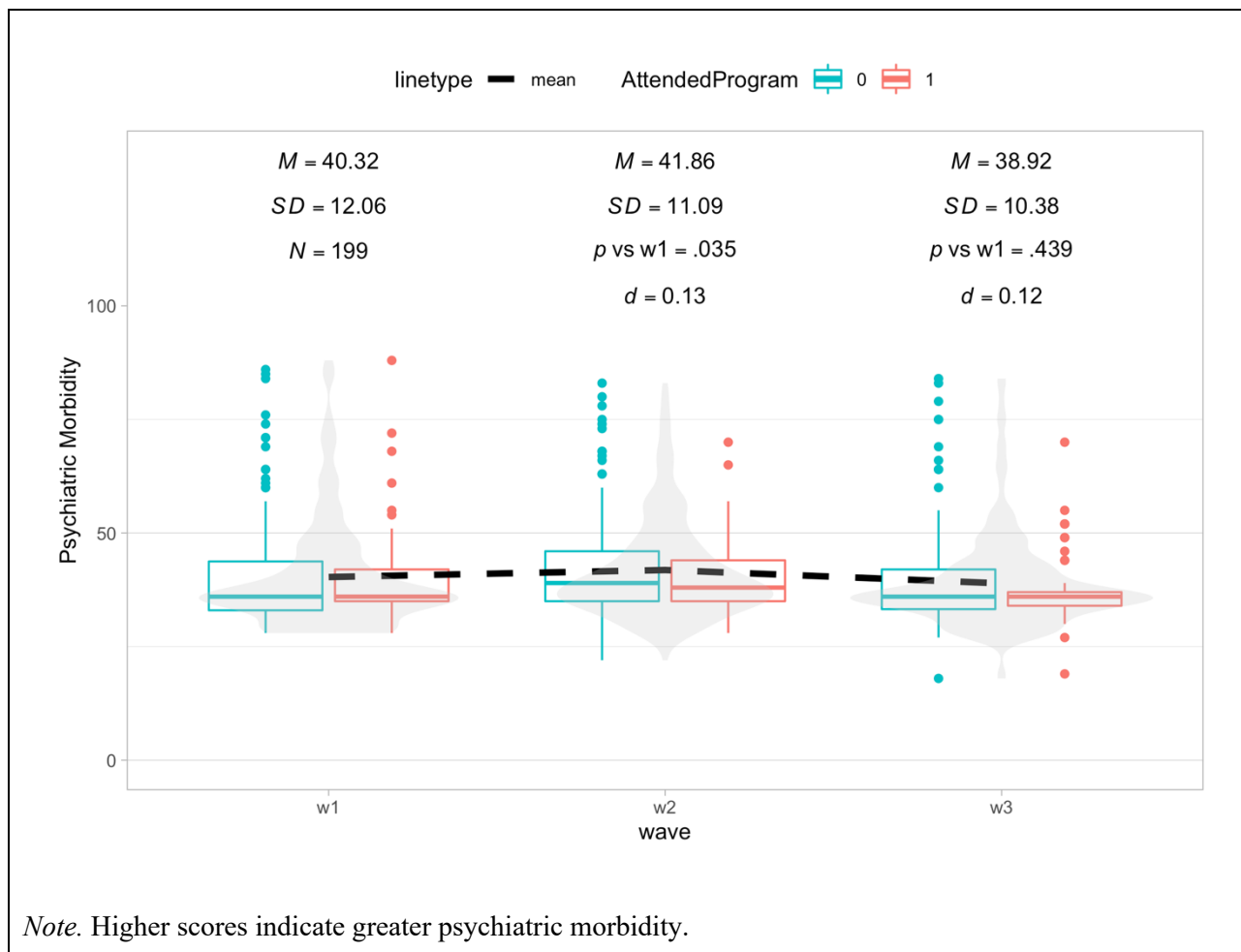
Figure 36. Parenting Stress Index total scores.



4.2.4 Other risk factors.

The raw scores on the General Health Questionnaire measuring psychiatric morbidity (i.e., a high score indicating more psychiatric morbidity; Figure 37) increased by 1.54 (3.8%) from baseline ($M = 40.32$; $SD = 12.06$) to wave 2 ($M = 41.86$; $SD = 11.09$; $p = .035$, $d = 0.13$) and decreased by 1.40 (3.5%) from baseline to wave 3 ($M = 38.92$; $SD = 10.38$; $p = .439$, $d = 0.13$). The percentage of caregivers, who obtained recoded scores greater than 4, qualifying them as having clinically relevant psychiatric morbidity, was 20.2% at baseline, 26.5% at wave 2 and 10.9% at wave 3.

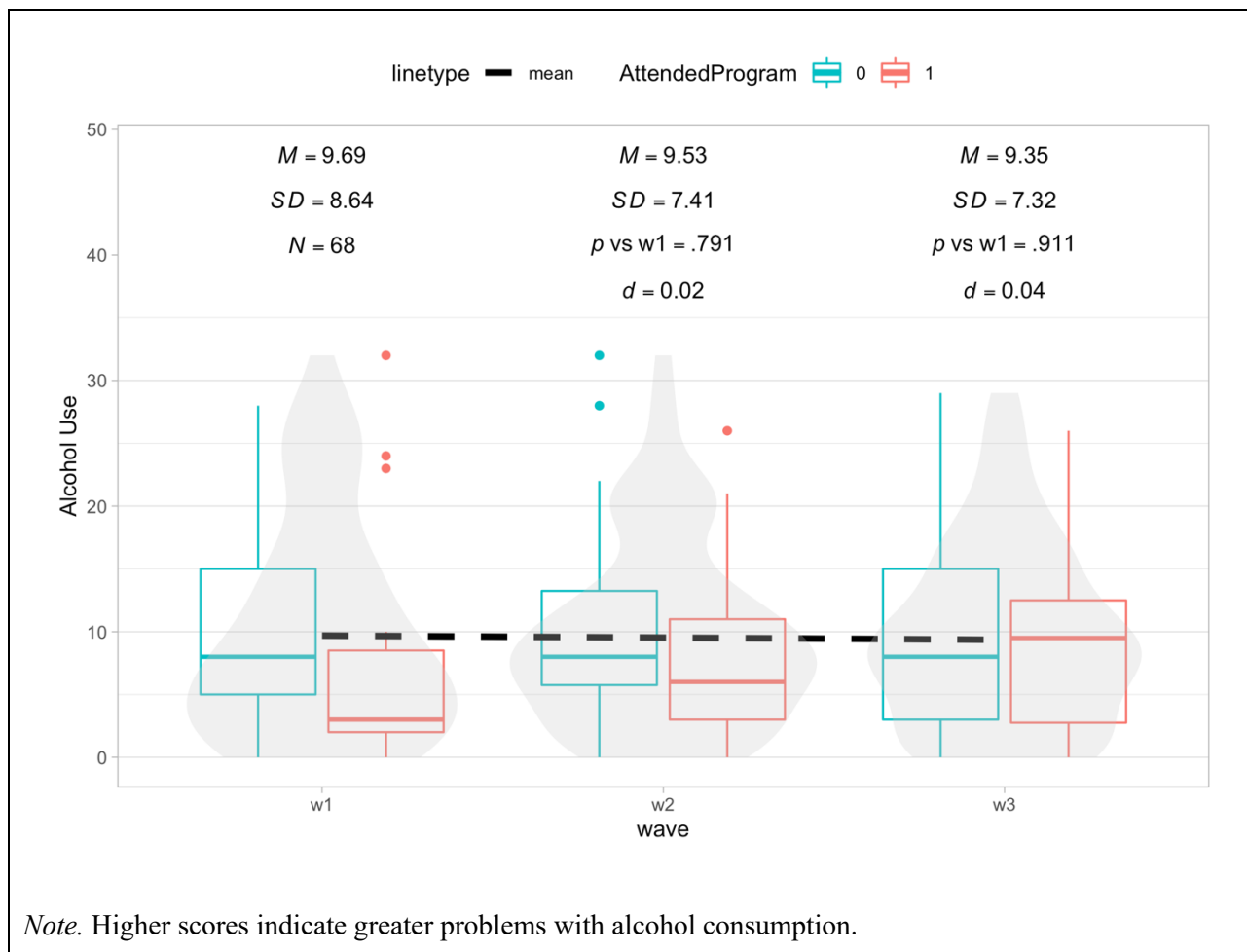
Figure 37. General Health Questionnaire total scores.



The scores on the Conflict Tactics Scale decreased by 2.2 (30.1%) from baseline ($M = 7.3$; $SD = 13.68$) to wave 2 ($M = 5.1$; $SD = 9.23$; $p = .810$, $d = 0.16$) and decreased by 3.07 (41.4%) from baseline to wave 3 ($M = 4.28$; $SD = 8.58$; $p = .638$, $d = 0.12$). Parenting is extremely challenging in the presence of domestic violence (Ward et al., 2015). It affects the entire household. In Touwsranten, 34.6% of caregivers at wave 1, 37.0% of caregivers at wave 2, and 24.9% of caregivers at wave 3 reported being in a relationship where they experience some form of abuse.

Scores indicating the severity of alcohol use (Figure 38) decreased numerically by 0.16 (1.7%) from baseline ($M = 9.69$; $SD = 8.64$) to wave 2 ($M = 9.53$; $SD = 7.41$; $p = .791$, $d = 0.02$) and decreased by 0.34 (3.5%) from baseline to wave 3 ($M = 9.35$; $SD = 7.32$; $p = .911$, $d = 0.042$). More specifically, the percentage of caregivers that reported using risky levels of alcohol (i.e., fell into the high-risk category), which is associated with difficulties in parenting, was 20.2% at wave 1, 18.7% at wave 2, and 18.3% at wave 3. These changes are not statistically significant or of a meaningful magnitude. Additionally, focus group discussions during previous surveys indicated that the caregivers were likely to under-report their alcohol usage.

Figure 38. Alcohol Severity questionnaire.



4.3 The Effect of the Intervention on Parenting Behaviour: Tests of Hypotheses 4a-d

Overall, caregivers in the analytic sample did not show significant change in parenting behaviour from wave 1 to wave 2, or from wave 1 to wave 3 (Figure 25). Nevertheless, it is possible to explore properties which might affect the trajectories of change in caregivers' parenting behaviour over the course of the intervention using Growth Curve Modelling (GCM; Cillessen & Borch, 2006).

GCM was used to analyse the analytic caregivers' parenting data from baseline to wave 3. One would expect parenting behaviour to improve within the entire community (H4a), for improvement to be sustained from wave 2 to wave 3 (H4b), that programme attendees would have higher parenting scores on average, that attendance would alter the rate of improvement (H4c), and that parenting scores would improve more for caregivers with a higher social activation dose (H4d).

I explored changes in parenting behaviour using growth curve models (described in Table 21). Although I hypothesised a linear improvement, the best fitting model was a quadratic model. Thus, the overall changes in parenting behaviour over the course of the parenting intervention were modelled with a second-order (quadratic) polynomial of wave and fixed effects of Programme Attendance (attendance vs. non-attendance; between-participants; model T0Q; Table 22). The

model also included participant random effects at each wave in order to allow consistencies within participants to contribute to the model rather than appearing as noise (Byrne & Crombie, 2003). This model was the best fitting of a range of linear and quadratic models investigated (see Table 22-24; and Appendix F for all linear and quadratic model fit comparisons).

There was a significant and positive effect of wave on the Parenting Summary Statistic indicating a linear increase in parenting behaviour over time ($Estimate = 0.83, SE = 0.21, p < .001$; confirming H4a). In statistical terms this indicates that the contribution that wave makes to Parenting Summary Statistic is the number of the wave times 0.83. The significance of the second-order effect of wave on the Parenting Summary Statistic indicates that the improvement in parenting behaviour declined from wave 2 to wave 3 ($Estimate = -0.18, SE = 0.05, p < .001$, thereby implying that there is not a sustained effect: H4b). In statistical terms this indicates that the contribution that wave squared makes to the Parenting Summary Statistic is the square of the number of the wave times -0.18. Thus, the overall contribution of wave is a combination of these two effects.

Attending parenting programmes did not significantly alter the Parenting Summary Statistic ($Estimate = 0.17, SE = 0.09, p = .057$), thereby providing no evidence in favour of H4c (see Table 22 and Figure 39). Additionally, comparisons between the quadratic models presented in Table 23 (and described in the data analysis section on Growth Curve Modelling: Waves 1 – 3.) indicated that *Model T0Q* was the best fitting model once additional parameters were taken into account. These results indicated that even when forcing the model to include the interactions between Programme Attendance and both wave and wave Squared, attending parenting programmes did not significantly alter the rate of parenting improvement ($Estimate = 0.04, SE = 0.14, p = .769$; see Table 24 for full results).

Table 21

Linear and quadratic model comparisons with programme attendance

Random Effects	Model	Name	df	AIC	BIC	logLik	deviance	χ^2	$\chi^2(df)$	p
Participant and Wave	Attendance (Linear)	Model T0	7	1980.91	2013.80	-983.46	1966.91	-	-	-
	Attendance (Quadratic)	Model T0Q	8	1971.89	2009.48	-977.95	1955.89	11.02	1	.001

Table 22

Coefficient estimates for growth curve analysis Model T0Q

	Estimate	SE	df	t-value	p
(Intercept)	-0.68	0.19	349.40	-3.55	< .001
Attendance	0.17	0.09	287.41	1.91	.057
Wave	0.83	0.21	254.91	3.89	< .001
Wave ²	-0.18	0.05	245.63	-3.37	.001

Note. T0Q is the designator used for the best fitting quadratic model.

Table 23

Quadratic model comparisons containing programme attendance

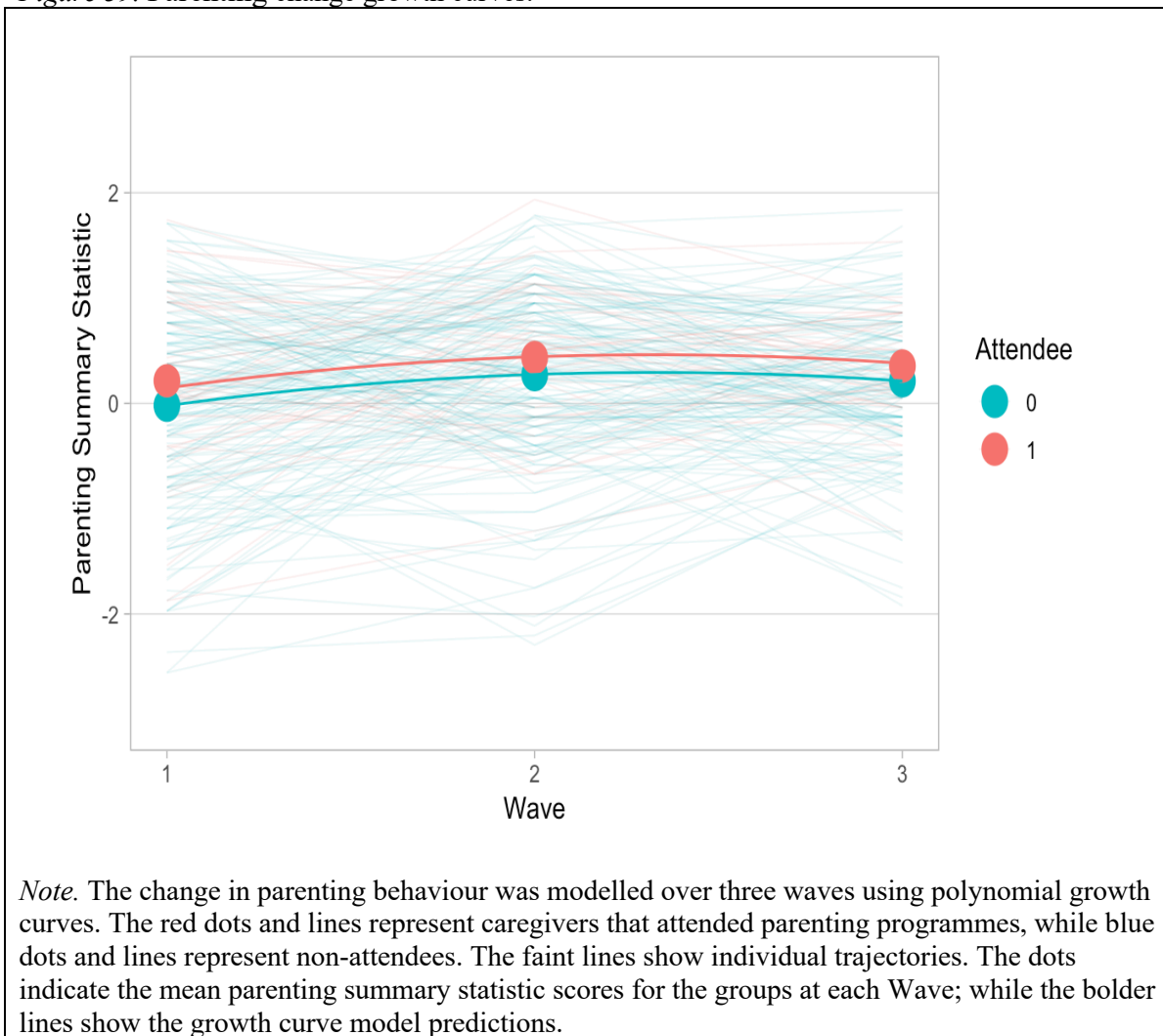
Random Effects	Model	Model name	df	AIC	BIC	logLik	deviance	χ^2	$\chi^2(df)$	p
Participant and Wave	attendance	Model T0Q	8	1425.00	1460.41	-704.62	1409.20	20.61	1	.000
	interaction	Model T1Q	9	1427.13	1466.65	-704.53	1409.12	0.18	1	.669
	double interaction	Model T2Q	10	1429.02	1472.98	-704.49	1409.00	0.09	1	.768

Table 24

Coefficient estimates for growth curve analysis Model T2Q

	Estimate	SE	df	t-value	p
(Intercept)	-0.76	0.24	301.39	-3.15	.002
Attendance	0.45	0.53	296.01	0.85	.396
Wave	0.88	0.26	212.35	3.35	.001
Wave ²	-0.19	0.06	199.55	-2.95	.001
Attendance * Wave	-0.21	0.58	208.44	-0.36	.717
Attendance * Wave ²	0.04	0.14	196.27	0.29	.769

Figure 39. Parenting change growth curves.



Note. The change in parenting behaviour was modelled over three waves using polynomial growth curves. The red dots and lines represent caregivers that attended parenting programmes, while blue dots and lines represent non-attendees. The faint lines show individual trajectories. The dots indicate the mean parenting summary statistic scores for the groups at each Wave; while the bolder lines show the growth curve model predictions.

Due to the intervention components (i.e., programme attendance and social activation dose) being highly correlated ($r = 0.34, p < .001$) the influence of the intervention components on the parenting trajectory was evaluated in separate growth curve models. The same model fitting process delineated above was followed, substituting programme attendance with social activation dose, to test the influence of social activation on parenting behaviour (H4d).

The overall changes in parenting behaviour over the course of the parenting intervention were modelled with a second-order (quadratic) polynomial of wave and random effects of participant, wave, and Social Activation Dose (range of dose received; between-participants; model T2QS). The model included the interactions between Social Activation Dose and both wave and wave Squared. Participant random effects were included at each wave in order to allow consistencies within participants to contribute to the model rather than appearing as noise (Barra, Levyb, Scheepersa, & Tilyc, 2013). This model was the best fitting of a range of Quadratic models investigated (see Table 25 for quadratic model fit comparisons).

Table 25

Quadratic model comparisons containing social activation dose

Random Effects	Model	Model name	df	AIC	BIC	logLik	deviance	χ^2	$\chi^2(df)$	p
Participant and Wave	social activation dose	Model T0QS	8	1429.6	1464.8	-	1413.60	19.15	1.00	.000
	interaction	Model T1QS	9	1429.6	1469.1	-	1411.60	2.03	1.00	.150
	double interaction	Model T2QS	10	1427.6	1471.5	-	1407.60	4.03	1.00	.041

The results in Table 26 indicate that during the initial stages of the intervention Social Activation was an important component of the intervention, but the benefits of the intervention were not sustained over time. The significance of the first-order effect of Social Activation Dose * wave on the Parenting Summary Statistic indicates that the improvement in parenting behaviour increases over time as social activation dose increases (*Estimate* = 0.09, *SE* = 0.04, *p* < .027; supporting H4d). The significance of the second-order (quadratic) interaction effect of Social Activation Dose and wave on the Parenting Summary Statistic indicates that the initial increase in parenting behaviour (from wave 1 to wave 2) was followed by a larger decrease in parenting (from wave 2 to wave 3), modelled as a quadratic effect of time as social activation dose increased (*Estimate* = - 0.02, *SE* = 0.01, *p* < .045).

Table 26

Coefficient estimates for growth curve analysis Model T2QS

	Estimate	SE	df	t-value	p
(Intercept)	0.37	0.51	305.53	0.73	.467
Social Activation Dose	-0.08	0.04	302.47	-2.23	.026
Wave	-0.29	0.55	214.25	-0.53	.597
Wave ²	0.07	0.14	200.69	0.51	.612
Social Activation Dose * Wave	0.09	0.04	212.42	2.23	.027
Social Activation Dose * Wave ²	-0.02	0.01	200.06	-2.02	.045

4.3.1 Caregivers' and Children's responses on the APQ: Test of Hypothesis 4e.

Children's reports of their caregivers' behaviour provide an alternative measure of changes in parenting behaviour amongst caregivers. As such, children over the age of 10 (i.e., in the older age group) were asked to report on their caregiver's behaviour. I expected that the relationship in H4a, and H4b would be mirrored when using the children's reports of their caregiver's behaviour (H4e). For these analyses, all cases with missing data for any of the variables at any time point were excluded in order to achieve a consistent analysis of the association between the scores reported on child and parent versions of the APQ (*n of complete cases* = 42).

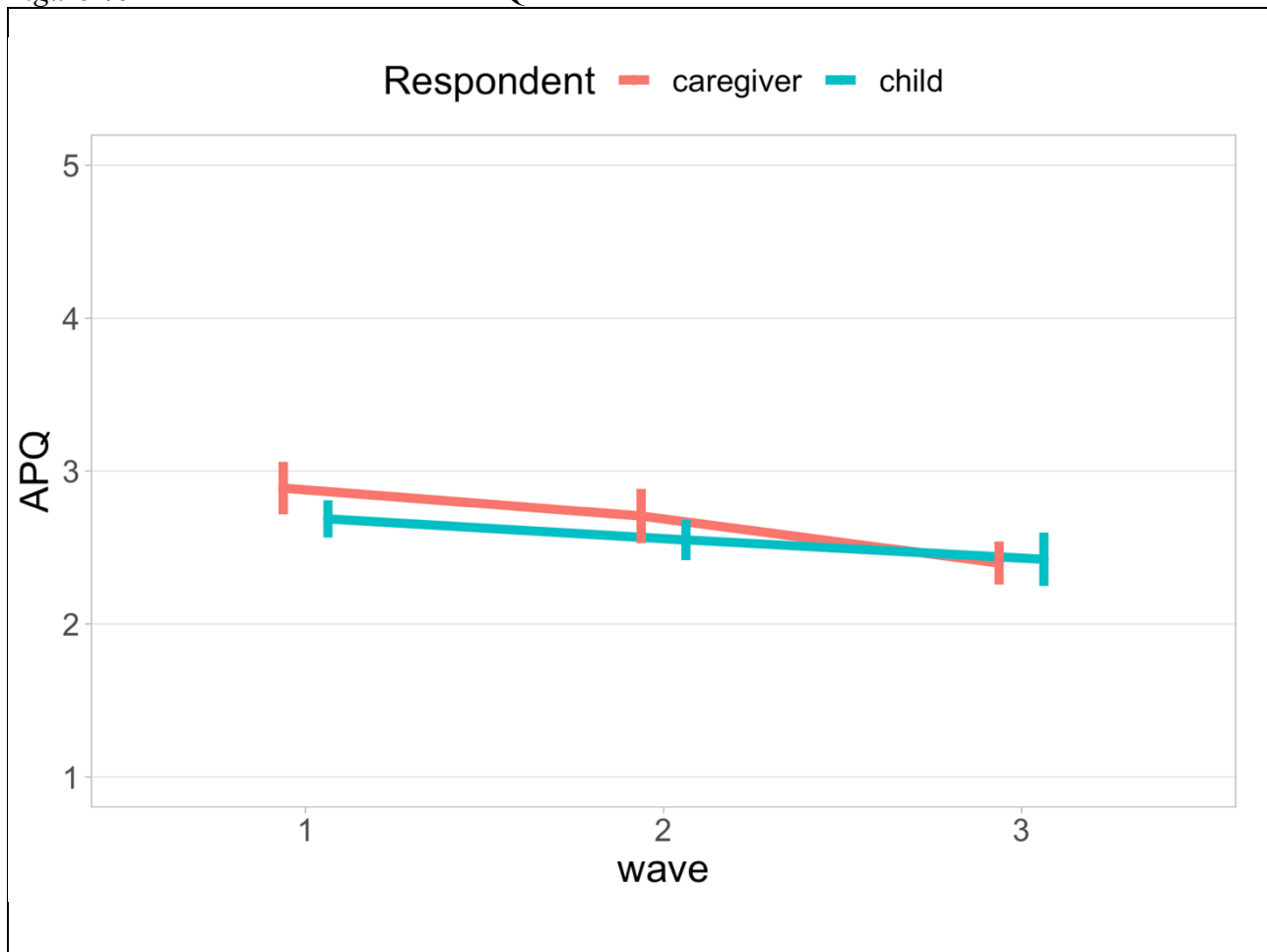
A multivariate growth curve model was constructed to allow for an interaction between change over time and the respondent (i.e., caregiver or child). Additionally, as specified in the data analysis section below, random intercepts were included for each dyad. The initial results indicated that all scores declined over time, and that the children's responses were lower than caregivers' responses ($Estimate = -0.45$, $SE = 0.17$, $p = .008$), but in terms of how their scores changed over time there was no statistically significant difference between caregiver and child responses ($Estimate = 0.15$, $SE = 0.08$, $p = .058$; consistent with H4e; see Table 27). More specifically, the size of the effect means that at baseline children's average scores on the 5-point APQ were half a point lower than their caregivers', and their scores become increasingly similar over the duration of the intervention. Thus, it appears that children stated that their caregivers had less positive parenting than the caregivers' claimed at baseline. Nevertheless, their scores on the APQ converged at wave 3. Moreover, the pattern shown in Figure 40 based on the 42 caregivers is similar to the pattern displayed by the 149 caregivers in the larger sample of caregivers with children in the older age group.

Table 27

Coefficient estimates for the multivariate growth curve analysis model

Fixed effects	Estimate	SE	df	t-value	p
(Intercept)	3.27	0.12	249	26.64	<.001
Wave	-0.28	0.05	210	-5.10	<.001
Respondent=Child	-0.45	0.17	210	-2.68	.008
Wave*Respondent=Child	0.15	0.08	210	1.91	.058

Figure 40. Growth curves for mean APQ item score.



The Pearson's r correlations for caregivers' and children's ratings on the Alabama Parenting Questionnaire subscales are presented in Table 28 and Figure 41. The results indicate that, despite the overall patterns between caregivers and children not being significantly different from one another, there is no obvious pattern to the correlations. More specifically, the strongest positive correlation is $+0.30$ while the strongest negative correlation is -0.46 , and most correlations are small, whether positive or negative. Moreover, the modal correlation is around $.15$, and there is a long tail of negative correlations. It is likely that with only 42 complete cases of children's data across all waves, the data are too noisy to detect any genuine relationships. However, the results could also allude to the caregivers providing socially desirable responses on the APQ. Figures showing the mean parenting behaviour scores for female caregivers and their child's responses can be found in Appendix G.

Further analyses were conducted with the overall sample to gain a better understanding of the relationship between child reports and their corresponding parental reports. For each item at each wave correlations were computed for child and caregiver reports. Of the 126 tests (for 42 items across all three waves) that were conducted, roughly 23% were significant correlations (see Figure 42, and Appendix G: Caregivers' and Children's responses to APQ. The strongest positive

correlation is +.42 and the strongest negative correlation is -.38; with very few negative correlations and significantly more positive correlations than one would expect by chance. The proportion of significant tests suggests that there is probably a shared underlying reality that is causing dyads' APQ scores to converge. That being said, the correlations are not necessarily large or consistently of the size that could theoretically be expected if there were a genuine unambiguous relationship between caregiver and child responses.

Table 28

Dyad Pearson's *r* correlations on the APQ subscales

APQ Subscales	wave 1	wave 2	wave 3
Hit Child with a Belt	0.19	0.11	-0.13
Inconsistent Discipline	-0.03	0.05	0.07
Involvement	-0.40	0.21	0.14
Monitoring and Supervision	-0.46	0.19	-0.23
Positive Parenting	0.17	0.18	0.01
Slap Child	0.23	0.04	-0.12
Spank Child	0.30	0.04	0.14
Yell and Scream at Child	-0.12	-0.08	0.14
Corporal Punishment	0.16	0.07	0.15

Figure 41. Correlations for caregivers' and children's APQ scores.

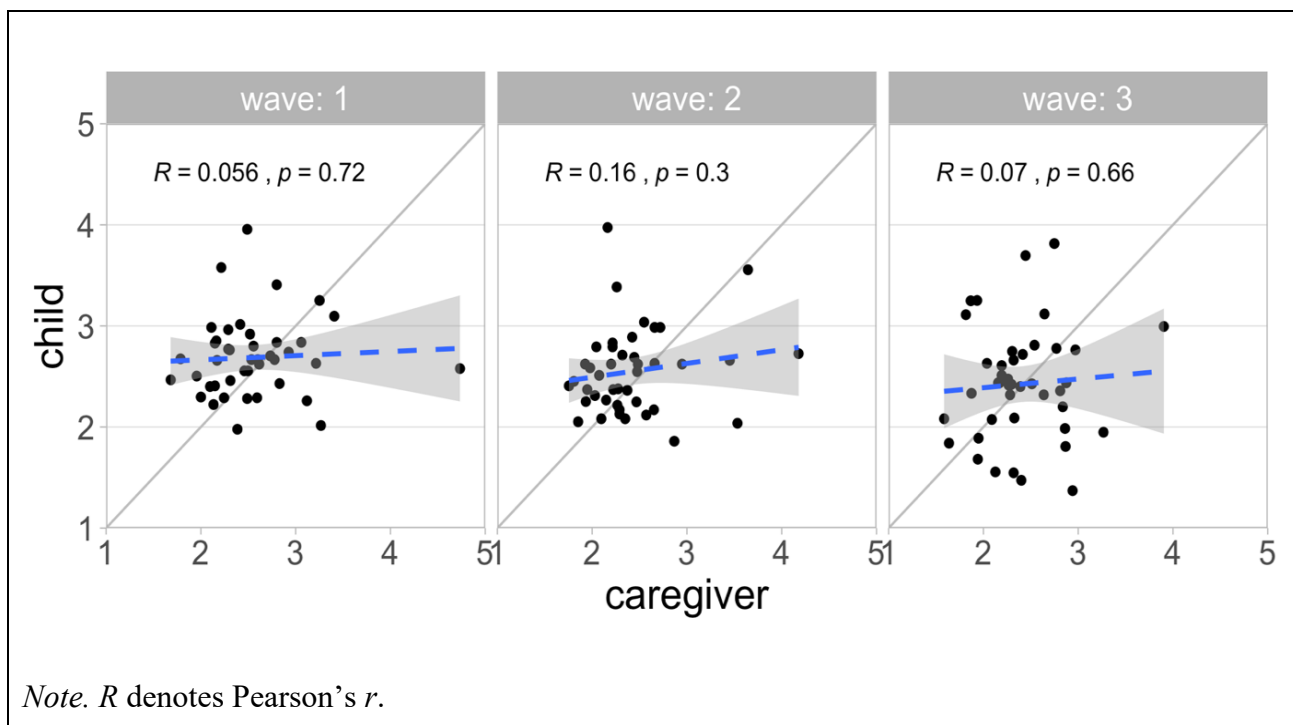
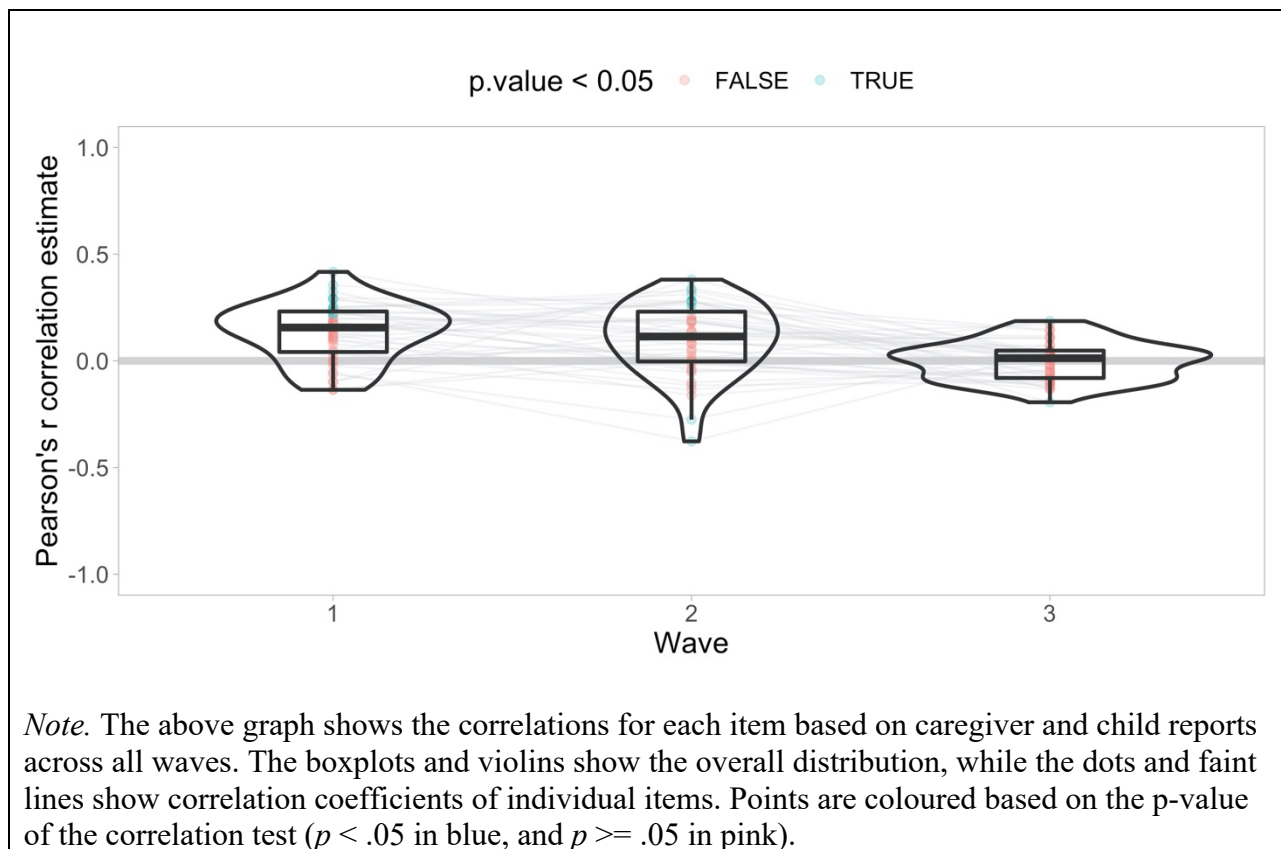


Figure 42. Correlations for caregivers' and children's scores on all APQ items.



4.4 Network Characterisation

The network consisted of the 203 caregivers in the analytic sample, of which 70 (34.5%) caregivers attended a parenting programme. Of the programme attendees, 45 (28.5%) attended between waves 1-2, and 25 (12.3%) between waves 2 – 3. Attendance over the duration of the intervention period is included in the model as a behavioural outcome accumulated over the three Waves. The caregiver network was constructed based on the first five nominations of other people that caregivers spoke to about parenting due to the negligible number of caregivers who nominate more than five other caregivers to speak to about parenting. Based on the analytic sample including all three Waves, the baseline network as reported in the wave 1 responses consisted of 200 nominations, resulting in an average degree (i.e., the mean number of incoming and outgoing ties for each caregiver in the network) of 0.99 ($SD = 1.99$) per caregiver. In wave 2, 246 nominations were made with an average degree of 1.21 ($SD = 1.33$). In wave 3, 176 nominations were made with an average degree of 0.87 ($SD = 1.38$). There was a numerical increase in nominations made between the first two successive waves and a slight reduction from waves 2-3. There was thus an increase in network density from wave 1 (.0049; 19.7% of the theoretical maximum density) to wave 2 (.0060; 24.2% of the theoretical maximum density): caregivers reported communicating more often about parenting behaviour with each other. However, there was a slight numerical

reduction in network density from wave 2 to wave 3 (.0043; 17.3%). Additional information on the number of ties made, lost, or maintained is presented in Table 29 below.

The reciprocity of the network (i.e., the mean probability that a reciprocal nomination existed for each nomination) was 0.30 at wave 1, 0.20 at wave 2, and 0.19 at wave 3. Thus, the majority of ties were asymmetric at wave 1 (70.0%), wave 2 (80.0%), and wave 3 (81.0%). Transitivity changed from 0.13 (0.1%) at wave 1, to 0.10 (10.2%) at wave 2, and to 0.05 (5.1%) at wave 3. Thus, the ratio of existing connections to possible connections appears to be relatively low in terms of whom caregivers speak to about parenting (a minimally socially integrated network = 0; and a maximally integrated network = 1).

Table 29

Network stability across three waves of data

	NWw1 - NWw2	NWw2 - NWw3	NWw1 - NWw3
Unmade Ties Maintained	40820	40825	40868
Ties Maintained	57	38	35
Tie Formed	189	138	141
Tie Lost	143	208	165

Note. NWw#, Network wave #.

4.4.1 Change in centrality parameters.

A paired samples *t*-test indicated a significant increase between waves 1 and 2 for: indegree: $t(1, 202) = -2.16, p = .032$, Cohen's $d = 0.18$ [95% CI for Cohen's d : -0.262, -0.005]; outdegree: $t(1, 202) = -2.73, p = .014, d = 0.23$ [-0.262, -0.005]; betweenness: $t(1, 202) = -4.75, p < .01, d = -0.47$ [-0.320, -0.062]; and closeness: $t(1, 202) = -9.62, p < .05, d = -0.94$ [-0.432, -0.170]. However, there appeared to be no significant change between waves 1 and 3 in indegree: ($t(1, 202) = 0.98, p = .333, d = 0.09$ [-0.206, 0.050]); or outdegree: ($t(1, 202) = -1.41, p = .160, d = -0.12$ [-0.206, 0.050]). There was a slight decrease between waves 1 and 3, in betweenness: ($t(1, 202) = -1.80, p = .072, d = 0.17$ [95% (-0.206, 0.050)]), and closeness: ($t(1, 202) = 2.17, p = .034, d = -0.03$ [-0.206, 0.050]). In addition, there was a significant increase in the number of attendees nominated from wave 1 to wave 2 ($t(1, 202) = -1.41, p = .052, d = -0.09$ [-0.314, -0.056]), but no change between waves 1 to 3 ($t(1, 202) = -0.11, p = .910, d = 0.01$ [-0.310, -0.050]); see Table 30). These results indicate that the network became more close-knit as the caregivers formed more ties to one another. However, this trend tapered down from wave 2 to 3.

Table 30

Centrality statistic change between waves 1-2, and waves 1-3

Variable Name	Wave	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
Indegree	1	0.99	1.19	-	-	-	-
Indegree	2	1.21	1.33	-2.16	202	.034	0.18
Indegree	3	0.87	1.38	0.98	202	.333	0.09
Outdegree	1	0.99	1.00	-	-	-	-
Outdegree	2	1.21	0.99	-2.73	202	.010	0.23
Outdegree	3	0.87	0.89	1.41	202	.160	0.12
Betweenness	1	9.10	22.53	-	-	-	-
Betweenness	2	95.64	259.18	-4.75	202	.000	0.47
Betweenness	3	5.51	19.30	1.80	202	.072	0.17
Closeness	1	24.97	1.03	-	-	-	-
Closeness	2	26.87	2.65	-9.62	202	.000	0.94
Closeness	3	24.78	0.74	2.17	202	.034	0.21
Attendees Nominated	1	0.48	0.73	-	-	-	-
Attendees Nominated	2	0.54	0.75	-1.41	202	.052	0.09
Attendees Nominated	3	0.48	0.72	-0.11	202	.910	0.01

4.5 Co-evolution of Selection and Socialisation Effects: Tests of Hypotheses 5 – 6

In this longitudinal study, two mechanisms (i.e., selection and socialisation) that may explain the overall shifts in parenting behaviour have been analysed with a stochastic actor-based model for network dynamics. A model of this kind provides parameter estimates based on both actors' chosen social network modifications (i.e., selection) and shifts in individual behaviours (i.e., influence; Burk, Steglich, & Snijders, 2007; Popp, Laursen, Kerr, Stattin, & Burk, 2008; Ripley, Snijders, & Preciado, 2015; Steglich, Sinclair, Holliday, & Moore, 2012). Additionally, it corrects for the interdependence of caregivers within close-knit settings (Kenny et al., 2006).

Table 31 presents the parameter estimates of the SIENA model. The rate function enables network analysts to report on network evolution by providing the average number of network modifications made between measurement points. Additionally, the maximum convergence ratio of the model is satisfactory at $< .25$. The *t*-ratios for individual parameters also achieved a satisfactory convergence of below $.10$ (Ripley et al., 2011). As such, the model is satisfactory for interpretation of the effects. The endogenous network effects (i.e., the reciprocity, GWESP, indegree-popularity and outdegree-activity parameters) were all statistically significant. The significant reciprocity effect elucidates a tendency towards mutual relationships, and the significant GWESP effect indicates a tendency for transitive closure (i.e., actors prefer relationships with their friends' friends; or their caregiver contacts' contacts). With regards to the degree-related effects, the significant indegree-popularity effect indicates that actors who receive more nominations to begin with are

more likely to receive more nominations, whereby those who are popular increase their potential influence (consistent with the rich-get-richer phenomenon; or Matthew effect, ‘For everyone who has, more will be given’, Gospel According to Matthew, 25:29; see Snijders, 2011; Wang, 2014). The significant outdegree-activity effect indicates that caregivers with higher outdegree scores to begin with are more likely to nominate more caregivers to speak to about parenting.

4.5.1 Selection: network dynamics (H5a – H5c).

In terms of selection effects I expected that: caregivers would select other caregivers to speak to about parenting based on their attendance status (H5a); and caregivers would select other caregivers to speak to about parenting based on their levels of parenting behaviour score (H5b)

Regarding selection effects of individual attributes, attendance ego- and alter- effects, as well as ego-effects of parenting behaviour, were statistically significant predictors of ties. This indicates a preference of caregivers to nominate attendees to speak to about parenting behaviour and be nominated if they themselves attended a parenting programme. This result is consistent with the findings from the previous SIENA model, and with H5a. Additionally, parenting behaviour influences network evolution (providing support for H5b). Specifically, caregivers with lower parenting scores tend to engage more readily in discussions about parenting. Caregivers also seem to maintain a preference toward forming connections with another caregiver if that person’s child is of similar age to their own child. The likelihood of forming, maintaining or breaking ties does not appear to be influenced by psychiatric morbidity, parenting stress, or alcohol misuse.

Hypothesis 5c was that caregivers with greater improvements in positive parenting scores would become more central in the caregiver network. Based on the findings obtained from the SIENA model for H5b, it appears that caregivers with greater improvements in positive parenting scores should not be significantly more influential in the caregiver network. In order to test this hypothesis, a simple linear regression was computed to predict change in centrality based on improvement in parenting behaviour. A non-significant regression equation was found, thus providing no support for H5c ($F(1, 217) = 0.18, p = .671$), with an $R^2 < 0.01$. This is a poor model fit, and thus nothing should be read into the statistics other than that a linear model is not an appropriate way of modelling this data, probably because there is no effect to model. Overall, there was no statistical support provided for H5c.

4.5.2 Socialisation: behaviour dynamics (H6a – H6c).

In terms of socialisation effects I expected that: caregivers would be influenced by their network connections’ parenting behaviour (H6a); parenting scores of caregivers would improve if they were connected to caregivers that have high parenting scores (H6b); and caregivers would experience greater improvements in parenting behaviour if they were connected to caregivers attending programmes (H6c).

For behavioural evolution, the rate function describes the average number of changes in behaviour between measurement points. The behavioural tendency for parenting behaviour was significant. The negative value of this parameter indicated a propensity for actors to report less change in parenting scores over the duration of the intervention (which may be due to the relatively high scores reported at baseline for most caregivers that form part of the analytic sample at wave 3). The parenting influence effect was positive and approached significance, whereas the max alter effect was not. Thus, neither the influence of the average nor the highest-scoring tie on parenting behaviour provided significant evidence in support of H6a and H6b (see Figure 44). Based on these findings it seems that caregivers were more inclined to become like their average contact, and not like the best example among their caregiver contacts. However, this may be in part due to a discussion network, rather than a friendship network, being evaluated. Consistent with the findings from the growth curve models, attending a parenting programme did not seem to influence parenting scores significantly (providing no evidence in support of H6c). Moreover, the likelihood that parenting scores increased versus decreased did not change significantly based on being connected to an attendee.

Table 31

Outcomes of the SIENA analyses of parenting behaviour

	Estimate ^a	Standard Error	t-Value ^b	Odds Ratio (Make:Break) ^c	Odds Ratio (Break:Make)
Selection: Network Dynamics					
Rate Parameter 1: Constant Caregiver Network	6.17	0.66	9.32*	476.94	
Rate Parameter 2: Constant Caregiver Network	6.12	0.91	6.74*	457.10	
General Network Effects					
Outdegree (Density)	-5.09	0.46	-10.99*		162.29
Reciprocity	2.40	0.22	11.08*	11.06	
GWESP I -> K -> J (69)	1.39	0.28	4.96*	4.01	
Indegree - popularity (sqrt)	0.63	0.07	8.65*	1.87	
Outdegree - activity (sqrt)	0.25	0.11	2.23*	1.29	
Covariate Ego Effect					
General Health	0.00	0.01	-0.27		1.00
Parenting Stress	0.00	0.00	-0.46		1.00
Alcohol Misuse	0.01	0.01	1.14	1.01	
Childs Age	-0.01	0.01	-0.90		1.01
Programme Attendance	0.26	0.12	2.20*	1.30	
Parenting	-0.47	0.21	2.30*		1.60
Covariate Alter Effect					
General Health	0.00	0.00	-0.42		1.00
Parenting Stress	0.00	0.00	0.38	1.00	
Alcohol Misuse	0.00	0.00	-0.60		1.00

	Estimate ^a	Standard Error	t-Value ^b	Odds Ratio (Make:Break) ^c	Odds Ratio (Break:Make)
Childs Age	0.00	0.01	-0.48		1.00
Programme Attendance Parenting	0.28	0.10	2.78*	1.32	
	0.14	0.29	0.47	1.15	
Covariate Similarity Effect					
General Health	0.04	0.27	0.13	1.04	
Parenting Stress	-0.11	0.29	-0.36		1.11
Alcohol Misuse	-0.12	0.20	-0.61		1.13
Childs Age	0.41	0.16	2.48*	1.50	
Programme Attendance Parenting	0.22	0.09	2.41*	1.24	
	3.16	2.07	1.52	23.46	
				Odds Ratio (Increase: Decrease)	Odds Ratio (Decrease: Increase)
Socialisation: Behaviour Dynamics					
Rate Parameter 1: Parenting Behaviour	5.02	2.21	2.27*	151.78	
Rate Parameter 2: Parenting Behaviour	2.79	0.72	3.90*	16.30	
Shape Effects					
parenting linear shape	0.03	0.15	0.23	1.03	
parenting quadratic shape	-0.68	0.31	2.18*		1.96
attendance linear shape	3.41	2.23	1.53	30.23	
Influence Effects					
parenting average alter	0.94	0.54	1.74	2.58	
parenting max. alter	0.18	0.85	0.21	1.20	
parenting: effect from attendance	0.05	0.19	0.27	1.05	
parenting: alter's (Caregiver Network) attendance maximum	0.00	0.98	0.00		1.00

Note: ^a In terms of selection: Parameter estimates are log-odds of (P(form new connection) + P(maintain existing connection)) / (P(sever connection) + P(maintain non-connection)). In terms of socialisation: Parameter estimates are log-odds of (P(increasing a behaviour) / (P(decreasing a behaviour)). In other words, the likelihood (odds) that your dependent variable (i.e., parenting) increases versus decreases.

^b Reported as absolute values. * $p < .05$, ** $p < .01$, *** $p < .001$. ^cThe make:break or increase:decrease column represents the likelihood that ties were made versus broken (selection) or whether parenting scores increased versus decreased (socialisation).

Figure 43. Outdegree centrality change by programme attendance.

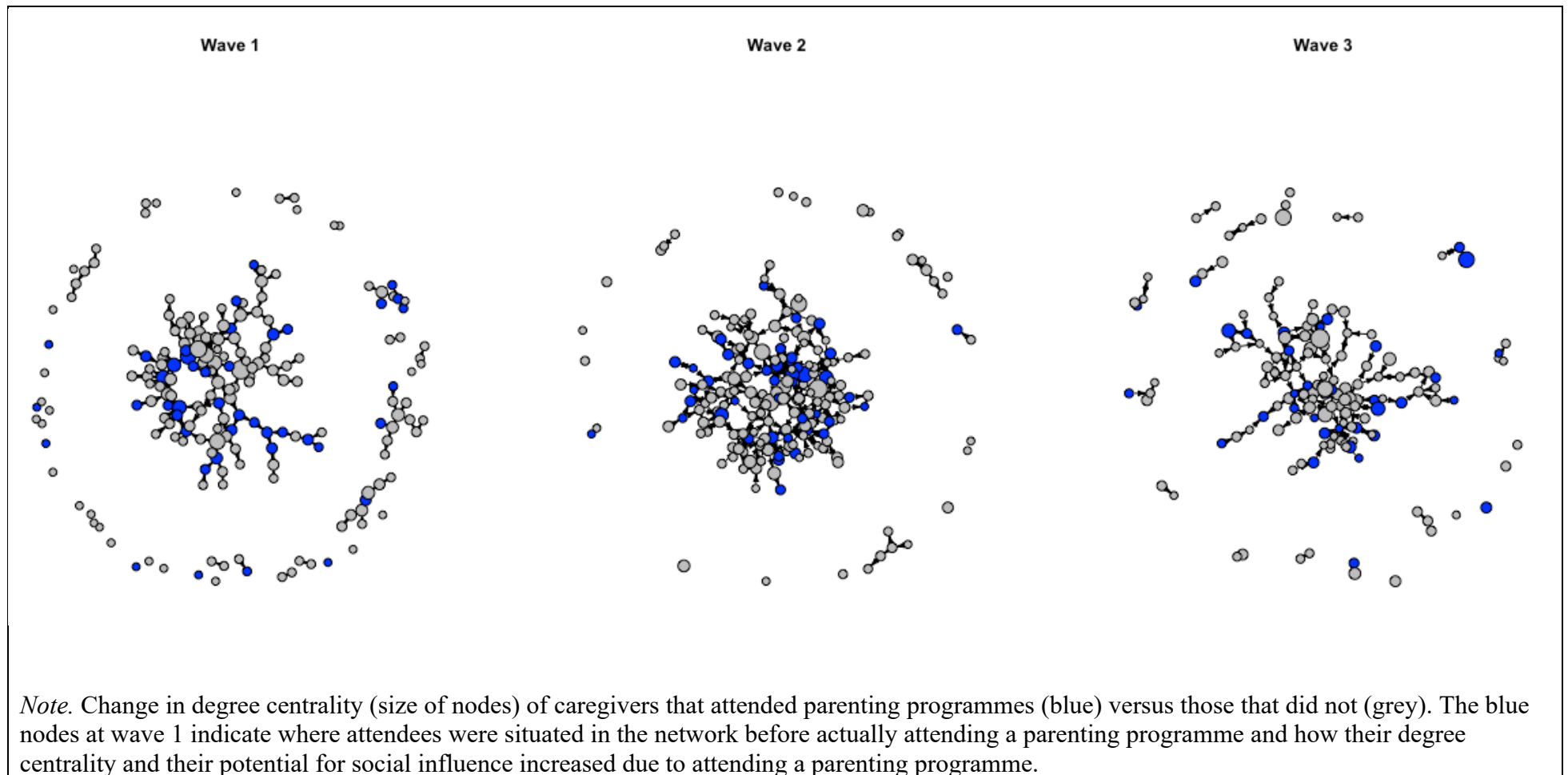
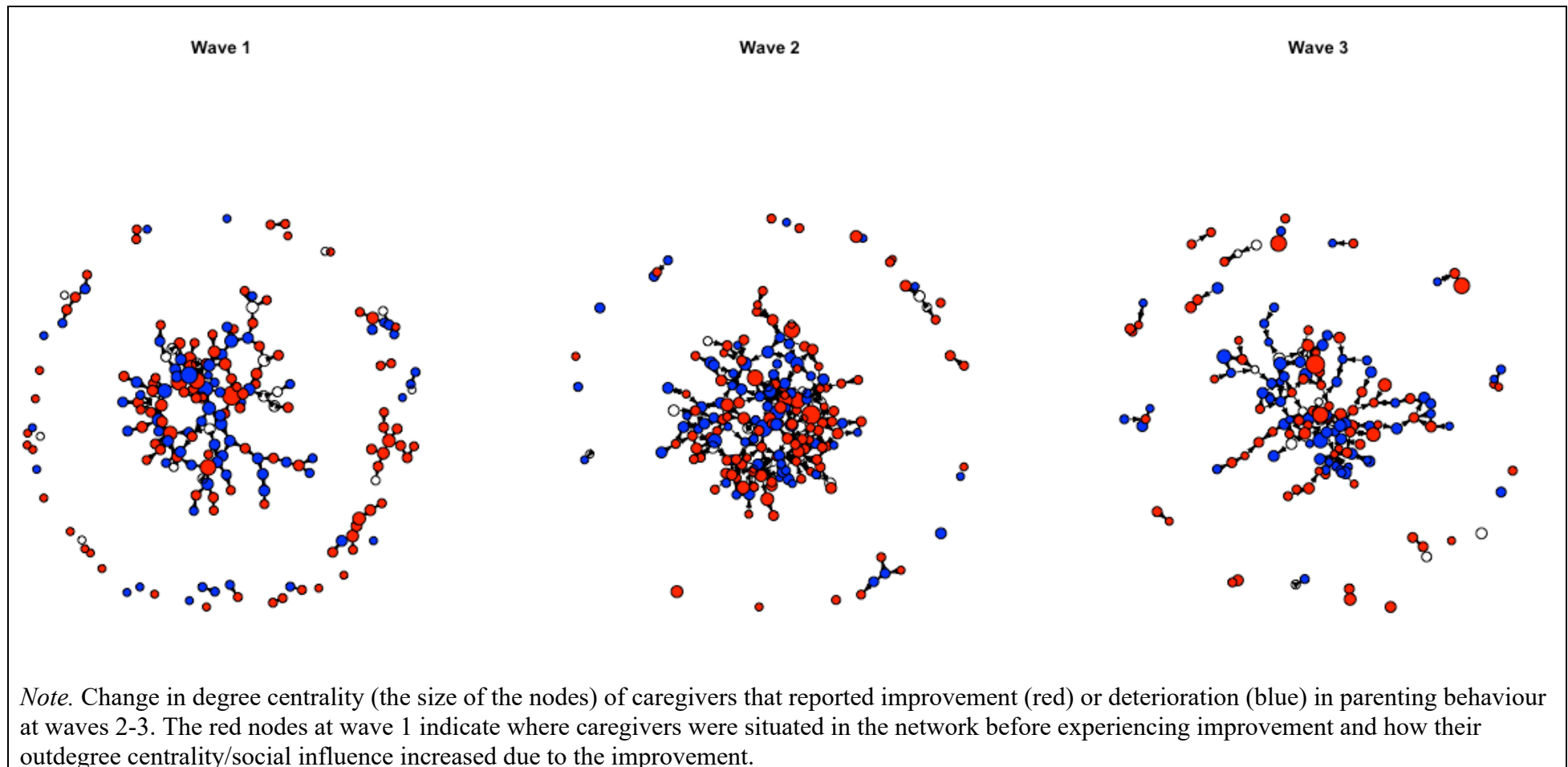


Figure 44. Outdegree centrality change by parenting change.



4.6 Discussion

The main goal of the present study was to obtain longitudinal evidence for mechanisms that may influence change over the course of an intervention to promote more positive parenting. To understand how to enhance the impact of parenting interventions in rural communities such as Touwsrante, I measured social influence and social selection processes in the interdependent dynamics of caregiver networks and parenting behaviour, while controlling for relevant risk factors and background network dynamics. A summary and discussion of the individual findings based on the three main research questions, including the third wave of data (collected in February 2019) will be presented below: (1) Was there community-wide change in self-reported parenting behaviour, that is, sustained improvement from wave 2 to wave 3, and, if so, which factors influenced change or the lack thereof?; (2) Did the intervention influence the caregivers' social network?; and (3) Did the caregivers' social network influence their reported behaviour? First the findings will be summarised and then the effects of the intervention on parenting behaviour will be discussed along with related subject matter (improvement as a function of child age; caregivers' and children's responses on the APQ); followed by a discussion about the influence of the intervention on caregivers' social networks and the possible influence of the caregivers' social networks on their reported caregiving behaviour. The discussion of each main outcome will include plausible explanations, integration of findings with relevant literature, and, where necessary, specific limitations will be addressed.

4.6.1 Summary of Findings

The caregivers' reports in the analytic sample, two years post-implementation, indicated that the initial overall improvement in parenting behaviour (with an effect size of $d = 0.14$) was not sustained from wave 2 – wave 3 ($d = 0.04$; providing no evidence in support of H4a or H4b). Insofar as the programme seems to have lasting effects, they are confined to the parenting of children in the younger age group ($d = 1.01$). Interestingly, equivalent improvements were reported amongst all caregivers in the analytic sample irrespective of programme attendance over the course of the intervention period (providing no evidence for H4c). Nevertheless, parenting scores improved more for caregivers with a higher social activation dose (consistent with H4d). The initial comparisons between caregivers' and children's scores on the APQ indicated that the children's responses were lower than caregivers' responses but their scores converged as the intervention progressed (i.e., there was no statistically significant difference between caregiver and child responses, consistent with H4e). Furthermore, the benefits of the intervention appeared to diffuse along social connections: The caregivers who attended parenting programmes appeared to remain more central in the social network, and potentially more influential in the community, irrespective of whether they attended between waves 1 and 2, or waves 2 and 3 (confirming H5a). Caregivers

also appear to select other caregivers to speak to about parenting based on their parenting behaviour score (consistent with H5b) and those caregivers with greater improvements tended to become more central in the network (consistent with H5c). Yet, caregivers were not significantly influenced by their caregiver contacts' parenting behaviour (providing no support for H6a), or by the caregiver contact in their network with the highest parenting score (providing no support for H6b). Similarly, being connected to an attendee did not seem to influence positive parenting behaviour (providing no support for H6c).

Any intervention that aims to bring about a community-wide shift in parenting behaviour should also expect to see significant reorganisation of the social network within which the caregivers are embedded. Thus, I predicted that, provided the intervention was successful, there would be a significant reorganisation of the social structure of the network. There was, however, no clear sustained effect of the intervention on the parenting behaviour in the analytic caregiver sample. Consequently, there is little that can be demonstrated about the role of social networks in producing those effects over the longer three-wave timescale; however, the findings clearly indicate that the intervention did influence the caregivers' social network.

4.6.2 Effects of the Intervention on Parenting Behaviour

In this section I discuss why we did not see clear, sustained community-wide change in self-reported parenting behaviour in the analytic sample following the intervention over this longer timescale. Parenting scores in the analytic sample clearly improved from wave 1 to wave 2 (18 months into the intervention). However, there was a slight decrease from wave 2 to wave 3 (36 months post- implementation; final measurement point). Overall, there was no significant change in parenting behaviour across the 36-month intervention period in the subsample for which network data was collected. Possible explanations for the longitudinal pattern observed in the data will be addressed below, namely: the temporal structure of the intervention, the tendency for behavioural change to erode over time, and unmet participant expectations. I will also discuss why the pattern of sustained improvement differed between the analytic and overall caregiver samples with reference to child age.

The pattern of the longitudinal data reflects the way the intervention was conducted over time. Most of the social activation elements of the intervention were conducted between waves 1 and 2 (i.e., in the first 18 months the intervention), thereby making wave 3 a follow-up measure in practice. However, despite the goal of the intervention being to sustain the impetus of the intervention in the community, the momentum wore off as evidenced by fewer social activation activities arranged by the community members and the number of caregivers choosing to attend programmes. The intervention may have made caregivers more sensitive to the parenting around them such that parenting was on their minds, meaning that they were more frequently assessing and

comparing behaviours of peers to discussions in or related to the parenting programme sessions, and thereby enhancing social transmission effects. When the initially positive effect had passed or the novelty of the intervention activities wore off and became more routine, people may still have influenced each other, but to a lesser extent. Thus, people were not talking about parenting with as many other people, consistent with the decrease in density from wave 2 – 3. Thus, the pattern of initial increases tailing off towards wave 3 may be due to stronger effects of a more recent and intensive engagement with the intervention between waves 1 and 2.

This rebound effect in the data, where initial improvements are followed by a return towards the baseline, is in line with behaviour change interventions in which effects similarly have a tendency to erode over time as old behavioural patterns are resumed (Gardner, Sheals, Wardle, & McGowan, 2014). Similar mechanisms may be at play in the process of habit formation and in the observations of parenting behaviour change. The primary mechanism put forward as an explanation of this rebound effect in behaviour change interventions is setting goals that are theoretically suboptimal for habit-formation: while participants make progress towards their goals (producing initial gains), these gains are not sustained because habits fail to develop, having been inadequately motivated in the form of specific, measurable goals (Gardner, Abraham, Lally, & de Bruijn, 2012). If the mechanisms are the same across behaviour change interventions and the present study, caregivers' goals in acquiring warm, positive parenting habits will have been instrumental in the change in their parenting scores over time. In this respect, attendees benefitted from the fact that developing specific, measurable goals formed a key component of each programme. As with the behaviour change interventions, however, attempting to help a participant to develop habit-forming goals is no guarantee that the participant actually develops habit-forming goals. The goals developed by non-attendees, if they developed explicit goals at all, are unlikely to have been structured appropriately for habit formation.

While goal-setting is an appealing explanation for the rebound effect in parenting scores, there are reasons why this explanation may be inadequate. Firstly, goal-setting was explicitly included in the parenting programmes, which should have reduced rebound effects from poor goal-setting, at least for attendees. Secondly, the intensive behaviour change interventions in which the effects of goal-setting on habit formation are usually assessed occur on timescales of days to months, whereas the patterns of change in the caregivers' parenting scores occur over years.

Moreover, research fatigue may also have set in and adversely affected caregivers' willingness to engage. Precursors for research fatigue include: indifference toward engagement, a lack of noticeable change attributable to engagement, and practical causes such as cost and time (Clark, 2008). Thus, reports of research fatigue are common in contexts where recurrent engagements do not lead to significant experience of change.

The last potential explanation for the decline in the initial parenting improvements is that the caregivers' expectations may not have been met by the intervention, thus causing a backlash effect. Research shows that unmet participant expectations, after engagement, are common and may have significant effects on numerous outcomes, such as: decreased satisfaction and functional status (Jackson & Kroenke, 2001), and may in turn exacerbate research fatigue (Clark, 2008). Caregivers' unmet expectations may also have affected their level of satisfaction with the intervention. The analytic sample may have had higher expectations due to being more closely connected to the Seven Passes Initiative (SPI). The analytic sample may be more connected due to: physical proximity to the SPI, the SPI's integration with school and afterschool activities in the Afrikaans-speaking Touwsrante Primary School, and, compared to the amaXhosa caregivers, the Afrikaans-speaking community has existed longer and is more stable. The analytic sample's closer affiliation with the SPI may also have resulted in caregivers taking on board more seriously what it means to be a positive parent and thereafter judging their own parenting more harshly. Alternatively, it may be a true reflection of those caregivers' experiences of change.

Despite the lack of a clear, sustained change in parenting behaviour for the analytic subsample, the full sample of caregivers that form part of the larger study did report sustained overall improvements. Interestingly, the subset of caregivers that did not form part of the present study evidenced significant improvements in their parenting behaviour. These caregivers mostly had children that remained in the younger age group; and irrespective of the sample assessed, caregivers with children who remain in the younger age group reported significant and meaningful improvements over the course of the intervention.

The above explanations do not explain why sustained improvements were seen in the overall caregiver sample, for whom the structure of and engagement with the intervention was similar. This difference between the overall caregiver sample and the analytic subsample can, however, be explained by the fact that there were more caregivers with children in the younger than the older age group in the overall caregiver sample. Caregivers with children in the younger age group consistently reported greater improvements in parenting behaviour throughout the intervention period. As discussed at length below, this may be due to early exposure effects being more pronounced (and thus more durable) for younger children (Shonkoff, 2017).

4.6.2.1 Improvement as a function of child age.

For caregivers with children in the younger age group, despite this sub-sample being fairly small, the data consistently indicates that the intervention was effective. The majority of these children were under 3 years old at the start of the programme and thus in a sensitive developmental period during the course of the intervention (Chen & Baram, 2016). As such, this pattern is

commonly observed, and there are numerous theoretical reasons why the intervention was more effective for these caregivers with particularly young children.

Firstly, early life experiences have profound effects on brain structure and function and a major ingredient in this brain development process is the interaction between children and their caregivers (Shonkoff, 2017). Therefore, early intervention may prevent caregivers from establishing change-resistant patterns of cold, harsh parenting and the expectation of cold, harsh parenting in the children (Provençal & Binder, 2015). As such, establishing healthy parenting habits and relationships to begin with is much easier than fixing dysfunctional action-reaction patterns that have already been established by the time children are in their teens.

Secondly, of the four parenting programmes administered as part of the intervention only one was for caregivers with adolescents: the Sinovuyo Caring Families Programme for parents and teens. The other three age-specific programmes were: (1) Thula Sana for pregnant mothers; (2) Book-sharing for caregivers with infants; and (3) the Sinovuyo Caring Families Programme for caregivers with children aged 2-9. Thus, due to caregivers attending sessions relevant to their child's current age, those with children in the younger age group may have received a higher dose of the programmes which may have increased the likelihood of those caregivers reporting warm, positive parenting behaviour. Greater exposure to programmes may have led to greater reporting of warm, positive parenting behaviour because of genuine improvements in behaviour. Moreover, the three parenting programmes administered to caregivers with children in the younger age group encompassed different components, and this variety of content may have made caregivers more interested in sharing their experiences with one another, in turn increasing the likelihood of assimilating and implementing the information taught. Norm shifts in good parenting strategies within the community may be an alternative or additional explanation for the greater willingness of caregivers with younger children to report increases in warm, positive parenting. These norm shifts may have been more pronounced in the caregivers with younger children relative to those with adolescent children for four reasons: (a) There were more attendees in this group possibly due to increased availability of programmes for caregivers with younger children; (b) These caregivers may have experienced increased accountability due to their involvement in the programmes, which may have made sustained improvements more likely; (c) Caregivers with younger children may be more scrutinised by others due to the vulnerability of their children and the level of responsibility required to take care of them (Lerner & Steinberg, 2004). Thus, caregivers may be more inclined to adopt socially desirable parenting practices to avoid unwanted scrutiny; or be more inclined to fall prey to providing responses that present themselves more favourably (Bornstein et al., 2015); (d) A portion of the caregivers with children in the younger age group were first-time caregivers and may have been more motivated to

engage with the content taught at the parenting practices, and to integrate those strategies into interactions with their child (WHO, 2004).

Thirdly, there is a wealth of scientific evidence demonstrating that parenting is one of the most significant influences on early childhood development (Shonkoff, 2017). Therefore, caregivers with children in the younger age group may be reporting behavioural improvements because it is easier for those caregivers to influence a positive feedback loop when their children are more receptive, as opposed to when interactions they have are potentially more dominated by the child. Thus, for caregivers with younger children, as compared to adolescents, the effects of the intervention on the caregivers' behaviour are more heavily determined by what the caregiver does to improve the dyadic interactions (Laursen & Collins, 2009; Lerner & Steinberg, 2004).

Fourthly, caregivers have more contact with children in the younger age group than the older age group, due to younger children's lack of autonomy and mobility at earlier stages of development. Thus, there will be more opportunities for the skills taught at the parenting programmes and subsequent changes implemented in the parent-child dyad to become deeply embedded ways of interacting (i.e., habitual) and bring about lasting change. Moreover, younger children are also usually viewed as having less moral autonomy than older children, and thus mistakes they make are more readily tolerated than those made by older children (Sokol et al., 2004).

Finally, the dramatic improvement reported by caregivers with children in the younger age group supports the Heckman (2012) theory that earlier interventions have greater return-on-investment than later interventions. Moreover, Heckman showed this decline in return-on-investment over time is evident in interventions aimed at children in disadvantaged families (2012). Consequently, based on the present findings from a rural community in South Africa, it could be argued that intervention efforts should be focused on targeting children in the younger age groups for the greatest efficiency and effectiveness. However, despite strong arguments made in favour of early intervention for child problems, two well-powered meta-analyses failed to find evidence that earlier childhood interventions were more effective (Gardner et al., 2019).

4.6.2.2 Caregivers' and children's responses on the APQ.

Caregivers' and children's responses on the APQ (completed by dyads of caregivers of children, and their children, aged 10 - 18) became more similar over the course of the intervention. Thus, even though the scores decreased over time they converged overall. This interesting finding may indicate that child reports (over and above the reports made by the caregivers themselves) have good predictive power of caregivers' behaviours (consistent with previous research findings; Barry, Frick, & Grafeman, 2008; Scott, Briskman, & Dadds, 2011). Related to this result was the finding that child reports were typically less "positive" than the corresponding caregiver reports (supporting the findings of Scott et al., 2010). However, the lack of robust correlation between

caregiver and child responses within the individual dyads on most of the scores, even more straightforward questions about spanking or yelling, may indicate that one group is responding more reliably than the other. It is possible that caregivers are vulnerable to wanting to paint themselves in a positive light. It could also be that both children and caregivers feel that their responses reflect reality, yet their subjective experiences of the same events may differ. It is also likely, however, that with only 42 complete cases, the data are too noisy to yield any genuine relationships.

Robustness checks were conducted using a larger sample including the incomplete cases across the intervention period. The findings indicated that the caregiver and child reports both revealed evidence of convergent validity. Therefore, indicating that the correlations were typically in the right direction, generally weak and statistically significant for 30% of the relationships tested (corresponding with results obtained by Scott et al., 2011). However, given that I was assessing within-dyad responses of caregivers and children on effectively the same questions, one might expect higher correlations. A possible reason for low to no correlations may be the low literacy levels of younger children. For example, translation issues may affect children resulting in an intergenerational effect of understanding questions. This possibility speaks to the need for good measurement instruments (predominantly in LMIC) to establish a more robust evidence base for parenting programmes (Ward, Sanders, Gardner, Mikton, & Dawes, 2016). Although the APQ has thus far been shown to be suitable for use in LMIC, validation is required in each new context. Another factor that may influence reports may be the level of expertise of the community members that were trained to collect the data and their interactions with the children while facilitating questionnaire completion (Cluver et al., 2018). Every attempt was made, however, to mitigate this risk by careful training of staff.

In summary, caregivers' reported parenting scores improved initially but these effects were not sustained towards the end of the intervention period. These changes in parenting scores differed as a function of social activation exposure, baseline parenting ability, and the age of the focus child. A similar pattern was observed when evaluating the data of the caregivers and children that form part of the dyadic analysis. Yet, the changes reported may not be homogenous within dyads or may be too noisy to report on definitively. Further investigations were conducted to determine whether the associations between the mechanisms driving these differences in improvement from wave 1 to wave 2 were sustained and to determine what other underlying factors may be at play using social network analysis. Due to the interdependent and dynamic nature of caregiver network ties and parenting behaviour, a novel social network analysis method was employed to assess selection and socialisation effects that may explain the continuous-time changes in parenting behaviour and caregiver networks.

4.6.3 Effects of the Intervention on the Caregiver Network

The intervention influenced the caregivers' social network: caregivers select other caregivers to speak to about parenting, based on their attendance status indicated by a significant alter effect (i.e., being nominated more by others) and a significant ego effect (i.e., forming connections with others). The significance of alter and ego effects indicates that caregivers are reaching out more to caregivers who attend programmes than to non-attendees and vice versa. I also found a significant similarity effect, which indicates that caregivers appear to prefer interacting with caregivers with the same attendance status: attendees have a preference for reaching out to attendees. The culmination of these effects shows robustly that attendance matters for tie formation: attendees of parenting programmes were the most attractive people to interact with about parenting matters.

These social network results can perhaps be explained by the attendees being more salient in the minds of caregivers encountering SPI fieldworkers and being asked about whom they speak to about parenting. In other words, they may have been less likely to nominate whom they had conversations with about parenting and more likely to nominate caregivers who were active parenting programme attendees or caregivers who participated in related intervention activities. However, discussions with attendees in the community (after a presentation of the wave 1 – wave 2 results) highlighted two reasons why non-attendees may have been genuinely more likely to have conversations about parenting with caregivers who attended parenting programmes. Firstly, attendees expressed a willingness to share information taught at the programmes, either in the form of lesson content or their lived experiences implementing the skills taught. Secondly, attendees reported that non-attendees approached them to solicit information about the programme content and the possible benefits of participation.

Regarding the significant similarity effect in the final SIENA model, it implies that people who have had similar patterns of attendance, as calculated by a cumulative binary variable (see method for the details), preferred interacting with one another. The result obtained by operationalising attendance in this way means that clusters of people with similar levels of attendance may have been more likely to share their knowledge obtained from the parenting programmes, thereby creating a 'Matthew effect'. This form of preferential attachment may magnify power gaps by exacerbating knowledge differences between attendees and non-attendees. Also (more prosaically), caregivers that attended parenting programmes together may have got to know each other well and may therefore have been more likely to nominate each other as people they spoke to about parenting.

Caregivers selected other caregivers to speak to about parenting based on those others' parenting behaviour. This hypothesis was supported by a significant ego effect, which indicates that

caregivers with lower scores were more likely to reach out to others to speak about parenting. Caregivers with higher scores were more likely to break ties with other caregivers. This pattern may have been the result of caregivers who were struggling with parenting responsibilities wanting to reach out for support; whereas caregivers that had higher parenting scores may not have felt the need to speak to others about parenting. The confidence with which people parented could also have influenced the likelihood of reaching out to speak about parenting. Interestingly, neither a significant similarity nor alter effect was observed in the data. Thus, caregivers did not seem to reach out more readily to those with higher or lower parenting scores to themselves, which may impede the social transmission of positive parenting behaviour. Finally, the non-significant similarity effect indicates that caregivers did not systematically reach out to caregivers with similar parenting scores to their own. These findings seem to indicate that caregivers with greater improvements in positive parenting scores did not become significantly more influential in the caregiver network. A possible reason why caregivers did not appear to select ties based on the Alter's parenting may be due to the fact that it is hard to gauge whether caregivers improved unless they were explicit about it in conversation or others were able to observe them interacting with their children.

4.6.4 Effects of Social Connectivity on the Intervention

In terms of socialisation effects, I found that caregivers were not significantly influenced by their caregiver contacts' parenting behaviour; the parenting scores of caregivers did not improve as a function of being connected to caregivers that have high parenting scores; and caregivers did not experience greater improvements in parenting behaviour if they were attendees or were connected to caregivers attending programmes.

The non-significant socialisation effect indicates that caregivers do not seem to be influenced by individuals to whom they are connected. This may be a function of the lack of reciprocal ties within the network structure. Reciprocated ties tend to have greater potential to influence behaviour dynamics (Mercken et al., 2010). Moreover, the number of caregiver contacts with particularly high parenting scores did not seem to change the likelihood of reporting improvements in parenting behaviour. Finally, caregivers were also not any more likely to report improvements in parenting behaviour if they were connected to caregivers attending programmes.

The findings demonstrate that caregiver involvement in the intervention seems to alter the structure of the caregiver network significantly. These changes in network structure, that provide more opportunities to influence parenting behaviour, do not, however, necessarily translate, at least in any straightforward manner, into measurable differences in parenting behaviour over the duration of a parenting intervention of this kind. The lack of measurable behavioural difference seems to be consistent with several other studies that acknowledged the importance of selection processes (e.g.,

research on adolescents' preferences to select friends with similar smoking behaviour; de Vries et al., 2006). The intervention may be working along social lines by creating role models of positive parenting behaviour. Thus, the caregiver network and who is central to it may serve as a proxy for those who are in a position to influence the behaviours of other caregivers in the community.

Consequently, even if people do not necessarily speak to the central network members, they may be more inclined to model their behaviour. No measure was used that could provide evidence in support of this claim and at this stage of development SIENA cannot directly test this idea. Future research studies could address this issue by asking specific questions about whom respondents consider to be good caregivers whom they would like to emulate.

5

General Discussion

Preventing and reducing violence by supporting caregivers is critical to national development in South Africa and around the world (Gould & Ward, 2015; WHO, 2016). The present thesis indicates that the implementation of evidence-based programmes to support positive parenting is has a range of promising outcomes, and is both necessary and achievable. One of the strongest contributions of this thesis is that it is, to my knowledge, the first study of its kind conducted in South Africa, indeed in Africa as a whole and in a country that can be characterised as low or middle-income, in which such interventions are so badly needed. Moreover, it offers an innovative use of social network analysis (SNA) to investigate outcomes of a parenting intervention in a rural community and longitudinally.

The novel two-pronged, low-resource, intervention design, implemented by trained community members, effected change irrespective of direct programme attendance. On average, participants reported improvements in positive parenting behaviour, including reductions in the use of corporal punishment, these effects were particularly prominent or sustained in caregivers with children in the younger age group. Caregivers also reported reduced child behaviour problems and stress. Moreover, the application of SNA in this context indicated that it can provide a useful tool to elucidate the underlying structure at play in bringing about large scale shifts in key outcomes. SNA indicated that both caregivers' network choices and their caregiving behaviours were altered by the intervention. The intervention did not, however, improve all aspects of parenting. Nevertheless, the study showed positive intervention impacts of both the programme and social activation components on a variety of caregiver and adolescent outcomes. These findings validate the potential of this parenting intervention. This final part of the thesis now turns to discussion of the

implications of the key outcomes, acknowledges specific limitations, and considers future research ideas to strengthen and clarify findings.

5.1 Implications

The results demonstrate a positive change in reported parenting behaviour, and this is a key indicator for potential violence prevention (Cluver et al., 2017; Lachman et al., 2016, 2018). The two-pronged intervention was associated with an improvement in reported parenting behaviour, potentially representing a potentially more cost-effective approach to violence prevention. However, in order to conclude this a cost-effectiveness consideration would require comparison with different programmes and knowledge of their costs.

Strikingly, the dissemination of the benefits through the community appears to have been sufficiently rapid and complete that people that did not attend a programme changed to the same extent as those that did. However, due to the lack of a control group the possibility of caregivers changing independently of the intervention cannot be ruled out. A key driver of this community-wide change was the social activation process which was relatively inexpensive to implement and broadly distributed (Parker, 2003).

5.1.1 Cost-effective early violence prevention strategy.

The intervention combined a social activation process with intensive parenting programmes. The programmes used are evidence-based and designed as early-intervention violence prevention strategies, following WHO recommendation (WHO, 2016) and government policy in South Africa (Department of Health, 2013). The present thesis adds to the evidence base supporting the efficacy of these programmes, but also extends current knowledge by assessing benefits to the wider community through both the social activation process and dissemination of the benefits of programme attendance through the caregiver social network. The cost-effectiveness of the parenting programmes may have been improved by the combination of: (a) diffusion of the benefits of programme attendance to caregivers who did not attend programmes, and (b) altering caregiving norms within the community. Together, these effects may encourage a virtuous circle of self-perpetuating improvements which would increase the impact of the intervention. However, the benefits of the intervention seem to be largely confined to caregivers with younger children, and those children themselves, especially when considering the longer time scale.

The intervention aimed to modify caregiving norms in the community. If it is changes in community norms that are responsible for the overall shifts found in warm, positive parenting behaviour in the initial intervention period, we would expect to see: (a) that the overall improvements were homogenous and sustained over time (Cislaghi et al., 2019), and (b) that community members who exemplified positive parenting behaviours would become more central to the caregiver communication network (e.g., Wölfer et al., 2014). Initial parenting improvements

were homogenous but only sustained among caregivers with younger children, and the community reorganised itself around caregivers who reported improvements or attended a parenting skills training program. As such, a norm-based account provides a partial explanation of reported improvements in warm, positive parenting behaviour. These norm shifts were achieved by combining a community-wide social activation approach (Parker, 2003; Peltzer et al., 2012; Wakefield et al., 2010) with intensive programmes delivered to a small subset of the community (for other examples of interventions achieving community-wide improvements by setting-level peer effects, see Dijkstra et al., 2010; Paluck et al., 2016; Paluck & Shepherd, 2012). An important open question remains, however, regarding whether the intensive portion of an intervention should be targeted, and, if so, how, to produce the greatest community-wide effect, taking into account, of course, concerns about cost-effectiveness.

5.1.2 Intensive intervention targeting.

The intervention in the present study relied on self-selection to the programmatic intervention component, whereas other studies have relied on targeting highly-connected individuals (Paluck et al., 2016; Paluck & Shepherd, 2012) or specific high-risk groups (Prinz et al., 2009). Targeting highly-connected individuals may be most effective for the dissemination of information through the community, but it can require expensive surveying to identify these individuals. High-risk groups may find the intervention more relevant and useful, but may in many cases be largely ostracised from mainstream attitudes, and hence lack the necessary social influence to support the wider media strategy. Self-selecting samples may be easiest to recruit and are inherently motivated to engage, but they may not be the most effective vectors of social norms (Hayakawa, 2000; Paluck et al., 2016; Paluck & Shepherd, 2012). The present thesis demonstrates that a self-selecting sample of recipients of the more intensive programmatic intervention component can, in the context of a community-wide campaign, be effective in producing changes in community norms. Targeting neither highly-connected nor high-risk groups has been tested in this specific context. Whether these more targeted approaches to recruiting recipients for the intensive portion of interventions are viable, and which of these approaches is most cost-effective, are questions in need of future empirical answers, but ultimately ones beyond the bailiwick of this dissertation.

The structure of the network, and the influence of its members, changed as a result of the intervention. In the present study, caregivers attending programmes became more influential, and were likely to acquire the status of ‘opinion leaders’. This indicates that the self-selecting subset of individuals who attended programmes were associated with more influence on their peers than would be expected *a priori* because of the increase in their social connectivity. This increased influence resulting from attendance suggests that targeting individuals with high social influence

may not be strictly necessary: sufficient shifts in network centrality may achieve effective outcomes without the need for expensive and time-consuming investigation of the network structure prior to intervention.

5.1.3 Social network analysis.

The present thesis highlights the utility of the theoretical concepts and statistical tools of SNA for studying interventions which aim to achieve community-wide changes. SNA allows analysis to go beyond assessing the effectiveness of the intervention in terms of mean shifts in individual-level behaviour changes, and to glean a genuine understanding of the mechanisms underlying those changes (Gest et al., 2011). This approach enables interventions to be developed in accordance with testable theories rather than by trial-and-error, and enables predictions to be made concerning the generalisability of results to novel settings (Fishbein et al., 2001).

In this study, parenting behaviour has been shown to improve across the community, and this change has been shown to depend upon direct and indirect exposure to the parenting programmes. Thus, SNA reveals the importance of social connections in diffusing benefits of the most resource-intensive components of the intervention, and suggests that finding ways to increase social connectivity within a community, in order to exchange information, may further enhance this diffusion. Furthermore, by characterising the ways in which the network structure changes as a result of the intervention, and by identifying the increase in influence accompanying programme attendance, SNA suggests ways in which these increases in social connectivity can be brought about.

Information flow is conceptualised as a function of network structure (Iyengar et al., 2011; Latkin & Knowlton, 2015; Valente, 2016). This means caution is necessary when generalising results concerning the flow of information to communities with different social network structures from the one studied. The spill-over effects (i.e., the possible spread of parenting practices from those who attended to those who did not) present in the current study, and unintended spill-over effects in other studies that aimed at preventing wide-spread information distribution in similar community contexts (e.g., Cluver et al., 2018), indicate that the findings are generalisable to other communities with similar social network structures (i.e., close-knit communities that are not structured around quasi-isolated 'cliques'). Attempts to translate the insights from this study, or claim that such insights can be translated, to networks with different structural properties should, however, be made with appropriate caution (Valente, 2016). Thus, research in qualitatively different networks is required to assess the generalisability of the present observations regarding information flow, network structure, and network dynamics to other communities.

5.2 Limitations

Although attempts have been made to establish a robust evaluation of the intervention at Touwsrante, and to recruit all the available caregivers in the community, there are of course limitations, as there are in any piece of research. The most important ones in this case must be openly acknowledged, with a view to qualifying claims made and serving as a guide to better future research. Most importantly, limitations related to the internal validity of the study should be acknowledged. A number of these limitations arise from the quasi-experimental design, the lack of a true control group, high attrition rates, systematic differences related to programme attendance, social desirability effects, and testing effects.

5.2.1 Methodological considerations.

The study was conducted on a convenience sample and lacked a specific control group. As in any non-experimental work, the methodological implication is that these factors reduced the internal validity of the results presented here. Moreover, strong claims about causality cannot be made on the basis of the present findings (Campbell et al., 2000). The lack of control group also means that we cannot differentiate between impact of the parenting intervention and naturally occurring developments due to unmeasured factors. Nevertheless, the present study design has served its purpose: it has added to the body of evidence that suggests that intensive programmes, in combination with a media campaign, can result in widespread behavioural improvements. Furthermore, it has expanded on existing literature by extending this evidence to the domain of a parenting behaviour intervention in a rural South African context.

High attrition rates are always a risk posed to longitudinal research, and missing data poses unique challenges when using longitudinal social network data. Primarily, missing data may limit the generalisability of findings. This is, however, less likely to pose a problem in the present study because I tested for systematic attrition, using state of the art methods, and there were no systematic differences between the analytic sample and those who dropped out, except that attendees were over-represented in the analytic sample. The greater representation of attendees in the analytic sample was deemed not to be a concern, however, because I found no differences in parenting behaviour between attendees and non-attendees: benefits of programme attendance diffused through the entire community.

Social desirability in responding to self-reports may reduce the extent to which the outcome measures are indicative of changes in parenting behaviour. Whilst the primary goal of the study was to effect behavioural change, altering attitudes can serve as an important precursor to inducing behavioural change (Darling & Steinberg, 1993; Knerr et al., 2013); and effects produced by social desirability would result from caregivers' renewed understanding of positive parenting, and, over time, changes in attitudes towards parenting. The convergence of the child and parent reports lends credence to the findings. Moreover, SNA is less affected by social desirability (Paluck & Shepherd,

2012), and, to some extent, findings based on SNA of ties (i.e., who caregivers spoke to about parenting) support the caregivers' self-report scores.

Testing effects may have influenced caregivers' responses by priming participants with specific questions related to positive parenting behaviour (Delaney et al., 2010). It is challenging to disentangle such influences from intervention effects in the absence of a control group. The risk of sensitisation (i.e., remembering previous responses and altering responding as a consequence) moderating the outcome of the questionnaire seems, however, unlikely given the 18-month period between wave 1 and wave 2 data collection (even in the theoretical case of the shorter gaps between waves). Nevertheless, learning effects due to habituation (i.e., responding differently due to increased familiarity with the format and content of the questionnaire) may have systematically biased responses: for example, if caregivers were more comfortable with the questionnaires at waves 2 or 3 they may have been more willing to disclose less positive parenting behaviours (Delaney et al., 2010) than in earlier Waves. Had they responded in this manner, however, they would, in fact, have shown a worsening, not an improvement, in parenting, which was not the case.

Additionally, the sample of children reporting on their caregivers' behaviour is limited in age range to 10–18 years. This is largely due to younger children not necessarily being able to provide reliable reports on their caregiver's behaviour. Nevertheless, the unavailability of a child measure for these ages is a severe limitation since early and middle childhood are critical epochs for caregiving effects on child development.

Finally, the majority of our knowledge on positive parenting is centred on scientific research conducted in English-speaking countries on a negligible, limited, percentage of the world's population (Arnett, 2008). Additionally, much of this research makes deductions that exaggerate the degree of scientific consensus around optimal conditions for children's psychological development (Serpell & Marfo, 2014). Consequently, research tends to spread a narrow view of caregivers and children that is frequently accepted as universally applicable (Morelli et al., 2018). Thus, comparing research findings about caregiver child dynamics based on data collected in South African rural settings with data from urban English-speaking settings should be done tentatively (Morelli et al., 2018).

5.2.2 Historical context.

On the 20th of October 2017, two weeks prior to the second wave of data collection being finalised, a South African high court ruling rejected 'reasonable chastisement' as a defence for violence towards one's own children (Mailovich, 2017). While this is a promising development which highlights the relevance of the current study, it could, potentially, constitute a threat to the validity of the study. There are, however, two reasons why this is not considered to be the case. First, the ruling did not coincide with the data collection for the Afrikaans-speaking caregivers –

data collection in the Afrikaans-speaking section of the community had already been completed – but its impact may need to be considered when evaluating sustained improvements with the third wave of data. Second, it is unlikely that information regarding new laws was disseminated throughout the caregivers' communities given the lack of exposure to the internet and the time frame for dissemination. Indeed, knowledge of developments in the law is slow to reach rural communities in South Africa (Modiko et al., 2014), underscoring once again the importance of interventions such as the one considered here in delivering information to individuals who are putting their freedom and their children's wellbeing at risk through ignorance regarding both the law and the availability of non-violent disciplinary alternatives to corporal punishment.

Community context.

An unplanned event may have had a negative impact on the intervention. Unfortunately, a key community member was retrenched from the Seven Passes Initiative, prior to the second wave of data collection taking place, an action which was widely misunderstood in the community and which left many caregivers feeling less well inclined towards the Seven Passes organisation. This change in the community structure may have influenced caregivers' willingness to engage with the intervention activities and might have resulted in them providing lower ratings on the questionnaires (indirectly making a negative judgement of the organisation). Since these changes were upsetting to many members of the community, particularly those in the analytic sample who may be more proactive members of the community, it may also have put them in a hostile mood when filling in the questionnaires.

5.2.3 Network maturation.

A final point with regards to internal validity is maturation: network dynamics have been shown to evolve differently at different life stages. After the age of around 30, personal networks tend to decrease in size (Wrzus et al., 2013). The caregivers in the present study were 35.92 years old on average ($SD = 12.05$) and 60% of the caregivers were older than 30, suggesting that their social networks should theoretically have decreased in size thereby from their maximum, plausibly also influencing the density of their information networks. Instead, caregivers had more caregiver connections on average at wave 2 than at wave 1 and there was a slight decrease in network density at wave 3. This pattern appears to have been partly driven by changes in the network structure produced by shifting norms within the community, as well as directly through the 'buddy system' component of the intervention which encouraged caregivers to expand their social support network (see Table 32 for details of the buddy system within the Sinovuyo programme). Furthermore, the intervention included many opportunities for caregivers to meet one another, such as the parenting programmes and community events, and these additional opportunities may have resulted in new connections being formed. However, one could also argue that the number of discussion partners on

a particular topic would not influence overall network size. Lastly, I note that Wrzus et al.'s (2013) meta-analysis of studies on network size and age predominantly examined friendship nominations, and it is unclear whether such data are likely to apply to a social support measure such as the question used here, which asked respondents whom they would consult regarding caregiving. Future research could contrast the rate of connection formation for younger versus older caregivers.

5.2.4 Future Directions

In acknowledging the limitations of the present work, I have identified some general future directions, which go beyond what is possible in the present thesis, but should be noted nonetheless. Firstly, work needs to be done in order to investigate the impact that a two-pronged intervention can have on other community settings. More specifically, future interventions and investigations of this kind should be implemented in different settings (e.g., rural/urban, isolated/connected, or low/middle income) to determine whether the dissemination of information will result in the large-scale improvements observed in this close-knit, bounded, low-income community.

Secondly, pluralistic ignorance is concerned with caregivers responding in accordance with how they incorrectly assume society expects them to behave. The present study does not have any measures that sought to investigate the effects of pluralistic ignorance, but future research could address this by asking caregivers: (a) what caregivers thought other caregivers in the community did (e.g., what the norm was regarding corporal punishment); and (b) whether they went along with the norm in private.

Thirdly, another important avenue for exploration is the threshold for behavioural changes: what proportion of the community needs direct exposure to the intensive portion of a composite intervention to maximise the effectiveness of the intervention (Valente, 1996; Venkatramanan & Kumar, 2011)? The fact that the intensive portion of the intervention is necessary but expensive provides an economic incentive to get the balance right with the minimum intensive proportion. Determining this balance is, however, a difficult task: it will require a more mature theory of social influence which is capable of relating information transmission in the network to the network structure in a predictive manner. A theory of this kind should be able to specify the proportion of the community to be targeted based on the specific properties of a network, such as mean degree and clustering. Developing a theory of this kind will doubtless require several programme roll-outs, as well as computational modelling of the effects of various interventions. There will be an ongoing tension between the needs of theory and practice in these roll-outs: it may be challenging to quantify a cost-efficient threshold that still achieves all the programme aims. Also, in a small community like Touwsrante, it would be impossible to deliver a programme only to the chosen few.

Fourthly, the smaller-than-anticipated community-wide impact (that may yet turn out to be transitory) may allude to an explore-exploit dilemma (Navarro et al., 2016) that needs to be addressed in future research. Conducting intervention research may result in the exploration, exploitation trade-off in that researchers will have to choose whether to prioritise overarching aims that are either largely: (a) research orientated (i.e., to explore: learn something from the research and expand the evidence-base; which is a time-consuming process); or (b) to make a marked difference in the lives of caregivers and their children (i.e., to exploit that evidence base; making use of the hard work done by exploration). Ward et al. (2015, p. 8) argue that although they would support causal models (to inform prevention policy; see also: Gardner et al., 2010); “the needs of low-resourced contexts are too pressing for such a slow and costly process” (i.e., the research that typically goes into developing and refining parenting programmes) given that it can take decades for parenting programmes to become recognised as evidence-based and suitable for rolling out widely. Shonkoff (2017, p. 2), on the other hand, emphasises that: “Better outcomes will remain elusive if we continue to compile variable outcome data in the absence of clearly defined causal models, simply to earn generic designation as an evidence-based intervention.” Both Ward et al. (2015) and Shonkoff (2017) offer valid arguments, hence the ideal intervention design would allow us to explore and exploit simultaneously. The real-world pressures of various resources and the urgency of certain problems mean, however, that trade-offs between information seeking and reward taking are inevitable. Nevertheless, striking the balance between multiple aims – conducting evidence-based interventions producing large effect sizes *and* having a real world impact – has been achieved in some studies (e.g., Gardner et al., 2010). Thus, my recommendation is that future researchers should continue to design interventions that focus on multiple aims that bring about greater impacts at scale for young children and caregivers with diverse needs. They should do this by: leveraging scientific knowledge, lived experience, and genuine parent engagement, to learn as much as possible about the conditions in which interventions achieve explicitly-intended effects (Darling-Hammond, Flook, Cook-Harvey, Barron & Osher, 2020). Moreover, in order to better understand the efficacy of interventions it is important to establish and monitor their causal effects. Non-randomised trials might provide adequate evidence of causal effects to inform decisions when interventions are demonstrably feasible and acceptable, and where evidence suggests there is little potential for harm (Bonell et al., 2011). As suggested by Rockers and colleagues, non-experiments can produce valid and causal effect estimates, in settings that are more natural than RCTs (Rockers et al., 2015). For example, non-randomised trials could help us gain an understanding of moderators and mediators of change in children’s conduct problems (e.g., improvements in parenting behaviour: Gardner et al., 2010) or effective components of parenting interventions (e.g., positive reinforcement and nonviolent discipline techniques: Leijten et al., 2019).

Fifthly, when using all three waves of data, the general intervention effect only holds for caregivers with children in the younger age group. Despite numerous theoretical reasons supporting the implementation of early childhood interventions due to their enhanced efficacy (Heckman, 2012) some studies provide conflicting evidence indicating that there is no significant distinction to be made with respect to child age (Gardner et al., 2019). Thus, future research should specifically test which intervention components are most or least successful at achieving shifts towards warm, positive parenting behaviour in the younger versus older child age groups. This intervention is not a separable package that could easily be broken down and evaluated to enable comparisons of the components that made a significant difference to the parenting reports of the two caregivers groups. However, RCTs could be implemented by future researchers to determine which intervention components have been most or least successful at achieving community-wide shifts in reported positive parenting behaviour. A population of caregivers could randomly be divided into two or more groups and given different interventions or different components of the same intervention. The results within each group could then be compared at the end of the trial period to determine both whether one group responded better to the intervention or whether specific intervention components influenced the rates of improvements within the groups differently. Alternatively, given the assertion that programme information spreads through the community, an RCT might use different programme components in different communities according to a factorial design to reduce intervention costs.

Finally, future researchers might usefully include a question to obtain information on both the caregiver discussion networks and friendship networks at all three waves of data collection. This would enable researchers to draw direct parallels between those networks and to provide additional information on influence, selection, and maturation patterns that might underlie reported changes in network behaviour. Understanding the structure and dynamics of the two different networks would allow verification of the present hypotheses concerning social transmission of attitudes and skills, and may clarify the importance of the network question asked in the present study when collecting social network nominations. Due to the complex social dynamics that may exist within the small, isolated, and densely populated community structure, it is reasonable to expect that information from the intervention will also diffuse via the friendship network. This comparison will be useful to determine whether friendship or caregiver contact networks are essentially equal in terms of disseminating positive parenting attitudes and changes in parenting behaviour. However, since it is likely that there would be a significant overlap between the caregiver and friendship networks a future pilot study should first be conducted to determine the practicality and necessity of collecting both sets of network data. Moreover, given the challenges of this work that should only be done if the specific research question demands it. Practical science has to balance the ultimate against the practical.

5.3 Conclusion

A two-pronged parenting intervention was deployed in a close-knit, geographically isolated, rural South African community. The intervention was composed of four evidence-based, age-specific, intensive parenting programmes rolled out alongside a community-wide social activation process focused on amplifying the dissemination of information taught at the programmes. Community-wide improvements in parenting behaviour were observed following the initial intervention period. These effects were, however, only sustained in caregivers with children in the younger age groups. Social network analysis (SNA) was employed as a tool to investigate the mechanisms underlying changes in caregivers' behaviours and norms, and indicated that the benefits of intensive programme attendance diffused along social connections. The intervention brought about changes in the structure of the caregivers' social network; caregivers who evidenced higher parenting improvement scores became increasingly influential. This indicates that the network restructured itself around parenting behaviour. These findings illustrate the value of SNA for interpreting the influence of an intervention in a sophisticated manner that is of distinctive value alongside the equally valuable and sophisticated approaches that focus on mean level change, and in a manner that allows for indirect as well as direct social influences. In this way, one can see that the addition of SNA complements the more traditional measures investigating mean level change on key outcomes, providing for a unique evaluation of a parenting intervention.

The results are promising for early-violence prevention strategies. Such strategies are recommended by the WHO and specifically endorsed by the South African government's violence reduction strategy (Gould et al., 2017). Nevertheless, these strategies require careful tailoring to individual target communities. The present study demonstrates the effectiveness of a parenting intervention with a media component, particularly for caregivers with children in the younger age group, administered to a low-income, rural community.

In order to achieve a substantive breakthrough in outcomes for children experiencing significant adversity in the younger age groups it is essential that caregivers who care for them continue to receive adequate support to transform their own lives. The possibility for dramatically improving the life prospects of all young children is real, but it must be grounded in a rich understanding of communities, individual lives, and empirical realities. The time to aim higher is now.

6

References

- Abidin, R. R. (1990). *Parenting Stress Index-Short Form*. Charlottesville, VA: Pediatric Psychology Press.
- Abidin, R. R. (1995). *Manual for the parenting stress index*. Odessa, FL: Psychological Assessment Resources.
- Achenbach, T. M., & Rescorla, L. (2001). *ASEBA school-age forms & profiles*. Aseba Burlington, VT.
- Achenbach, T. M., & Ruffle, T. M. (2000). The Child Behavior Checklist and related forms for assessing behavioral/emotional problems and competencies. *Pediatrics in Review*, *21*(8), 265–271. <https://doi.org/10.1542/pir.21-8-265>
- Alampay, L. P., Lachman, J. M., Landoy, B. V., Madrid, B. J., Ward, C. L., Hutchings, J., Alinea, M. C. D., & Gardner, F. (2018). Preventing child maltreatment in low-and middle-income countries: Parenting for lifelong health in the Philippines. In *Developmental Science and Sustainable Development Goals for Children and Youth* (pp. 277–293). Springer. https://doi.org/10.1007/978-3-319-96592-5_15
- Albore-Gallo, L., Lara-Muñoz, C., Esperón-Vargas, C., Zetina, J. A., Soriano, A. M., & Colin, G. V. (2007). Validity and reability of the CBCL/6-18. Includes DSM scales. *Actas Espanolas de Psiquiatria*, *35*(6), 393–900. https://www.researchgate.net/publication/5841674_Validity_and_reability_of_the_CBCL6-18_Includes_DSM_scales
- An, J.-Y. (2012). Social networks and health: Models, methods, and applications. *Healthcare Informatics Research*, *18*(4), 287–289. <https://doi.org/http://dx.doi.org/10.4258/hir.2012.18.4.287>
- Arnett, J. J. (2008). The neglected 95%: Why American psychology needs to become less American. *American Psychologist*, *63*(7), 602–614. <https://doi.org/10.1037/0003-066X.63.7.602>
- Ballard, T., Coates, J., Swindale, A., & Deitchler, M. (2011). Household hunger scale: Indicator definition and measurement guide. *Food and Nutrition Technical Assistance (FANTA)*, *360*(2),

1–17. <https://www.fantaproject.org/sites/default/files/resources/HHS-Indicator-Guide-Aug2011.pdf>

Ballivian, A., Azevedo, J. P., & Durbin, W. (2015). Using mobile phones for high-frequency data collection. In D. Toninelli, R. Pinter, & P. de Pedraza (Eds.), *Mobile research methods: Opportunities and challenges of mobile research methodologies* (pp. 21–39).

<https://doi.org/10.5334/bar.c>

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall, Inc. <https://psycnet.apa.org/record/1985-98423-000>

Bandura, A. (1997). *Self-efficacy: The exercise of self-control*. New York, NJ: Freeman.

Barlow, J., Smailagic, N., Huband, N., Roloff, V., & Bennett, C. (2012). Parent-training programmes for improving parental psychosocial health. *Cochrane Database of Systematic Reviews*, 6(10), 1–197. <https://doi.org/10.4073/csr.2012.15>

Baron, R. C., Rimer, B. K., Breslow, R. A., Coates, R. J., Kerner, J., Melillo, S., Habarta, N., Kalra, G. P., Chattopadhyay, S., Wilson, K. M., Lee, N. C., Mullen, P. D., Coughlin, S. S., & Briss, P. A. (2008). Client-directed interventions to increase community demand for breast, cervical, and colorectal cancer screening. A systematic review. *American Journal of Preventive Medicine*, 35(1), 1–16. <https://doi.org/10.1016/j.amepre.2008.04.002>

Barry, C. T., Frick, P. J., & Grafeman, S. J. (2008). Child versus parent reports of parenting practices: Implications for the conceptualization of child behavioral and emotional problems. *Assessment*, 15(3), 294–303. <https://doi.org/10.1177/1073191107312212>

Battaglia, T. A., Roloff, K., Posner, M. A., & Freund, K. M. (2007). Improving follow-up to abnormal breast cancer screening in an urban population. *Cancer*, 109(2), 359–367. <https://doi.org/10.1002/cncr.22354>

Bayer, J. K., Hiscock, H., Ukoumunne, O. C., Scalzo, K., & Wake, M. (2010). Three-year-old outcomes of a brief universal parenting intervention to prevent behaviour problems: Randomised controlled trial. *Archives of Disease in Childhood*, 95(3), 187–192. <https://doi.org/10.1136/adc.2009.168302>

Black, M. E., Yamada, J., & Mann, V. (2002). A systematic literature review of the effectiveness of community-based strategies to increase cervical cancer screening. *Canadian Journal of Public Health*, 93(5), 386–393. <http://journal.cpha.ca/index.php/cjph/article/view/328/328>

Bogat, G. A., DeJonghe, E., Levendosky, A. A., Davidson, W. S., & Von Eye, A. (2006). Trauma symptoms among infants exposed to intimate partner violence. *Child Abuse and Neglect*, 30(2), 109–125. <https://doi.org/10.1016/j.chiabu.2005.09.002>

Bonell, C. P., Hargreaves, J., Cousens, S., Ross, D., Hayes, R., Petticrew, M., & Kirkwood, B. R. (2011). Alternatives to randomisation in the evaluation of public health interventions: Design

- challenges and solutions. *Journal of Epidemiology and Community Health*, 65(7), 582–587.
<https://doi.org/10.1136/jech.2008.082602>
- Borgatti, S. P., & Halgin, D. S. (2011). On Network Theory. *Organization Science*, 22(5), 1168–1181. <https://doi.org/10.1287/orsc.1100.0641>
- Bornstein, M. H., Putnick, D. L., Lansford, J. E., Pastorelli, C., Skinner, A. T., Sorbring, E., Tapanya, S., Uribe Tirado, L. M., Zelli, A., Alampay, L. P., Al-Hassan, S. M., Bacchini, D., Bombi, A. S., Chang, L., Deater-Deckard, K., Di Giunta, L., Dodge, K. A., Malone, P. S., & Oburu, P. (2015). Mother and father socially desirable responding in nine countries: Two kinds of agreement and relations to parenting self-reports. *International Journal of Psychology*, 50(3), 174–185. <https://doi.org/10.1002/ijop.12084>
- Brechwald, W. A., & Prinstein, M. J. (2011). Beyond homophily: A decade of advances in understanding peer influence processes. *Journal of Research on Adolescence*, 21(1), 166–179. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3666937/pdf/nihms461129.pdf>
- Browning, C. R. (2016). Moving beyond poverty: Neighborhood structure, social processes, and health. *Journal of Health and Social Behavior*, 44(4), 552–571.
<http://www.jstor.org/stable/1519799>
- Browning, C. R., & Cagney, K. A. (2003). Moving beyond poverty: Neighborhood structure, social processes, and health. *Journal of Health and Social Behavior*, 44(4), 552–571.
<http://www.jstor.org/stable/1519799>
- Burk, W. J., Steglich, C. E. G., & Snijders, T. A. B. (2007). Beyond dyadic interdependence: Actor-oriented models for co-evolving social networks and individual behaviors. *International Journal of Behavioral Development*, 31(4), 397–404.
<https://doi.org/10.1177/0165025407077762>
- Burt, R. S. (2005). The social capital of structural holes. In *The New Economic Sociology: Developments in an Emerging Field* (pp. 148–190).
<https://smg.media.mit.edu/library/Burt.StructuralHoles.pdf>
- Button, S., Pianta, R. C., & Marvin, R. S. (2001). Partner support and maternal stress in families raising young children with cerebral palsy. *Journal of Developmental and Physical Disabilities*, 13(1), 61–81. <https://doi.org/10.1023/A:1026509400487>
- Byrne, B. M., & Crombie, G. (2003). Modeling and testing change: An introduction to the latent growth curve model. *Understanding Statistics*, 2(3), 177–203.
https://doi.org/10.1207/s15328031us0203_02
- Calkins, S. D., & Dedmon, S. E. (2000). Physiological and behavioral regulation in two-year-old children with aggressive/destructive behavior problems. *Journal of Abnormal Child Psychology*, 28(2), 103–118. <https://doi.org/10.1023/A:1005112912906>

- Calvete, E., Corral, S., & Estévez, A. (2007). Factor structure and validity of the Revised Conflict Tactics Scales for Spanish women. *Violence against Women, 13*(10), 1072–1087.
<https://doi.org/10.1177/1077801207305933>
- Campbell, M., Fitzpatrick, R., Haines, A., Kinmonth, A. L., Sandercock, P., Spiegelhalter, D., & Tyrer, P. (2000). Framework for design and evaluation of complex interventions to improve health framework for trials of complex interventions. *British Medical Journal, 321*(7262), 694–696. <https://doi.org/10.1136/bmj.321.7262.694>
- Cattell, V. (2001). Poor people, poor places, and poor health: the mediating role of social networks and social capital. *Social Science & Medicine, 52*(10), 1501–1516.
[https://doi.org/10.1016/S0277-9536\(00\)00259-8](https://doi.org/10.1016/S0277-9536(00)00259-8)
- Çenker-Özek, C. I. (2019). Discussion networks in Turkey: a social capital approach to informal social relations. *Journal of Southeast European and Black Sea, 19*(3), 409–430.
<https://doi.org/10.1080/14683857.2019.1625552>
- Centola, D., Becker, J., Brackbill, D., & Baronchelli, A. (2018). Tipping points in social convention. *Science, 360*(6393), 1082. <https://doi.org/10.1126/science.360.6393.1082-d>
- Chen, Y., & Baram, T. Z. (2016). Toward understanding how early-life stress reprograms cognitive and emotional brain networks. *Neuropsychopharmacology, 41*(1), 197–206.
<https://doi.org/10.1038/npp.2015.181>;
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal, 9*(2), 233–255. <https://doi.org/10.1207/S15328007SEM0902>
- Choi, S., Yang, J. S., & Chen, W. (2018). Longitudinal Change of an Online Political Discussion Forum: Antecedents of Discussion Network Size and Evolution. *Journal of Computer-Mediated Communication, 23*(5), 260–277. <https://doi.org/10.1093/jcmc/zmy013>
- Chow, S.-C., Shao, J., Wang, H., Lokhnygina, Y., Shao, J., Wang, H., & Lokhnygina, Y. (2018). *Sample Size Calculations in Clinical Research, Third Edition*. New York: Chapman and Hall/CRC. <https://doi.org/10.1201/9781315183084>
- Christ, O., Schmid, K., Lolliot, S., Swart, H., Stolle, D., Tausch, N., Al Ramiah, A., Wagner, U., Vertovec, S., & Hewstone, M. (2014). Contextual effect of positive intergroup contact on outgroup prejudice. *Proceedings of the National Academy of Sciences, 111*(11), 3996–4000.
<http://www.pnas.org/content/111/11/3996.full.pdf>
- Christakis, N. A., & Fowler, J. H. (2007). The spread of obesity in a large social network over 32 years. *New England Journal of Medicine, 357*(4), 370–379.
<https://doi.org/10.1056/NEJMsa066082>
- Cialdini, R., & Trost, M. (1998). Social influence: Social norms, conformity and compliance. In

The Handbook of Social Psychology (pp. 151–192). McGraw-Hill.

<https://doi.org/10.2307/2654253>

Cillessen, A. H. N., & Borch, C. (2006). Developmental trajectories of adolescent popularity: A growth curve modelling analysis. *Journal of Adolescence*, 29(6), 935–959.

<https://doi.org/10.1016/j.adolescence.2006.05.005>

Cislaghi, B., Denny, E. K., Cissé, M., Gueye, P., Shrestha, B., Shrestha, P. N., Ferguson, G., Hughes, C., & Clark, C. J. (2019). Changing social norms: The importance of “organized diffusion” for scaling up community health promotion and women empowerment interventions. *Prevention Science*, 38(2), 1–11. <https://doi.org/10.1007/s11121-019-00998-3>

Clark, T. (2008). “We’re over-researched here!”: Exploring accounts of research fatigue within qualitative research engagements. *Sociology*, 42(5), 953–970.

<https://doi.org/10.1177/0038038508094573>

Cluver, L. D., Doubt, J., Lachman, J., Tsoanyane, S., & Ward, C. L. (2016). *Sinovuyo Caring Families Programme for Parents and Teens| Facilitator Manual First* (pp. 1–277).

http://www.who.int/violence_injury_prevention/violence/child/PLH-for-Teens-HIV-enhanced-Facilitator-manual-English.pdf

Cluver, L. D., Lachman, J. M., Ward, C. L., Gardner, F., Peterson, T., Hutchings, J. M., Mikton, C., Meinck, F., Tsoanyane, S., Doubt, J., Boyes, M., & Redfern, A. A. (2017). Development of a parenting support program to prevent abuse of adolescents in South Africa: Findings from a pilot pre-post study. *Research on Social Work Practice*, 27(7), 758–766.

<https://doi.org/10.1177/1049731516628647>

Cluver, L. D., Meinck, F., Shenderovich, Y., Ward, C. L., Romero, R. H., Redfern, A., Lombard, C., Doubt, J., Steinert, J., Catanho, R., Wittesaele, C., De Stone, S., Salah, N., Mpimpilashe, P., Lachman, J., Loening, H., Gardner, F., Blanc, D., Nocuza, M., & Lechowicz, M. (2016). A parenting programme to prevent abuse of adolescents in South Africa: Study protocol for a randomised controlled trial. *Trials*, 17(328), 1–10. <https://doi.org/10.1186/s13063-016-1452-8>

Cluver, L. D., Meinck, F., Steinert, J. I., Shenderovich, Y., Doubt, J., Herrero Romero, R., Lombard, C. J., Redfern, A., Ward, C. L., Tsoanyane, S., Nzima, D., Sibanda, N., Wittesaele, C., De Stone, S., Boyes, M. E., Catanho, R., Lachman, J. M., Salah, N., Nocuza, M., & Gardner, F. (2018). Parenting for Lifelong Health: A pragmatic cluster randomised controlled trial of a non-commercialised parenting programme for adolescents and their families in South Africa. *BMJ Global Health*, 3(1), 1–16. <https://doi.org/http://dx.doi.org/10.1136/bmjgh-2017-000539>

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94(1988), S95–S120. <https://www.jstor.org/stable/2780243>

- Cooper, P. J., Tomlinson, M., Swartz, L., Landman, M., Molteno, C., Stein, A., McPherson, K., & Murray, L. (2009). Improving quality of mother-infant relationship and infant attachment in socioeconomically deprived community in South Africa: Randomised controlled trial. *BMJ Global Health*, 338(7701), 997. <https://doi.org/10.1136/bmj.b974>
- Coore Desai, C., Reece, J. A., & Shakespeare-Pellington, S. (2017). The prevention of violence in childhood through parenting programmes: A global review. *Psychology, Health and Medicine*, 22(3), 166–186. <https://doi.org/10.1080/13548506.2016.1271952>
- Cowen, P. S. (1998). Crisis child care: An intervention for at-risk families. *Issues in Comprehensive Pediatric Nursing*, 21(3), 147–158. [https://www.google.co.za/search?q=Cowen%2C+P.+S.+\(1998\)](https://www.google.co.za/search?q=Cowen%2C+P.+S.+(1998)).
- Dadds, M. R., Maujean, A., & Fraser, J. A. (2003). Parenting and conduct problems in children: Australian data and psychometric properties of the Alabama Parenting Questionnaire. *Australian Psychologist*, 38(3), 238–241. <http://psycnet.apa.org/record/2004-17336-010>
- Dalton, D., & Ortegren, M. (2011). Gender differences in ethics research: The importance of controlling for the social desirability response bias. *Journal of Business Ethics*, 103(1), 73–93. <https://doi.org/10.1007/s10551-011-0843-8>
- Daly, M., Bray, R., Bruckauf, Z., Byrne, J., Margaria, A., Pecnik, N., & Samms-Vaughan, M. (2015). Family and parenting support. Policy and provision in a global context. In *Innocenti Insight* (Vol. 2, Issue 5). https://www.unicef-irc.org/publications/pdf/01_family_support_layout_web.pdf
- Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2), 97–140. <https://doi.org/10.1080/10888691.2018.1537791>
- Darling, N., & Steinberg, L. (1993). Parenting style as context: An integrative model. *Psychological Bulletin*, 113(3), 487–496. <https://doi.org/10.1037/0033-2909.113.3.487>
- Day, C., Michelson, D., Thomson, S., Penney, C., & Draper, L. (2012). Evaluation of a peer led parenting intervention for disruptive behaviour problems in children: Community based randomised controlled trial. *BMJ (Online)*, 344(7849), 1–10. <https://doi.org/10.1136/bmj.e1107>
- de Klepper, M., Sleenbos, E., van de Bunt, G., & Agneessens, F. (2010). Similarity in friendship networks: Selection or influence? The effect of constraining contexts and non-visible individual attributes. *Social Networks*, 32(1), 82–90. <https://doi.org/10.1016/j.socnet.2009.06.003>
- de Vries, R. E., van den Hooff, B., & de Ridder, J. A. (2006). Explaining knowledge sharing: The role of team communication styles, job satisfaction, and performance beliefs. *Communication*

Research, 33(2), 115–135. <https://doi.org/10.1177/0093650205285366>

- Dean, C., Myers, K., & Evans, E. (2003). Community-wide implementation of a parenting program: the South East Sydney Positive Parenting Project. *Australian E-Journal for the Advancement of Mental Health*, 2(3), 179–190. <https://doi.org/10.5172/jamh.2.3.179>
- Delaney, P. F., Verkoeijen, P. P. J. L., & Spirigel, A. (2010). Spacing and testing effects: A deeply critical, lengthy, and at times discursive review of the literature. *Psychology of Learning and Motivation - Advances in Research and Theory*, 53(1), 63–147. [https://doi.org/10.1016/S0079-7421\(10\)53003-2](https://doi.org/10.1016/S0079-7421(10)53003-2)
- Department of Health. (2013). *Western Cape Government Integrated Violence Prevention Policy Framework*. <https://www.westerncape.gov.za/news/western-cape-government-launches-violence-prevention-policy>
- Dijkstra, J. K., Lindenberg, S., Veenstra, R., Steglich, C., Isaacs, J., Card, N. A., & Hodges, E. V. E. (2010). Influence and selection processes in weapon carrying during adolescence: The roles of status, aggression, and vulnerability. *Criminology*, 48(1), 187–220. <https://doi.org/10.1111/j.1745-9125.2010.00183.x>
- Doubt, J., Bray, R., Loening-Voysey, H., Cluver, L., Byrne, J., Nzima, D., King, B., Shenderovich, Y., Steinert, J., & Medley, S. (2017). “It Has Changed”: Understanding Change in a Parenting Program in South Africa. *Annals of Global Health*, 83(5–6), 767–776. <https://doi.org/10.1016/j.aogh.2017.10.021>
- Duncan, T. E., & Duncan, S. C. (2009). The ABC’s of LGM: An introductory guide to latent variable growth curve modeling. *Social and Personality Psychology Compass*, 3(6), 979–991. <https://doi.org/10.1111/j.1751-9004.2009.00224.x>
- Ebesutani, C., Bernstein, A., Nakamura, B. J., Chorpita, B. F., Higa-McMillan, C. K., Weisz, J. R., & Health, R. N. on Y. M. (2010). Concurrent validity of the Child Behavior Checklist DSM-oriented scales: Correspondence with DSM diagnoses and comparison to syndrome scales. *Journal of Psychopathology and Behavioral Assessment*, 32(3), 373–384. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2914253/>
- Eddy, J. M., & Chamberlain, P. (2000). Family management and deviant peer association as mediators of the impact of treatment condition on youth antisocial behavior. *Journal of Consulting and Clinical Psychology*, 68(5), 857–863. <https://doi.org/10.1037//0022-006X.68.5.857>
- Elgar, F. J., Waschbusch, D. A., Dadds, M. R., & Sigvaldason, N. (2007). Development and validation of a short form of the Alabama Parenting Questionnaire. *Journal of Child and Family Studies*, 16(2), 243–259. <https://doi.org/10.1007/s10826-006-9082-5>
- Essau, C. A., Sasagawa, S., & Frick, P. J. (2006). Psychometric properties of the Alabama

- Parenting Questionnaire. *Journal of Child and Family Studies*, 15(5), 595–614.
<https://doi.org/10.1007/s10826-006-9036-y>
- Farrington, D. P., Gaffney, H., Lösel, F., & Ttof, M. M. (2017). Systematic reviews of the effectiveness of developmental prevention programs in reducing delinquency, aggression, and bullying. *Aggression and Violent Behavior*, 33(November 2016), 91–106.
<https://doi.org/10.1016/j.avb.2016.11.003>
- Fichter, M. M., Xepapadakos, F., Quadflieg, N., Georgopoulou, E., & Fthenakis, W. E. (2004). A comparative study of psychopathology in Greek adolescents in Germany and in Greece in 1980 and 1998 - 18 Years apart. *European Archives of Psychiatry and Clinical Neuroscience*, 254(1), 27–35. <https://doi.org/10.1007/s00406-004-0450-0>
- Field, A. (2009). Discovering statistics using SPSS. In 3rd Edition (Ed.), *Sage Publication* (Vol. 58). <https://doi.org/10.1234/12345678>
- Fishbein, M., Von Haefen, I., & Appleyard, J. (2001). The role of theory in developing effective interventions: Implications from project SAFER. *Psychology, Health and Medicine*, 6(2), 223–238. <https://doi.org/10.1080/13548500123176>
- Fortuin, J. (2016). *Birds of a feather... Selection and socialization processes in youth's social networks*. <https://www.researchgate.net/publication/228431869>
- Freeman, L. C., Borgatti, S. P., & White, D. R. (1991). Centrality in valued graphs: A measure of betweenness based on network flow. *Social Networks*, 13(2), 141–154.
[https://doi.org/10.1016/0378-8733\(91\)90017-N](https://doi.org/10.1016/0378-8733(91)90017-N)
- Frick, P. J., Christian, R. E., & Wootton, J. M. (1999). Age trends in the association between parenting practices and conduct problems. *Behaviour Modification*, 23(1), 106–128.
<https://doi.org/10.1177/0145445599231005>
- Fryar, C. D., Gu, Q., & Ogden, C. L. (2012). Anthropometric reference data for children and adults: United States, 2007-2010. *Vital Health Statistics*, 5(11), 1–40. <https://doi.org/10.1186/1471-2431-8-10>
- Fujimoto, K., Snijders, T. A. B., & Valente, T. W. (2018). Multivariate dynamics of one-mode and two-mode networks: Explaining similarity in sports participation among friends. *Network Science*, 6(03), 370–395. <https://doi.org/10.1017/nws.2018.11>
- Furlong, M., Mcgilloway, S., Bywater, T., Hutchings, J., Sm, S., Donnelly, M., Furlong, M., Mcgilloway, S., Bywater, T., Hutchings, J., Smith, S. M., & Donnelly, M. (2012). Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years (Review). *Evidence-Based Child Health: A Cochrane Review Journal*, 8(2), 1–362. <https://doi.org/10.1002/14651858.CD008225.pub2>. Copyright
- Gardner, B., Abraham, C., Lally, P., & de Bruijn, G.-J. (2012). Towards parsimony in habit

- measurement: Testing the convergent and predictive validity of an automaticity subscale of the Self-Report Habit Index. *International Journal of Behavioral Nutrition and Physical Activity*, 9(1), 102. <https://doi.org/10.1186/1479-5868-9-102>
- Gardner, B., Sheals, K., Wardle, J., & McGowan, L. (2014). Putting habit into practice, and practice into habit: A process evaluation and exploration of the acceptability of a habit-based dietary behaviour change intervention. *International Journal of Behavioral Nutrition and Physical Activity*, 11(1), 1–13. <https://doi.org/10.1186/s12966-014-0135-7>
- Gardner, F., Burton, J., & Klimes, I. (2006). Randomised controlled trial of a parenting intervention in the voluntary sector for reducing child conduct problems: Outcomes and mechanisms of change. *Journal of Child Psychology and Psychiatry*, 47(11), 1123–1132. <https://doi.org/10.1111/j.1469-7610.2006.01668.x>
- Gardner, F., Hutchings, J., Bywater, T., & Whitaker, C. (2010). Who benefits and how does it work? Moderators and mediators of outcome in an effectiveness trial of a parenting intervention. *Journal of Clinical Child and Adolescent Psychology*, 39(4), 568–580. <https://doi.org/10.1080/15374416.2010.486315>
- Gardner, F., Leijten, P., Melendez-Torres, G. J., Landau, S., Harris, V., Mann, J., Beecham, J., Hutchings, J., & Scott, S. (2019). The earlier the better? Individual participant data and traditional meta-analysis of age effects of parenting interventions. *Child Development*, 90(1), 7–19. <https://doi.org/https://doi.org/10.1111/cdev.13138>
- Gershoff, E. T. (2013). Spanking and child development: We know enough now to stop hitting our children. *Child Development Perspective*, 7(3), 133–137. <https://doi.org/10.1111/cdep.12038>
- Gershoff, E. T., Lee, S. J., & Durrant, J. E. (2017). Promising intervention strategies to reduce parents' use of physical punishment. *Child Abuse & Neglect*, 71, 9–23. <https://doi.org/10.1016/j.chiabu.2017.01.017>
- Gesell, S. B., Tesdahl, E., & Ruchman, E. (2012). The Distribution of Physical Activity in an After-school Friendship Network. *PEDIATRICS*, 129(6), 1064–1071. <https://doi.org/10.1542/peds.2011-2567>
- Gesell, Sabina B., Barkin, S. L., & Valente, T. W. (2013). Social network diagnostics: A tool for monitoring group interventions. *Implementation Science*, 8(1), 1–12. <https://doi.org/10.1186/1748-5908-8-116>
- Gest, S. D., Osgood, D. W., Feinberg, M. E., Bierman, K. L., & Moody, J. (2011). Strengthening prevention program theories and evaluations: Contributions from social network analysis. *Prevention Science*, 12(4), 349–360. <https://doi.org/10.1007/s11121-011-0229-2>
- Ghasemiefteh, G., Ebrahimi, R., & Gao, J. (2013). Complex contagion and the weakness of long ties in social networks: Revisited. *Proceedings of the ACM Conference on Electronic*

Commerce, 1(212), 507–524.

Global Initiative to End All Corporal Punishment of Children. (2017). *Ending legalised violence against children our aim to end legalised violence against children* (Issue December).

www.endcorporalpunishment.org

Global Initiative to End All Corporal Punishment of Children. (2020). *Global report 2019: Progress towards ending corporal punishment of children*.

<http://endcorporalpunishment.org/wp-content/uploads/global/Global-report-2019.pdf>

Goldberg, D. P., & Hillier, V. F. (1979). A scaled version of the General Health Questionnaire. *Psychological Medicine*, 9(1), 139–145. <https://doi.org/10.1017/S0033291700021644>

Goodman, J. S., & Blum, T. C. (1996). Assessing the non-random sampling effects of subject attrition in longitudinal research. *Journal of Management*, 22(4), 627–652.

<https://doi.org/10.1177/014920639602200405>

Gould, C., Mufamadi, D., Hsiao, C., & Amisi, M. (2017). Reducing violence in South Africa: From policing to prevention. *Policy Brief*, 106(6), 1–15.

[file:///C:/Users/User/Downloads/policybrief106 \(1\).pdf](file:///C:/Users/User/Downloads/policybrief106%20(1).pdf)

Gould, C., & Ward, C. L. (2015). Positive parenting in South Africa: Why supporting families is key to development and violence prevention. *Policy Brief*, 77(4), 1–8.

<https://issafrica.org/research/policy-brief/positive-parenting-in-south-africa-why-supporting-families-is-key-to-development-and-violence-prevention>

Granovetter, M. (1973). The strength of weak ties. *The American Journal of Sociology*, 78(6), 1360–1380. <https://doi.org/10.1086/225469>

Gregorich, S. E. (2006). Do self-report instruments allow meaningful comparisons across diverse populations. *Medical Care*, 44(11), 78–94.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1808350/>

Gremmen, M. C., Berger, C., Ryan, A. M., Steglich, C. E. G., Veenstra, R., & Dijkstra, J. K. (2018). Adolescents' friendships, academic achievement, and risk behaviors: Same-behavior and cross-behavior selection and influence processes. *Child Development*, 00(0), 1–20.

<https://doi.org/10.1111/cdev.13045>

Gross, D., Fogg, L., Young, M., Ridge, A., Cowell, J. M., Richardson, R., & Sivan, A. (2006). The equivalence of the Child Behavior Checklist/1 1/2-5 across parent race/ethnicity, income level, and language. *Psychological Assessment*, 18(3), 313.

<https://www.ncbi.nlm.nih.gov/pubmed/16953734>

Haj-Yahia, M. M., & Dawud-Noursi, S. (1998). Predicting the use of different conflict tactics among Arab siblings in Israel: A study based on social learning theory. *Journal of Family Violence*, 13(1), 81–103. <https://doi.org/10.1023/A:1022864801027>

- Haskett, M. E., Ahern, L. S., Ward, C., & Allaire, J. (2006). Factor structure and validity of the Parenting Stress Index-Short Form. *Journal of Clinical and Adolescent Psychology, 35*(2), 302–312. <https://doi.org/10.1207/s15374424jccp3502>
- Hayakawa, H. (2000). Bounded rationality, social and cultural norms, and interdependence via reference groups. *Journal of Economic Behavior & Organization, 43*(1), 1–34. [https://doi.org/10.1016/S0167-2681\(00\)00106-2](https://doi.org/10.1016/S0167-2681(00)00106-2)
- Heckman, J. J. (2012). Invest in early childhood development: Reduce deficits, strengthen the economy. *The Heckman Equation, 7*, 1–2. <https://heckmanequation.org/resource/the-heckman-curve/>
- Heymann, J., Sprague, A. R., Nandi, A., Earle, A., Batra, P., Schickedanz, A., Chung, P. J., & Raub, A. (2017). Paid parental leave and family wellbeing in the sustainable development era. *Public Health Reviews, 38*(1), 1–16. <https://doi.org/10.1186/s40985-017-0067-2>
- Hoeve, M., Dubas, J. S., Eichelsheim, V. I., Van Der Laan, P. H., Smeenk, W., & Gerris, J. R. M. (2009). The relationship between parenting and delinquency: A meta-analysis. *Journal of Abnormal Child Psychology, 37*(6), 749–775. <https://doi.org/10.1007/s10802-009-9310-8>
- Hogg, M. A., & Reid, S. A. (2006). Social identity, self-categorization, and the communication of group norms. *Communication Theory, 16*(1), 7–30. <https://doi.org/10.1111/j.1468-2885.2006.00003.x>
- Holbrook, A. L., Green, M. C., & Krosnick, J. A. (2003). Telephone versus face-to-face interviewing of national probability samples with long questionnaires. *Public Opinion Quarterly, 67*(1), 79–125. <https://doi.org/10.1086/346010>
- Holbrook, A. L., Krosnick, J. A., & Pfent, A. (2007). The causes and consequences of response rates in surveys by the news media and government contractor survey research firms. In *Advances in Telephone Survey Methodology* (Vol. 60607, pp. 499–528). <https://doi.org/10.1002/9780470173404.ch23>
- Hou, J., Yu, L., Ting, S. M. R., Sze, Y. T., & Fang, X. (2011). The status and characteristics of couple violence in China. *Journal of Family Violence, 26*(2), 81–92. <https://doi.org/10.1007/s10896-010-9343-3>
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Humeniuk, R. E., Ali, R., Babor, T. F., Farrell, M., Formigoni, M. L., Jittiwutikarn, J., De Lacerda, R. B., Ling, W., Marsden, J., & Monteiro, M. (2008). Validation of the alcohol, smoking and substance involvement screening test (ASSIST). *Addiction, 103*(6), 1039–1047. <https://doi.org/10.1111/j.1360-0443.2007.02114>

- Humeniuk, R. E., Henry-Edwards, S., Ali, R. L., Poznyak, V., Monteiro, M., R. Humeniuk, Henry-Edwards, S., Ali, R. L., Poznyak, V., Monteiro, M., Humeniuk, R. E., Ali, R. L., Babor, T. F., Farrell, M., Formigoni, M. L., Jittiwutikarn, J., de Lacerda, R. B., Ling, W., Marsden, J., ... Monteiro, M. (2010). The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST): Manual for use in primary care. In *World Health Organization*.
<https://doi.org/10.1111/j.1360-0443.2007.02114.x>
- Hutcheson, J. J., & Black, M. M. (1996). Psychometric properties of the Parenting Stress Index in a sample of low-income African-American mothers of infants and toddlers. *Early Education and Development, 7*(4), 381–400. https://doi.org/10.1207/s15566935eed0704_5
- Innocenti, M. S., Huh, K., & Boyce, G. C. (1992). Families of children with disabilities: Normative data and other considerations on parenting stress. *Topics in Early Childhood Special Education, 12*(3), 403–427. <https://doi.org/10.1177/027112149201200310>
- Irwin, J. R., Carter, A. S., & Briggs-Gowan, M. J. (2002). The social-emotional development of “late-talking” toddlers. *Journal of the American Academy of Child & Adolescent Psychiatry, 41*(11), 1324–1332. https://www.researchgate.net/publication/9050344_Late-Talking_Toddlers
- Iyengar, R., Van den Bulte, C., & Valente, T. W. (2011). Opinion leadership and social contagion in new product diffusion. *Marketing Science, 30*(2), 195–212.
<https://doi.org/10.1287/mksc.1100.0566>
- Jackson, C. (2007). The general health questionnaire. *Occupational Medicine, 57*(1), 78–79.
<https://doi.org/10.1093/occmed/kql169>
- Jackson, J. L., & Kroenke, K. (2001). The effect of unmet expectations among adults presenting with physical symptoms. *Annals of Internal Medicine, 134*(9 II SUPPL.), 889–897.
https://doi.org/10.7326/0003-4819-134-9_part_2-200105011-00013
- Jakobsen, J. C., Gluud, C., Wetterslev, J., & Winkel, P. (2017). When and how should multiple imputation be used for handling missing data in randomised clinical trials – a practical guide with flowcharts. *BMC Medical Research Methodology, 17*(1), 162.
<https://doi.org/10.1186/s12874-017-0442-1>
- Jankey, O., Próspero, M., & Fawson, P. (2011). Mutually violent attitudes: effects on intimate partner violence and mental health symptoms among couples in Botswana, Africa. *Journal of Aggression, Conflict and Peace Research, 3*(1), 4–11. <https://doi.org/10.5042/jacpr.2011.0017>
- Jones, M., Rona, R. J., Hooper, R., & Wesseley, S. (2006). The burden of psychological symptoms in UK Armed Forces. *Occupational Medicine, 56*(5), 322–328.
<https://doi.org/10.1093/occmed/kql023>
- Kamwangamalu, N. M. (2013). Ubuntu in South Africa: A sociolinguistic perspective to a pan-

- African concept. In *The global intercultural communication reader* (pp. 240–250). Routledge.
- Kempe, D., Kleinberg, J., & Tardos, E. (2015). Maximizing the spread of influence through a social network. *Theory of Computing*, *11*(1), 105–147. <https://doi.org/10.4086/toc.2015.v011a004>
- Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic analysis*. New York: Guildford.
- Kerley, K. R., Xu, X., Sirisunyaluck, B., & Alley, J. M. (2010). Exposure to family violence in childhood and intimate partner perpetration or victimization in adulthood: Exploring intergenerational transmission in Urban Thailand. *Journal of Family Violence*, *25*(3), 337–347. <https://doi.org/10.1007/s10896-009-9295-7>
- Kindermann, T. A. (2007). Effects of naturally existing peer groups on changes in academic engagement in a cohort of sixth graders. *Child Development*, *78*(4), 1186–1203. <https://doi.org/10.1111/j.1467-8624.2007.01060>
- Knerr, W., Gardner, F., & Cluver, L. D. (2013). Improving positive parenting skills and reducing harsh and abusive parenting in low- and middle-income countries: A systematic review. *Prevention Science*, *14*(4), 352–363. <https://doi.org/10.1007/s11121-012-0314-1>
- Krause, R. W., Huisman, M., Steglich, C., & Sniiders, T. A. B. (2018). Missing network data a comparison of different imputation methods. *Proceedings of the 2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, ASONAM 2018*, 159–163. <https://doi.org/10.1109/ASONAM.2018.8508716>
- Lachman, J. M., Cluver, L. D., Ward, C. L., Mikton, C., Gardner, F., & Hutchings, J. (2014). *Parenting for Lifelong Health Ages 2-9: Development and evaluation of a parenting programme to reduce the risk of child maltreatment in Cape Town, South Africa* (Issue September, pp. 2–3). https://www.researchgate.net/publication/265864915_Parenting_for_Lifelong_Health
- Lachman, J. M., Kelly, J., Cluver, L. D., Ward, C. L., Hutchings, J., & Gardner, F. (2018). Process evaluation of a parenting program for low-income families in south africa. *Research on Social Work Practice*, *28*(2), 188–202. <https://doi.org/10.1177/1049731516645665>
- Lachman, J. M., Sherr, L. T., Cluver, L. D., Ward, C. L., Hutchings, J., & Gardner, F. (2016). Integrating evidence and context to develop a parenting program for low-income families in South Africa. *Journal of Child and Family Studies*, *25*(7), 2337–2352. <https://doi.org/10.1007/s10826-016-0389-6>
- Lam, T. C. M., & Bengo, P. (2003). A comparison of three retrospective self-reporting methods of measuring change in instructional practice. *American Journal of Evaluation*, *24*(1), 65–80. <https://doi.org/10.1177/109821400302400106>
- Latkin, C. A., & Knowlton, A. R. (2015). Social network assessments and interventions for health behavior change: A critical review. *Behavioral Medicine*, *41*(3), 90–97.

<https://doi.org/10.1080/08964289.2015.1034645>

- Laursen, B., & Collins, W. A. (2009). Parent—child relationships during adolescence. *Handbook of Adolescent Psychology, 2*.
- Lehrer, J. A., Lehrer, E. L., & Zhao, Z. (2009). Physical and psychological dating violence in young men and women in Chile: Results from a 2005 survey of university students. *International Journal of Injury Control and Safety Promotion, 16*(4), 205–214.
<https://doi.org/10.1080/17457300903307003>
- Leijten, P., Gardner, F., Melendez-Torres, G. J., van Aar, J., Hutchings, J., Schulz, S., Knerr, W., & Overbeek, G. (2019). Meta-Analyses: Key Parenting Program Components for Disruptive Child Behavior. *Journal of the American Academy of Child and Adolescent Psychiatry, 58*(2), 180–190. <https://doi.org/10.1016/j.jaac.2018.07.900>
- Leijten, P., Melendez-Torres, G. J., Knerr, W., & Gardner, F. (2016). Transported Versus Homegrown Parenting Interventions for Reducing Disruptive Child Behavior: A Multilevel Meta-Regression Study. *Journal of the American Academy of Child and Adolescent Psychiatry*. <https://doi.org/10.1016/j.jaac.2016.05.003>
- Lerner, R., & Steinberg, L. (2004). Handbook of Adolescent Psychology. In *Handbook of Adolescent Psychology*. John Wiley & Sons, Inc., Hoboken, New Jersey.
<https://doi.org/10.1002/9780471726746>
- Lester, S., Lawrence, C., & Ward, C. L. (2017). What do we know about preventing school violence? A systematic review of systematic reviews. *Psychology, Health & Medicine, 22*(1), 187–223.
https://open.uct.ac.za/bitstream/handle/11427/15615/thesis_com_2015_lester_soraya_natalie_2.pdf?sequence=1&isAllowed=y
- Lester, S. N. (2015). *Evaluation of the Parent Centre's positive parenting skills training programme: a randomised controlled trial* [University of Cape Town].
https://open.uct.ac.za/bitstream/handle/11427/15615/thesis_com_2015_lester_soraya_natalie_2.pdf?sequence=1&isAllowed=y
- Lindsay, G., Strand, S., Cullen, A., Cullen, S., Davis, H., Conlon, G., Barlow, J., & Evans, R. (2011). *Parenting Early Intervention Programme Evaluation. 121, 174*.
- Little, T. D. (2013). *Longitudinal structural equation modeling*. Guilford Press.
- Lobo, A., Pérez-Echeverría, M. J., & Artal, J. (1986). Validity of the scaled version of the General Health Questionnaire (GHQ-28) in a Spanish population. *Psychological Medicine, 16*(01), 135–140. <https://doi.org/10.1017/S0033291700002579>
- Lucente, S. W., Fals-Stewart, W., Richards, H. J., & Goscha, J. (2001). Factor structure and reliability of the Revised Conflict Tactics Scales for incarcerated female substance abusers.

Journal of Family Violence, 16(4), 437–450. <https://doi.org/10.1023/A:1012281027999>

Mailovich, C. (2017). *Reasonable chastisement of children declared unconstitutional*.

<https://www.businesslive.co.za/bd/national/2017-10-19-reasonable-chastisement-of-children-declared-unconstitutional/>

McEachern, A. D., Dishion, T. J., Weaver, C. M., Shaw, D. S., Wilson, M. N., & Gardner, F. (2012). Parenting Young Children (PARYC): Validation of a self-report parenting measure. *Journal of Child and Family Studies*, 21(3), 498–511. <https://doi.org/10.1007/s10826-011-9503-y>

McGilloway, S., Mhaille, G. N., Bywater, T., Furlong, M., Leckey, Y., Kelly, P., Comiskey, C., & Donnelly, M. (2012). A parenting intervention for childhood behavioral problems: A randomized controlled trial in disadvantaged community-based settings. *Journal of Consulting and Clinical Psychology*, 80(1), 116–127. <https://doi.org/10.1037/a0026304>

McGilloway, S., NiMhaille, G., Bywater, T., Leckey, Y., Kelly, P., Furlong, M., Comiskey, C., O'Neill, D., & Donnelly, M. (2014). Reducing child conduct disordered behaviour and improving parent mental health in disadvantaged families: a 12-month follow-up and cost analysis of a parenting intervention. *European Child and Adolescent Psychiatry*, 23(9), 783–794. <https://doi.org/10.1007/s00787-013-0499-2>

McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, 415–444.

Meade, a W., Johnson, E. C., & Braddy, P. W. (2006). The utility of alternative fit indices in test of measurement invariance. *Annual Academy of Management Conference Atlanta GA*.

[http://www4.ncsu.edu/~awmeade/Links/Papers/AFIsMI\(AoM06\).pdf](http://www4.ncsu.edu/~awmeade/Links/Papers/AFIsMI(AoM06).pdf)

Meade, A. W., & Kroustalis, C. M. (2005). Problems of item parceling with CFA: Test of measurement invariance. In *20th Annual Conference of the Society for Industrial and Organizational Psychology* (pp. 1–14). <https://doi.org/10.1177/1094428105283384>

Mercken, L., Snijders, T. A. B., Steglich, C., Vartiainen, E., & de Vries, H. (2010). Dynamics of adolescent friendship networks and smoking behavior. *Social Networks*, 32(1), 72–81. <https://doi.org/10.1016/j.socnet.2009.02.005>

Mercken, Liesbeth, Snijders, T. A. B., Steglich, C., Vertiainen, E., & De Vries, H. (2010). Smoking-based selection and influence in gender-segregated friendship networks: A social network analysis of adolescent smoking. *Addiction*, 105(7), 1280–1289. <https://doi.org/10.1111/j.1360-0443.2010.02930.x>

Mercy, J. A., Butchart, A., Rosenberg, M. L., Dahlberg, L., & Harvey, A. (2008). Preventing violence in developing countries: a framework for action. *International Journal of Injury Control and Safety Promotion*, 15(4), 197–208. <https://doi.org/10.1080/17457300802406955>

- Mesman, J., Bongers, I. L., & Koot, H. M. (2001). Preschool developmental pathways to preadolescent internalizing and externalizing problems. *The Journal of Child Psychology and Psychiatry and Allied Disciplines*, *42*(5), 679–689. <https://www.ncbi.nlm.nih.gov/pubmed/11464972>
- Mikton, C., & Butchart, A. (2009). Child maltreatment prevention: A systematic review of reviews. *Bulletin of the World Health Organization*, *87*(5), 353–361. <https://doi.org/10.2471/BLT.08.057075>
- Modiko, P., Ngcobo, W., Tshivhase, T., Raselavhe, R., SurrIDGE, T., & Beck, B. (2014). The unique challenges for CCS public engagement in south africa. *Energy Procedia*, *63*, 7047–7052. <https://doi.org/10.1016/j.egypro.2014.11.738>
- Molloy, L. E., Gest, S. D., & Rulison, K. L. (2010). Peer influences on academic motivation: Exploring multiple methods of assessing youths' most influential peer relationships. *The Journal of Early Adolescence*, *31*(13), 1–38. <https://doi.org/10.1177/0272431610384487>
- Morelli, G., Quinn, N., Chaudhary, N., Vicedo, M., Rosabal-Coto, M., Keller, H., Murray, M., Gottlieb, A., Scheidecker, G., & Takada, A. (2018). Ethical challenges of parenting interventions in low- to middle-income countries. *Journal of Cross-Cultural Psychology*, *49*(1), 5–24. <https://doi.org/10.1177/0022022117746241>
- Morey, R. D., & Rouder, J. N. (2018). *BayseFactor: computation of bayes factors for common designs*.
- Morrison, J., Pikhart, H., Ruiz, M., & Goldblatt, P. (2014). Systematic review of parenting interventions in European countries aiming to reduce social inequalities in children's health and development. *BMC Public Health*, *14*(1). <https://doi.org/10.1186/1471-2458-14-1040>
- Navarro, D. J., Newell, B. R., & Schulze, C. (2016). Learning and choosing in an uncertain world: An investigation of the explore-exploit dilemma in static and dynamic environments. *Cognitive Psychology*, *85*, 43–77. <https://doi.org/10.1016/j.cogpsych.2016.01.001>
- Nesselroade, J. R., Stigler, S. M., & Baltes, P. B. (1980). Regression toward the mean and the study of change. *Psychological Bulletin*, *88*(3), 622–637. <https://doi.org/10.1037/0033-2909.88.3.622>
- Newton, R. R., Connelly, C. D., & Landsverk, J. A. (2001). An examination of measurement characteristics and factorial validity of the Revised Conflict Tactics Scale. *Educational and Psychological Measurement*, *61*(2), 317–335. <https://doi.org/10.1136/bmjopen-2013-003638>
- Nöthling, J., Martin, C. L., Laughton, B., Cotton, M. F., & Seedat, S. (2013). Maternal post-traumatic stress disorder, depression and alcohol dependence and child behaviour outcomes in mother-child dyads infected with HIV: a longitudinal study. *BMJ Open*, *3*(12), 1–10. <https://doi.org/10.1177/00131640121971130>

- Nøvik, T. S. (1999). Validity of the Child Behaviour Checklist in a Norwegian sample. *European Child & Adolescent Psychiatry*, 8(4), 247–254. <https://doi.org/10.1007/s007870050098>
- Opsahl, T., Agneessens, F., & Skvoretz, J. (2010). Node centrality in weighted networks: Generalizing degree and shortest paths. *Social Networks*, 32(3), 245–251. <https://doi.org/10.1016/j.socnet.2010.03.006>
- Paluck, E. L. (2011). Peer pressure against prejudice: A high school field experiment examining social network change. *Journal of Experimental Social Psychology*, 47(2), 350–358. <https://doi.org/10.1016/j.jesp.2010.11.017>
- Paluck, E. L., Shepherd, H., & Aronow, P. M. (2016). Changing climates of conflict: A social network experiment in 56 schools. *Proceedings of the National Academy of Sciences*, 113(3), 566–571. <https://doi.org/10.1073/pnas.1514483113>
- Paluck, E. L., & Shepherd, H. S. (2012). The salience of social referents: A field experiment on collective norms and harassment behavior in a school social network. *Journal of Personality and Social Psychology*, 103(6), 899–915. <https://doi.org/10.1037/a0030015>
- Parker, W. (2010). AIDS, rhetoric, and the silence of lived experience: Reflections on the South African experience. *African Journal of Rhetoric : Rhetoric in the Time of AIDS - African Perspectives*, 2(1), 215–221. http://reference.sabinet.co.za/nwulib.nwu.ac.za/webx/access/electronic_journals/aar_rhetoric/aar_rhetoric_v2_a12.pdf
- Parker, W. M. (1997). Action media : Consultation, collaboration and empowerment in health promotion. *African Media Review*, 11(6), 1–8. <http://digital.lib.msu.edu/projects/africanjournals/>
- Parker, W. M. (2003). Re-appraising youth prevention in South Africa: The case of loveLife. *South African AIDS Conference, August 2003, August*, 1–18. http://www.aidstar-one.com/sites/default/files/g3p_documents/89/lovelife-South-African-AIDS-Conference-Presentation.pdf
- Parker, W. M., & Becker-Benton, A. (2016). Experiences in conducting participatory communication research for HIV prevention globally: Translating critical dialog into action through action media. *Frontiers in Public Health*, 4(6), 1–10. <https://doi.org/10.3389/fpubh.2016.00128>
- Patterson, J. M. (2002). Understanding family resilience. *Journal of Clinical Psychology*, 58(3), 233–246. <https://doi.org/10.1002/jclp.10019>
- Peltzer, K., Parker, W. M., Mabaso, M., Makonko, E., Zuma, K., & Ramlagan, S. (2012). Impact of national HIV and AIDS communication campaigns in South Africa to reduce HIV risk behaviour. *The Scientific World Journal*, 10(2), 1–6. <https://doi.org/10.1100/2012/384608>

- Perrin, J. M., Lu, M. C., Geller, A., & DeVoe, J. E. (2020). Vibrant and healthy kids: Aligning science, practice, and policy to advance health equity. *Academic Pediatrics, 20*(2), 160–162. https://www.researchgate.net/profile/James_Perrin6/publication/337949523_Vibrant_and_Healthy_Kids_Aligning_Science_Practice_and_Policy_to_Advance_Health_Equity_A_Report_from_the_National_Academies_of_Science_Engineering_and_Medicine/links/5eeaa77b92851ce9
- Piquero, A. R., Jennings, W. G., Diamond, B., Farrington, D. P., Tremblay, R. E., Welsh, B. C., & Gonzalez, J. M. R. (2016). A meta-analysis update on the effects of early family/parent training programs on antisocial behavior and delinquency. *Journal of Experimental Criminology, 12*(2), 229–248. <https://doi.org/10.1007/s11292-016-9256-0>
- Popp, D., Laursen, B., Kerr, M., Stattin, H., & Burk, W. K. (2008). Modeling homophily over time with an actor-partner interdependence model. *Developmental Psychology, 44*(4), 1028.
- Power and Sample Size Calculators | HyLown.* (n.d.). Retrieved May 4, 2018, from <http://powerandsamplesize.com/Calculators/>
- Preciado, P., Snijders, T. A. B., Burk, W. J., Stattin, H., & Kerr, M. (2012). Does proximity matter? Distance dependence of adolescent friendships. *Social Networks, 34*(1), 18–31. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4268773/pdf/nihms628618.pdf>
- Preston, N., Lester, S., & Ward, C. L. (2014). *Do contextual stressors affect parenting behaviours and child aggression in South African townships?* [University of Cape Town]. http://www.psychology.uct.ac.za/sites/default/files/image_tool/images/117/Soraya.Lester.pdf
- Prinz, R. J., Sanders, M. R., Shapiro, C. J., Whitaker, D. J., & Lutzker, J. R. (2009). Population-based prevention of child maltreatment: the U.S. Triple-P system population trial. *Prevention Science, 10*(1), 1–12. <https://doi.org/10.1007/s11121-009-0123-3>
- Prochaska, J. O., Norcross, J. C., & DiClemente, C. C. (2015). Applying the stages of change. *Psychologists' Desk Reference, 19*(2), 177–181. <https://doi.org/10.1093/med:psych/9780199845491.003.0034>
- Provençal, N., & Binder, E. B. (2015). The effects of early life stress on the epigenome: From the womb to adulthood and even before. *Experimental Neurology, 268*, 10–20. <https://doi.org/10.1016/j.expneurol.2014.09.001>
- RCore Team. (2013). *R: a language and environment for statistical computing.* R Foundation for Statistical Computing, Vienna.
- Reitman, D., Currier, R. O., & Stickle, T. R. (2002). A critical evaluation of the Parenting Stress Index-Short Form (PSI-SF) in a Head Start population. *Journal of Clinical Child and Adolescent Psychology, 31*(3), 384–392. <https://www.ncbi.nlm.nih.gov/pubmed/12149976>
- Reynolds, L. J. (2014). “Low-hanging fruit”: Counting and accounting for children in PEPFAR-funded HIV/AIDS programmes in South Africa. *Global Public Health, 9*(1–2), 124–143.

<https://doi.org/10.1080/17441692.2013.879670>

- Ripley, R. M., Snijders, T. A. B., & Preciado, P. (2015). Manual for RSiena. *University of Oxford; Department of Statistics; Nuffield College., 2007*, Retrieved online May 2015.
http://www.stats.ox.ac.uk/~snijders/siena/RSiena_Manual.pdf
- Ripley, R., Snijders, T. A. B., Boda, Z., Vörös, A., & Preciado, P. (2011). Manual for RSiena. In *University of Oxford; Department of Statistics; Nuffield College.* (pp. 1–231).
http://www.stats.ox.ac.uk/~snijders/siena/RSiena_Manual.pdf
- Rockers, P. C., Røttingen, J. A., Shemilt, I., Tugwell, P., & Bärnighausen, T. (2015). Inclusion of quasi-experimental studies in systematic reviews of health systems research. *Health Policy, 119*(4), 511–521. <https://doi.org/10.1016/j.healthpol.2014.10.006>
- Rosseel, Y. (2012). lavaan: an R package for structural equation modeling and more. *Journal of Statistical Software, 48*(2), 1–22. <https://doi.org/10.18637/jss.v048.i02>
- Rouder, J. N., Morey, R. D., Speckman, P. L., & Province, J. M. (2012). Default Bayes factors for ANOVA designs. *Journal of Mathematical Psychology, 56*(5), 356–374.
<https://doi.org/10.1016/j.jmp.2012.08.001>
- Rubio-Stipeć, M., Bird, H., Canino, G., & Gould, M. (1990). The internal consistency and concurrent validity of a Spanish translation of the Child Behavior Checklist. *Journal of Abnormal Child Psychology, 18*(4), 393–406. https://www.researchgate.net/scientific-contributions/2077243292_Maritza_Rubio_Stipeć
- Rubio Valladolid, G., Martínez Raga, J., Martínez Gras, I., Ponce Alfaro, G., de la Cruz Bértolo, J., Jurado Barba, R., Sánchez Junco, A. R., & Zarco Montejo, J. (2014). Validation of the Spanish version of the alcohol, smoking and substance involvement screening test (ASSIST). *Psicothema, 26*(2).
- Ryan, A. M. (2001). The peer group as a context for the development of young adolescent motivation and achievement. *Child Development, 72*(4), 1135–1150.
<http://onlinelibrary.wiley.com/doi/10.1111/1467-8624.00338/abstract>
- Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science, 277*(5328), 918–924.
<http://science.sciencemag.org/content/277/5328/918.long>
- Sanders, M. R. (2008). Triple P-Positive Parenting Program as a public health approach to strengthening parenting. *Journal of Family Psychology, 22*(4), 506–517.
<https://doi.org/10.1037/0893-3200.22.3.506>
- Sanders, M. R., Burke, K., Prinz, R. J., & Morawska, A. (2017). Achieving population-level change through a system-contextual approach to supporting competent parenting. *Clinical Child and Family Psychology Review, 20*(1), 36–44. <https://doi.org/10.1007/s10567-017-0227-4>

- Schaefer, D. R., Adams, J., & Haas, S. A. (2013). Social networks and smoking: Exploring the effects of peer influence and smoker popularity through simulations. *Health Education and Behavior, 40*(1), 1–15. <https://doi.org/10.1177/1090198113493091>
- Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online, 8*(2), 23–74. <https://doi.org/10.1002/0470010940>
- Schnitz, N., Kruse, J., & Tress, W. (1999). Psychometric properties of the General Health Questionnaire (GHQ-12) in a German primary care sample. *Acta Psychiatrica Scandinavica, 100*(6), 462–468. <https://doi.org/10.1111/j.1600-0447.1999.tb10898.x>
- Scott, S., Briskman, J., & Dadds, M. R. (2011). Measuring parenting in community and public health research using brief child and parent reports. *Journal of Child and Family Studies, 20*(3), 343–352. <https://doi.org/10.1007/s10826-010-9398-z>
- Scott, S., Sylva, K., Doolan, M., Price, J., Jacobs, B., Crook, C., & Landau, S. (2010). Randomised controlled trial of parent groups for child antisocial behaviour targeting multiple risk factors: The SPOKES project. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 51*(1), 48–57. <https://doi.org/10.1111/j.1469-7610.2009.02127.x>
- Serpell, R., & Marfo, K. (2014). Some growth points in African child development research. *New Directions for Child and Adolescent Development, 2014*(146), 97–112. <https://doi.org/10.1002/cad.20075>
- Shelton, K. K., Frick, P. J., & Wootton, J. (1996). Assessment of parenting practices in families of elementary school-age children. *Journal of Clinical Child Psychology, 25*(3), 317–329. https://doi.org/10.1207/s15374424jccp2503_8
- Shisana, O., Rehle, T., Simbayi, L., Zuma, K., Jooste, S., Pillay-van-Wky, V., Mbelle, N., Van Zyl, J., Parker, W., Zungu, N., Pezi, S., & the SABSSM III Implementation Team. (2008). South African national HIV prevalence, incidence, behaviour and communication survey, 2008: a turning tide among teenagers? In *HSRC Press*. <http://journal.frontiersin.org/Article/10.3389/fpubh.2016.00128/abstract>
- Shoham, D. A., Hammond, R., Rahmandad, H., Wang, Y., & Hovmand, P. (2015). Modeling social norms and social influence in obesity. *Current Epidemiology Reports, 2*(1), 71–79. <https://doi.org/10.1007/s40471-014-0032-2>
- Shonkoff, J. P. (2017). Rethinking the definition of evidence-based interventions to promote early childhood development. *Pediatrics, 140*(6), 1–2. <https://doi.org/10.1542/peds.2017-3136>
- Silovsky, J. F., & Niec, L. (2002). Characteristics of young children with sexual behavior problems: A pilot study. *Child Maltreatment, 7*(3), 187–197. <https://doi.org/10.1111/j.1600-0447.1999.tb10898>

- Simmel, G. (2010). *Conflict and the web of group affiliations*. Simon and Schuster.
- Simons, H., Kushner, S., Jones, K., & James, D. (2003). From evidence-based practice to practice-based evidence: The idea of situated generalisation. *Research Papers in Education*, 18(4), 347–364. <https://doi.org/10.1080/0267152032000176855>
- Smith, T. B., Oliver, M. N. I., & Innocenti, M. S. (2001). Parenting stress in families of children with disabilities. *American Journal of Orthopsychiatry*, 71(2), 1–257. <https://scholarsarchive.byu.edu/cgi/viewcontent.cgi?article=3025&context=facpub>
- Snijders, T. A. B. (2009). Longitudinal Methods of Network Analysis. In *Encyclopedia of Complexity and System Science* (pp. 5998–6013). https://www.stats.ox.ac.uk/~snijders/siena/Longi_Net.pdf
- Snijders, T. A. B. (2011). Statistical models for social networks. *Annual Review of Sociology*, 37, 131–153. <https://doi.org/10.1146/annurev.soc.012809.102709>
- Snijders, T. A. B., van de Bunt, G. G., & Steglich, C. E. G. (2010). Introduction to stochastic actor-based models for network dynamics. *Social Networks*, 32(1), 44–60. <https://doi.org/10.1016/j.socnet.2009.02.004>
- Sokol, B. W., Chandler, M. J., & Jones, C. (2004). From mechanical to autonomous agency: The relationship between children's moral judgments and their developing theories of mind. *New Directions for Child and Adolescent Development*, 2004(103), 19–36. https://onlinelibrary.wiley.com/doi/pdf/10.1002/cd.95?casa_token=3069LPxTK68AAAAA:dELbVKPaRKA7Ng7BOJ3v-C1cZyKT99rNEoTPGjvalMdUr0JoEwuB8IkpUly_hCaNfJ0Gz2Q8tDr8kmtl
- Sorsdahl, K., Myers, B., Ward, C. L., Matzopoulos, R., Mtukushe, B., Nicol, A., Cuijpers, P., & Stein, D. J. (2015). Adapting a blended motivational interviewing and problem-solving intervention to address risky substance use amongst South Africans. *Psychotherapy Research*, 25(4), 435–444. <https://doi.org/10.1080/10503307.2014.897770>
- South African Schools Act. (1996). South African Schools Act No. 84 of 1996. In *Government Gazette* (Vol. 377). Government Printer. https://www.gov.za/sites/default/files/gcis_document/201409/act84of1996.pdf
- Sriram, T. G., Chandrashekar, C. R., Isaac, M. K., & Shanmugham, V. (1989). The General Health Questionnaire (GHQ) - Comparison of the English version and a translated Indian version. *Social Psychiatry and Psychiatric Epidemiology*, 24(6), 317–320. <https://doi.org/10.1007/BF01788035>
- Statistics South Africa. (2018). General Household Survey. In *Statistics South Africa* (Issue May). www.statssa.gov.za/info@statssa.gov.za
- Steglich, C., Sinclair, P., Holliday, J., & Moore, L. (2012). Actor-based analysis of peer influence in

- A Stop Smoking In Schools Trial (ASSIST). *Social Networks*, 34(3), 359–369.
<https://doi.org/10.1016/j.socnet.2010.07.001>
- Steglich, C., Snijders, T. A. B., & Pearson, M. (2010). Dynamic networks and behavior: Separating selection from influence. *Sociological Methodology*, 40(1), 329–393.
<http://journals.sagepub.com.ezproxy.uct.ac.za/doi/pdf/10.1111/j.1467-9531.2010.01225.x>
- Straus, M A, Hamby, S. L., Boney-McCoy, S., & Sugarman, D. B. (1996). The Revised Conflict Tactics Scales (CTS2): Development and preliminary psychometric data. *Journal of Family Issues*, 17(6), 283–316. <https://doi.org/10.1177/019251396017003001>
- Straus, Murray A., & Mickey, E. L. (2012). Reliability, validity, and prevalence of partner violence measured by the conflict tactics scales in male-dominant nations. *Aggression and Violent Behavior*, 17(5), 463–474. <https://doi.org/10.1016/j.avb.2012.06.004>
- Street, A. E., Gibson, L. E., & Holohan, D. R. (2005). Impact of childhood traumatic events, trauma-related guilt, and avoidant coping strategies on PTSD symptoms in female survivors of domestic violence. *Journal of Traumatic Stress*, 18(3), 245–252.
<https://doi.org/10.1002/jts.20026>
- Swann, W. B., Jetten, J., Gómez, Á., Whitehouse, H., & Bastian, B. (2012). When group membership gets personal: A theory of identity fusion. *Psychological Review*, 119(3), 441–456. <https://doi.org/10.1037/a0028589>
- Swart, L. A., Stevens, M. S. G., & Ricardo, I. (2002). Violence in adolescents' romantic relationships: Findings from a survey amongst school-going youth in a South African community. *Journal of Adolescence*, 25(4), 385–395. <https://doi.org/10.1006/jado.2002.0483>
- Tseng, V., & Seidman, E. (2007). A systems framework for understanding social settings. *American Journal of Community Psychology*, 39(3–4), 217–228. <https://doi.org/10.1007/s10464-007-9101-8>
- Valente, T. W. (1996). Social network thresholds in the diffusion of innovations. *Social Networks*, 18(1), 69–89. [https://doi.org/10.1016/0378-8733\(95\)00256-1](https://doi.org/10.1016/0378-8733(95)00256-1)
- Valente, T. W. (2016). Network models and methods for studying the diffusion of innovations. *Models and Methods in Social Network Analysis*, 98–116.
<https://doi.org/10.1017/CBO9780511811395.006>
- Valente, T. W. (2017). Putting the network in network interventions. *Proceedings of the National Academy of Sciences*, 114(36), 9500–9501. <https://doi.org/10.1073/pnas.1712473114>
- Valente, T. W., Carrington, P. J., Scott, J., & Wasserman, S. (2005). *Network Models and Methods for Studying the Diffusion of Innovations*. 98–116.
<https://doi.org/10.1017/cbo9780511811395.006>
- Valente, T. W., Gallaher, P., & Mouttapa, M. (2004). Using social networks to understand and

- prevent substance use: A transdisciplinary perspective. *Substance Use and Misuse*, 39(10–12), 1685–1712. <https://doi.org/10.1081/JA-200033210>
- Valente, T. W., & Pumpuang, P. (2007). Identifying opinion leaders to promote behavior change. *Health Education and Behavior*, 34(6), 881–896. <https://doi.org/10.1177/1090198106297855>
- Valente, T. W., Watkins, S. C., Jato, M. N., Van Der Straten, A., & Tsitsol, L. P. M. (1997). Social network associations with contraceptive use among Cameroonian women in voluntary associations. *Social Science and Medicine*, 45(5), 677–687. [https://doi.org/10.1016/S0277-9536\(96\)00385-1](https://doi.org/10.1016/S0277-9536(96)00385-1)
- Vally, Z., Murray, L., Tomlinson, M., & Cooper, P. J. (2015). The impact of dialogic book-sharing training on infant language and attention: a randomized controlled trial in a deprived South African community. *Journal of Child Psychology and Psychiatry*, 56(8), 865–873. <https://doi.org/10.1111/jcpp.12352>
- van Aar, J., Leijten, P., Orobio de Castro, B., & Overbeek, G. (2017). Sustained, fade-out or sleeper effects? A systematic review and meta-analysis of parenting interventions for disruptive child behavior. *Clinical Psychology Review*, 51, 153–163. <https://doi.org/10.1016/j.cpr.2016.11.006>
- van de Mortel, T. F. (2008). Faking it: Social desirability response bias in self-report research report research. *Australian Journal of Advanced Nursing*, 25(4), 40–48. https://doi.org/http://www.ajan.com.au/ajan_25.4.htm
- van der Westhuizen, C., Wyatt, G., Williams, J. K., Stein, D. J., & Sorsdahl, K. (2016). Validation of the Alcohol, Smoking and Substance Involvement Screening Test in a low-and middle-income country cross-sectional emergency centre study. *Drug and Alcohol Review*, 35(6), 702–709. <https://doi.org/10.1111/dar.12424>
- Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods*, 3(1), 4–70. <https://doi.org/10.1177/109442810031002>
- Veenstra, R., Dijkstra, J. K., & Kreager, D. A. (2018). Pathways, networks, and norms. A sociological perspective on peer research. In *Handbook of peer interactions, relationships, and groups* (pp. 45–63). The Guilford Press. <https://doi.org/10.1017/CBO9781107415324.004>
- Veenstra, R., Dijkstra, J. K., Steglich, C., & Van Zalk, M. H. W. (2013). Network-behavior dynamics. *Journal of Research on Adolescence*, 23(3), 399–412. <https://doi.org/10.1111/jora.12070>
- Venkatramanan, S., & Kumar, A. (2011). Information dissemination in socially aware networks under the linear threshold model. In *National Conference on Communications, NCC 2011* (pp. 1–5). <https://doi.org/10.1109/NCC.2011.5734787>
- Veriava, F., Thom, A., & Hodgson, T. F. (2017). Corporal Punishment. In *Basic Education Rights*

Handbook – Education Rights in South Africa (pp. 330–351). <http://section27.org.za/wp-content/uploads/2017/02/Chapter-19.pdf>

- Vidmar, S., Carlin, J., Hesketh, K., & Cole, T. (2004). Standardizing anthropometric measures in children and adolescents with new functions for egen. *The Stata Journal*, 4(1), 50–55. <https://doi.org/10.1177/1536867X1301300211>
- Ville, A. S. Saint, Hickey, G. M., & Phillip, L. E. (2005). *Using social network analysis to understand how social capital influences knowledge flows in rural communities* (pp. 1–6). https://www.mcgill.ca/globalfoodsecurity/files/globalfoodsecurity/2013_socialnetworkanal.pdf
- Waisbren, S. E., Ronen, M., Read, C. Y., Marsden, D., & Levy, H. L. (2004). Brief report: Predictors of parenting stress among parents of children with biochemical genetic disorders. *Journal of Pediatric Psychology*, 29(7), 565–570. <https://doi.org/10.1093/jpepsy/jsh058>
- Wakefield, M. A., Loken, B., & Hornik, R. C. (2010). Use of mass media campaigns to change health behaviour. *Lancet (London, England)*, 376(9748), 1261–1271. [https://doi.org/10.1016/S0140-6736\(10\)60809-4](https://doi.org/10.1016/S0140-6736(10)60809-4)
- Wang, J. (2014). Unpacking the Matthew effect in citations. *Journal of Informetrics*, 8(2), 329–339. <https://doi.org/10.1016/J.JOI.2014.01.006>
- Wang, Y., & Chen, H.-J. (2012). Use of percentiles and z-scores in Anthropometry. In *Handbook of Anthropometry: Physical Measures of Human Form in Health and Disease* (pp. 29–48). Springer. <https://doi.org/10.1007/978-1-4419-1788-1>
- Ward, C. L., Gould, C., Kelly, J., & Mauff, K. (2015). Spare the rod and save the child assessing the impact of parenting on child behaviour and mental health. *SA Crime Quarterly*, 51, 9–22. <https://doi.org/10.4314/sacq.v51i1.2>
- Ward, C. L., Mertens, J. R., Flisher, A. J., Bresick, G. F., Sterling, S. A., Little, F., & Weisner, C. M. (2008). Prevalence and correlates of substance use among South African primary care clinic patients. *Substance Use & Misuse*, 43(10), 1395–1410. <https://doi.org/10.1080/10826080801922744>
- Ward, C. L., Wessels, I. M., Lachman, J. M., Hutchings, J., Cluver, L. D., Kassanjee, R., Nhapi, R., Little, F., & Gardner, F. (2019). Parenting for Lifelong Health for young children: a randomized controlled trial of a parenting program in South Africa to prevent harsh parenting and child conduct problems. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 9. <https://doi.org/10.1111/jcpp.13129>
- Ward, C., Sanders, M. R., Gardner, F., Mikton, C., & Dawes, A. (2016). Preventing child maltreatment in low- and middle-income countries. Parent support programs have the potential to buffer the effects of poverty. *Child Abuse and Neglect*, 54, 97–107. <https://doi.org/10.1016/j.chiabu.2015.11.002> LK -

<http://vb3lk7eb4t.search.serialssolutions.com?sid=EMBASE&issn=18737757&id=doi:10.1016%2Fj.chiabu.2015.11.002&atitle=Preventing+child+maltreatment+in+low-+and+middle-income+countries.+Parent+support+programs+have+the+potential+to+buffer+the+effects+of+poverty&stitle=Child+Abuse+Negl.&title=Child+Abuse+and+Neglect&volume=54&issue=&spage=97&epage=107&aulast=Ward&aufirst=Catherine&aunit=C.&aufull=Ward+C.&coden=CABND&isbn=&pages=97-107&date=2016&aunit1=C&aunitm=>

Wasserman, S., & Faust, K. (1994). *Social network analysis: Methods and applications*. Cambridge University Press, 1(2), 1–116. <https://doi.org/10.1525/ae.1997.24.1.219>

Waters, H., Hyder, A., Rajkotia, Y., Basu, S., Rehwinkel, J., & Butchart, A. (2004). The economic dimensions of interpersonal violence. In *World Health Organization*.

<http://whqlibdoc.who.int/publications/2004/9241591609.pdf>

Webster-Stratton, C., & Reid, M. (2010). Adapting The Incredible Years, an evidence-based parenting programme, for families involved in the child welfare system. *Journal of Children's Services*, 5(1), 25–42. <https://doi.org/10.5042/jcs.2010.0115>

Whittingham, K., Sofronoff, K., Sheffield, J., & Sanders, M. R. (2009). Stepping stones Triple P: An rct of a parenting program with parents of a child diagnosed with an autism spectrum disorder. *Journal of Abnormal Child Psychology*, 37(4), 469–480.

<https://doi.org/10.1007/s10802-008-9285-x>

WHO. (2016). INSPIRE seven strategies for ending violence against children. In *World Health Organization*. <http://apps.who.int/iris/bitstream/handle/10665/207717/9789241565356-eng.pdf>

WHO ASSIST Working Group. (2002). The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST): Development, reliability and feasibility. *Addiction*, 97(9), 1183–1194. <https://doi.org/10.1046/j.1360-0443.2002.00185.x>

Wolfe, R. B., & Hirsch, B. J. (2003). Outcomes of parent education programs based on reevaluation counseling. *Journal of Child and Family Studies*, 12(1), 61–76.

<https://doi.org/10.1023/A:1021358109562>

Wölfer, R., & Scheithauer, H. (2014). Social influence and bullying behavior: Intervention-based network dynamics of the fairplayer.manual bullying prevention program. *Aggressive Behaviour*, 40(4), 309–319. <https://doi.org/10.1002/ab.21524>

Wölfer, Ralf, Cortina, K. S., & Baumert, J. (2012). Embeddedness and empathy: How the social network shapes adolescents' social understanding. *Journal of Adolescence*, 35(5), 1295–1305. <https://doi.org/10.1016/j.adolescence.2012.04.015>

Wölfer, Ralf, Faber, N. S., & Hewstone, M. (2015). Social network analysis in the science of groups: Cross-sectional and longitudinal applications for studying intra- and intergroup behavior. *Group Dynamics: Theory, Research, and Practice*, 19(1), 45–61.

<https://doi.org/10.1037/gdn0000021>

- Wölfer, Ralf, Schultze-Krumbholz, A., Zagorscak, P., Jäkel, A., Göbel, K., & Scheithauer, H. (2014). Prevention 2.0: targeting cyberbullying @ school. *Prevention Science, 15*(6), 879–887. <https://doi.org/10.1007/s11121-013-0438-y>
- World Health Organization. (2004). *The importance of caregiver-child interactions for the survival and healthy development of young children* (pp. 1–57). <https://apps.who.int/iris/bitstream/handle/10665/42878/924159134X.pdf>
- Wrzus, C., Hänel, M., Wagner, J., & Neyer, F. J. (2013). Social network changes and life events across the life span: A meta-analysis. *Psychological Bulletin, 139*(1), 53–80. <https://doi.org/10.1037/a0028601>
- Wu, W., West, S. G., & Taylor, A. B. (2009). Evaluating Model Fit for Growth Curve Models: Integration of Fit Indices From SEM and MLM Frameworks. *Psychological Methods, 14*(3), 183–201. <https://doi.org/10.1037/a0015858>
- Yamin, P., Fei, M., Lahlou, S., & Levy, S. (2019). Using social norms to change behavior and increase sustainability in the real world: A systematic review of the literature. *Sustainability (Switzerland), 11*(20). <https://doi.org/10.3390/su11205847>
- YG v The State Case No. A263/2016., (2016). <http://www1.saflii.org/za/cases/ZAGPJHC/2017/290.pdf>
- Yu, M., & Kim, K. E. (2016). A structural equation model for parenting stress in mothers of premature infants. *Journal of Child and Family Studies, 25*(4), 1334–1344. <https://doi.org/10.1007/s10826-015-0297-1>

7


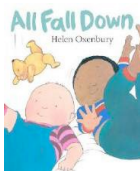
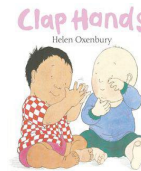
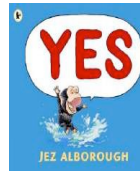
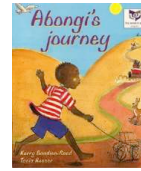
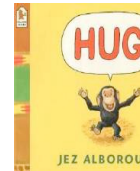
Appendices

7.1 Appendix A: Overview of Book Sharing and Thula Sana

7.1.1 Book Sharing Parenting Programme

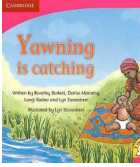
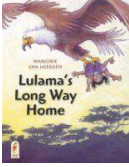
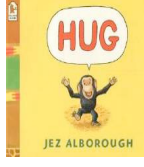
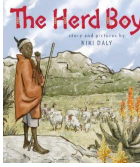
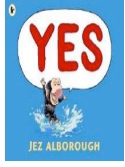
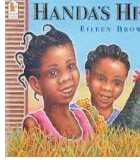
Separate book-sharing programmes for caregivers with younger children (ages 12-30 months) and for caregivers with older children (31-60 months) have been developed in order to speak to the different developmental needs of children of different ages. For both the younger children group and the older children group, there are eight sessions, with a new book of the week each week. The aim of the eight sessions is to provide caregivers with the skills to practise quality book-sharing with their infants or toddlers. Sensitive and reciprocal book sharing is effective in cognitive and language development (Cooper & Murray, 2015).

Book-sharing with younger children: trainer’s manual

SESSION 1	SESSION 2	SESSION 3	SESSION 4	SESSION 5	SESSION 6	SESSION 7	SESSION 8
Intro to Book-Sharing (Part 1)	Intro to Book-Sharing (Part 2)	Pointing and Naming	More Pointing and Naming	Making Links	Talking about Feelings	Summary	Review
						Child may choose favourite book.	

Note: Eight Book-Sharing Sessions (one 60 min session per week for eight weeks).

Book-sharing with older children: trainer’s manual

SESSION 1	SESSION 2	SESSION 3	SESSION 4	SESSION 5	SESSION 6	SESSION 7	SESSION 8
Intro to Book-Sharing	Naming and Linking	Talking about Feelings	Talking about Intentions	Talking about Perspectives	Numeracy and Comparisons	Summary	Review
						Child may choose favourite book.	

Note: Eight Book-Sharing Sessions (one 60 min session per week for eight weeks).

Thula Sana programme to promote secure parent-infant relationship

Causal Pathway Targeted by Thula Sana (theory of change): The Thula Sana programme targets two areas. First, a supportive relationship is provided, beginning in late pregnancy and continuing for the first six months postpartum. This relationship will help mothers cope with the difficulties of early parenthood and be a buffer against the development of significant mood disturbance. Second, by making mothers aware of infant capacities and vulnerabilities, mothers will become better able to manage their infants, and more sensitive and less intrusive in their interactions with them. These interactions will promote better infant emotional regulation, which, in turn, will lead to more secure attachment later in life. The development of securely attached children is predicted by appropriately sensitive and responsive care. This is particularly relevant in relation to infant vulnerability and distress.

7.1.2 Thula Sana Programme (from birth – 6 months)

Session Curriculum (Duration: 60 minutes)	Goals	Actions
Antenatal Sessions: (2 sessions in late pregnancy)		
Antenatal Session 1	Establish contract, trust, and supportive relationship; learn about family circumstances and potential support systems.	Introduce the programme content and structure. Contracting for confidentiality. Discuss mother's pregnancy.
Antenatal Session 2	Tuning in to the mother, and exploring support structures and resources.	Discuss: mother's support structures, the labour and birth, employment, and the mother's partner/ baby's father.
Postpartum: (14 sessions from day three to six months)		
Postnatal Session 1 (Day 3)	Noting infant social responsiveness. Commenting on infant behaviour.	Discuss: the birth, the blues, feeding and relevant other concerns for the baby. Note and comment on infant social responsiveness, and infant behaviour. Focus on joys and disappointments associated with the birthing process.
Postnatal Session 2 (Day 6 – 10)	Provide mothers with support and by listening and reflecting on concerns. Help mothers with engagement difficulties. Promote caregivers' capacity to support their infant, especially in situations of vulnerability and distress.	Listen and reflect on any concerns the mother may raise. Full Behavioural and Interactive Assessment of the Baby (BAIB, Murray & Andrews, 2000), focusing on: Ability to shut out intrusive light and sound while asleep. Uncovering and undressing and placing in supine position. Ventral Suspension Crawling Defensive movements Crying and consolability. Cuddliness Non-social/Social interactive package Imitation, responsiveness and reciprocity Intrusiveness Rooting and sucking Discuss feeding and sleeping (help mother understand her baby's patterns, encourage mother to read baby's cues to help her devise interventions that facilitate the transition to sleep. Discuss reasons for crying (e.g., hunger, fatigue, over-stimulation, discomfort, loneliness); and methods to console baby (e.g., using face and/or voice, picking up and holding).

Session Curriculum (Duration: 60 minutes)	Goals	Actions
Postnatal Session 3 (Day 17 – 21)		Discuss wider concerns the mother might have at every session (discuss strategies to help make most effective use of resources).
Postnatal Session 4 (4 weeks)		Completion of Behavioural and Interactive Assessment of the Baby.
Postnatal Session 5 (5 weeks)		Discuss sleep, crying and consolability.
Postnatal Session 6 (6 weeks)		The Behavioural and Interactive Assessment of the Baby – only the social interactive package and imitation, responsiveness and reciprocity
Postnatal Session 7 (7 weeks)		Continue discussion on sleep, crying and consolability for the duration of the programme.
Postnatal Session 8 (8 weeks)		Referring to notes made in postnatal session 2.
Postnatal Session 9 (9 weeks)	The focus of sessions shifts substantially to encouraging social interactions between the mother/caregiver and the baby.	Highlight aspects of pre-speech.
Postnatal Sessions 10 – 15 (11, 13, 15, 17, 21, 25 weeks, respectively)	Promote caregivers' awareness and understanding of their infant's experience; and appreciation of their infant's 'social' nature. Create awareness of infant's motivation to engage and their importance to their infant.	Highlight baby's interest in the mother's face and eyes. Model face-to-face interactions with sensitive reciprocal exchanges using verbal and nonverbal conversations with the baby. Talk to the baby and reflect on his/her experiences. Help the mother position the baby for social interaction.

7.2 Appendix B: Ethical Approval

UNIVERSITY OF CAPE TOWN



Department of Psychology
Research Ethics Committee
Rondebosch, 7701
Tel: 27 21 6504607 Fax: 27 21 6504104
E-mail: Lauren.Wild@uct.ac.za

28 April 2016

REFERENCE NUMBER: PSY2016-003

Researcher Name: Lisa Kleyn

Researcher Address: Department of Psychology, University of Cape Town

Dear Ms Kleyn

PROJECT TITLE: Investigating the Longitudinal Spread of Social Influence via Social Network Analysis in a Parenting Intervention within a Rural South African Community

Thank you for your submission to the Department of Psychology Research Ethics Committee.

It is a pleasure to inform you that the Committee has **granted approval** for the amendments made to your original proposal.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please quote your REFERENCE NUMBER in all your correspondence.

Yours sincerely,

A handwritten signature in cursive script, appearing to read 'Lauren Wild', written in dark ink.

Associate Professor Lauren Wild
Acting Chair, Department of Psychology Research Ethics Committee

7.3 Appendix C: Household Report Form

Seven Passes Initiative Household Report Form

Fieldworker's name:

Date:

Time:

Erf number (from the map):

Name of participant:

Participant's phone number:

Household 1:

Name of one adult in that household:

Adult's phone number:

INTERVIEWER TO READ OUT: Now, I'd like to ask you a few questions about the people who live in your household.					Pregnancies	
3.1 Who lives in your house? Please list them all RESPONDENT FIRST!!	3.2 Relationship to the respondent 1 = Respondent 2 = Husband/Boyfriend 3 = Wife/Girlfriend 4 = Son 5 = Daughter 6 = Mother 7 = Father 8 = Stepmother 9 = Stepfather 10 = Sibling 11 = Step-sibling 12 = Grandparent 13 = Cousin 14 = Niece/Nephew 15 = Aunt/uncle 16 = Child of another relative 17 = Neighbour/Friend X = Other (specify)	For children: Child's age	For children: Child's school	For children: Child's grade	Is anybody pregnant? Indicate with a X.	How many months are they pregnant?
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

Was a Mobenzi questionnaire completed for household 1? If not, why not?

7.4 Appendix D: Touwsranten Parenting Questionnaire

Section 1. Intro

1.1 UniqueID

Please insert the caregiver's unique identifying number:

Expects a numeric response (required)

1.2 ParentsName

Parents full name:

Expects a single line text response (required)

1.3 GenderParent

Gender of parent

Expects a single option response (required)

Male [1]

Female [2]

1.4 ParentAge

Parents age

Expects a numeric response (required)

1.5 ParentBirthDate

Parents birth date:

Expects a date response (required)

1.6 ChildName

Last year you completed the questionnaire about xxx (please say the name of the child). Does xxx (name of child) still live with you?

Expects a single option response (required)

No [0]

Yes [1]

1.7 ChildsName

What is the child's full name that you will complete the questionnaire about?

Expects a single line text response (required)

1.8: Relation

What relation are you to this child?

Expects a single option response (required)

- Biological [1]
- Step parent [2]
- Adoptive parent [3]
- Grandparent [4]
- Foster parent [5]
- Other [95]

Prerequisites

Skip when Relation (1.8) Not Equal 'Other [95]'

1.9: RelationSpecify

Please specify:

Expects a single line text response (required)

1.10: ChildDOB

Child's date of birth:

Expects a date response (required)

1.11: CalcAge

Operator

This field is not displayed on the handset. Operator: Set(ChildAgeCalculated (1.12) , ROUND(SUB(DIVISION((DAYSBETWEEN

(@984730 , DATETIMEW) , 365.25) , 0.5) , 2))

1.12: ChildAgeCalculated

Numeric

This field is not displayed on the handset

Prerequisites

Skip when ChildAgeCalculated (1.12) Less Than '21' OR

Skip when ChildAgeCalculated (1.12) Equals '21'

1.13: AgeStop1

This child is Q ChildAgeCalculated (1.12) years old. This does not meet study requirements. Press Back if you made a mistake, or Proceed to end the survey now.

Expects a single option response (required)

- Proceed [1]

Branches

If response Equals 'Proceed [1]' then skip to End (18.1)

1.14: ChildGender

What is the child's gender?

Expects a single option response (required)

- Male [1]
- Female [2]

1.15. PhysicalAddress

Physical address

Expects a single line text response (required)

1.16. CellNumber

We may need to contact you during the final phase of data collection and would sincerely appreciate if you could provide us with your cell phone details:

Expects a phone number (optional)

Constraints

Response must be Match `^[0-9]{10}$`

1.17. SchoolGradeNotAttending

Grade in school

Expects a single option response (required)

- Creche [0]
- Grade R [0]
- Grade 1 [1]
- Grade 2 [2]
- Grade 3 [3]
- Grade 4 [4]
- Grade 5 [5]
- Grade 6 [6]
- Grade 7 [7]
- Grade 8 [8]
- Grade 9 [9]
- Grade 10 [10]
- Grade 11 [11]
- Grade 12 [12]
- Does not Attend School [99]
- Finished School [999]

1.18. ChildsSchool

What school does your child go to?

Expects a single option response (optional)

- Sonneblom Creche [0]
- Touwsrante Primary [1]
- George High School [2]
- Pacaltsdorp High School [3]
- Olympia [4]
- Outeniqua High School [5]
- Van Kervel Hoerskool [6]
- Carpe Diem [7]
- Hoekwil Primer [8]
- Other [9]
- None [10]

Section 2. Alabama Parenting Questionnaire - For 6 - 18

2.1 APQ-Instructions

Thank you! Here are a number of statements about your family. Please rate each item as to show how often it typically occurs in your home. The possible answers are Never or very little of the time, sometimes, and often or always.

2.2 FriendlyTalk_APQ

You have a friendly talk with your child.

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [2]
- Often or always [5]
-

2.3 GoodJob_APQ

You let your child know when he/she is doing a good job with something.

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [2]
- Often or always [5]
-

2.4 ThreatenPunishment_APQ

You threaten to punish your child and then do not actually punish him/her.

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [2]
- Often or always [5]
-

2.5 SpecialActivities_APQ

You volunteer to help with special activities that your child is involved in (such as sports, church youth groups, or Seven Passes).

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [2]
- Often or always [5]
-

2.6 RewardBehaviour_APQ

You reward or give something extra to your child for obeying you or behaving well.

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [2]
- Often or always [5]
-

2.7 LeavesNote_APQ

Your child leaves a note (or sends an SMS, or tells you) to let you know where he/she is going

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.8 PlayGames_APQ

You play games or do other fun things with your child

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.9 NegotiatePunishment_APQ

Your child talks you out of being punished after he/she has done something wrong

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.10 AskAboutSchool_APQ

You ask your child about his/her day in school

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.11 StaysOutTooLate_APQ

Your child stays out in the evening past the time he/she is supposed to be home

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.12 HomeworkHelp_APQ

You help your child with his/her homework

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.13: **Obedience_APQ**

You feel that getting your child to listen to you is more trouble than its worth.

Expects a single option response (required)

- Never or almost never [1]
 - Sometimes [3]
 - Often or always [5]
-

2.14: **Compliments_APQ**

You compliment your child when he/she does something well.

Expects a single option response (required)

- Never or almost never [1]
 - Sometimes [3]
 - Often or always [5]
-

2.15: **AskAboutPlans_APQ**

You ask your child what his/her plans are for the coming day.

Expects a single option response (required)

- Never or almost never [1]
 - Sometimes [3]
 - Often or always [5]
-

2.16: **TakesToActivity_APQ**

You take your child to a special activity.

Expects a single option response (required)

- Never or almost never [1]
 - Sometimes [3]
 - Often or always [5]
-

2.17: **PraiseBehaviour_APQ**

You praise your child if he/she behaves well.

Expects a single option response (required)

- Never or almost never [1]
 - Sometimes [3]
 - Often or always [5]
-

2.18: **DoNotKnowFriends_APQ**

Your child is out with friends you dont know.

Expects a single option response (required)

- Never or almost never [1]
 - Sometimes [3]
 - Often or always [5]
-

2.19: HugsKisses_APQ

You hug or kiss your child when he/she does something well

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [2]
- Often or always [5]
-

2.20: NoCurfew_APQ

Your child goes out without a set time to be home

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [2]
- Often or always [5]
-

2.21: TalkAboutFriends_APQ

You talk to your child about his/her friends

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [2]
- Often or always [5]
-

2.22: OutLateWithoutAdult_APQ

Your child is out after dark without an adult with him/her

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [2]
- Often or always [5]
-

2.23: LetOutPunishment_APQ

You let your child out of a punishment early (like you send them to bed without supper, and in the end you do give them food)

Expects a single option response (required)

- Never or very little of the time [1]
- Sometimes [2]
- Often or always [5]
-

2.24: PlanningFamilyActivities_APQ

Your child helps plan family activities

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [2]
- Often or always [5]
-

2.25: ForgetChild_APQ

You get so busy that you forget where your child is and what he/she is doing.

Expects a single option response (required)

- Never or very little of the time [1]
 - Sometimes [2]
 - Often or always [3]
-

2.26: PunishesBehaviour_APQ

Your child is punished when he/she has done something wrong.

Expects a single option response (required)

- Never or almost never [1]
 - Sometimes [2]
 - Often or always [3]
-

2.27: AttendsMeetings_APQ

You attend PTA meetings, parent/teacher conferences, or other meetings at your child's school.

Expects a single option response (required)

- Never or almost never [1]
 - Sometimes [2]
 - Often or always [3]
-

2.28: LikesHelp_APQ

You tell your child that you like it when he/she helps out around the house.

Expects a single option response (required)

- Never or almost never [1]
 - Sometimes [2]
 - Often or always [3]
-

2.29: CheckHomeTime_APQ

You check that your child comes home at the time she/he was supposed to.

Expects a single option response (required)

- Never or almost never [1]
 - Sometimes [2]
 - Often or always [3]
-

2.30: TellChildYourWhereabouts_APQ

You tell your child where you are going.

Expects a single option response (required)

- Never or almost never [1]
 - Sometimes [2]
 - Often or always [3]
-

2.31 LateFromSchool_APQ

Your child comes home from school more than an hour past the time you expect him/her

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.32 PunishmentMood_APQ

The punishment you give your child depends on your mood.

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.33 HomeSupervision_APQ

Your child is at home without adult supervision.

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.34 SpankHand_APQ

You spank your child with your hand when he/she has done something wrong.

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.35 IgnoreMisbehaviour_APQ

You ignore your child when he/she is misbehaving

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.36 SlapChild_APQ

You slap your child when he/she has done something wrong.

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.37: TakeAwayPrivileges_APQ

You take away privileges (like watching TV, or going out with friends) or money from your child as a punishment

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.38: RoomPunishment_APQ

You send your child to his/her room as a punishment

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.39: HitsWithBelt_APQ

You hit your child with a belt, whip, stick or other object when he/she has done something wrong

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.40: YellScream_APQ

You yell or scream at your child when he/she has done something wrong

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.41: CalmlyExplains_APQ

You calmly explain to your child why his/her behavior was wrong when he/she misbehaves

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.42: TimeOut_APQ

You use time out (make him/her sit or stand in a corner) as a punishment

Expects a single option response (required)

- Never or almost never [1]
- Sometimes [3]
- Often or always [5]
-

2.43: ExtraChores_APO

You give your child extra chores (jobs around the house) as a punishment

Expects a single option response (required)

Never or almost never [1]

Sometimes [2]

Often or always [5]

Section Prerequisites

Skip when ChildAgeCalculated (1.12) Less Than '1.5' OR

Skip when ChildAgeCalculated (1.12) Equals '6' OR

Skip when ChildAgeCalculated (1.12) Greater Than '6'

Section 3. Parenting Young Children Scale - For 18 Months - 5 years

3.1 Introduction_PARYC

Thank you! Here are a number of statements about your family. Please rate each item as to show how often it typically occurs in your home.

3.2 FunPlay_PARYC

How many times in the past month did you play with your child in a way that was fun for both of you?

Expects a single option response (required)

- Never [1]
 - Once in the last month [2]
 - Twice in the last month [3]
 - Three or more times in the past month [4]
 - Weekly in the past month [5]
 - Twice a week in the past month [6]
 - Almost daily in the past month [7]
-

3.3 ProblemSolving_PARYC

How many times in the past month did you stand back and let your child work through problems s/he might be able to solve?

Expects a single option response (required)

- Never [1]
 - Once in the last month [2]
 - Twice in the last month [3]
 - Three or more times in the past month [4]
 - Weekly in the past month [5]
 - Twice a week in the past month [6]
 - Almost daily in the past month [7]
-

3.4 PlayGame_PARYC

How many times in the past month did you invite your child to play a game with you or share an enjoyable activity?

Expects a single option response (required)

- Never [1]
 - Once in the last month [2]
 - Twice in the last month [3]
 - Three or more times in the past month [4]
 - Weekly in the past month [5]
 - Twice a week in the past month [6]
 - Almost daily in the past month [7]
-

3.5. PraiseBehaviour_PARYC

How many times in the past month did you notice and praise your child's good behavior?

Expects a single option response (required)

- Never [1]
 - Once in the last month [2]
 - Twice in the last month [3]
 - Three or more times in the past month [4]
 - Weekly in the past month [5]
 - Twice a week in the past month [6]
 - Almost daily in the past month [7]
-

3.6. TeachNewSkills_PARYC

How many times in the past month did you teach your child new skills?

Expects a single option response (required)

- Never [1]
 - Once in the last month [2]
 - Twice in the last month [3]
 - Three or more times in the past month [4]
 - Weekly in the past month [5]
 - Twice a week in the past month [6]
 - Almost daily in the past month [7]
-

3.7. HouseholdChores_PARYC

How many times in the past month did you involve your child in household chores?

Expects a single option response (required)

- Never [1]
 - Once in the last month [2]
 - Twice in the last month [3]
 - Three or more times in the past month [4]
 - Weekly in the past month [5]
 - Twice a week in the past month [6]
 - Almost daily in the past month [7]
-

3.8. RewardNewSkill_PARYC

How many times in the past month did you reward your child when s/he did something well or showed a new skill?

Expects a single option response (required)

- Never [1]
 - Once in the last month [2]
 - Twice in the last month [3]
 - Three or more times in the past month [4]
 - Weekly in the past month [5]
 - Twice a week in the past month [6]
 - Almost daily in the past month [7]
-

3.9 StickToRules_PARYC

How many times in the past month did you stick to your rules and not change your mind?

Expects a single option response (required)

- Never [1]
 - Once in the last month [2]
 - Twice in the last month [3]
 - Three or more times in the past month [4]
 - Weekly in the past month [5]
 - Twice a week in the past month [6]
 - Almost daily in the past month [7]
-

3.10 SpeakCalmly_PARYC

How many times in the past month did you speak calmly with your child when you were upset with him or her?

Expects a single option response (required)

- Never [1]
 - Once in the last month [2]
 - Twice in the last month [3]
 - Three or more times in the past month [4]
 - Weekly in the past month [5]
 - Twice a week in the past month [6]
 - Almost daily in the past month [7]
-

3.11 ClearExplanation_PARYC

How many times in the past month did you explain what you wanted your child to do in clear and simple ways?

Expects a single option response (required)

- Never [1]
 - Once in the last month [2]
 - Twice in the last month [3]
 - Three or more times in the past month [4]
 - Weekly in the past month [5]
 - Twice a week in the past month [6]
 - Almost daily in the past month [7]
-

3.12 TellChildToDo_PARYC

How many times in the past month did you tell your child what you wanted him or her to do rather than tell him/her to stop doing something?

Expects a single option response (required)

- Never [1]
 - Once in the last month [2]
 - Twice in the last month [3]
 - Three or more times in the past month [4]
 - Weekly in the past month [5]
 - Twice a week in the past month [6]
 - Almost daily in the past month [7]
-

3.13 BehaviouralExpectations_PARYC

How many times in the past month did you tell your child how you expected him or her to behave?

Expects a single option response (required)

- Never [1]
 - Once in the last month [2]
 - Twice in the last month [3]
 - Three or more times in the past month [4]
 - Weekly in the past month [5]
 - Twice a week in the past month [6]
 - Almost daily in the past month [7]
-

3.14 SetRules_PARYC

How many times in the past month did you set rules on your child's problem behavior that you were willing/able to enforce?

Expects a single option response (required)

- Never [1]
 - Once in the last month [2]
 - Twice in the last month [3]
 - Three or more times in the past month [4]
 - Weekly in the past month [5]
 - Twice a week in the past month [6]
 - Almost daily in the past month [7]
-

3.15 FollowedRules_PARYC

How many times in the past month did you make sure your child followed the rules you set all or most of the time?

Expects a single option response (required)

- Never [1]
 - Once in the last month [2]
 - Twice in the last month [3]
 - Three or more times in the past month [4]
 - Weekly in the past month [5]
 - Twice a week in the past month [6]
 - Almost daily in the past month [7]
-

3.16 SpankChild_PARYC

Do you spank your child with your hand on the body when he/ she has done something wrong?

Expects a single option response (required)

- Never or almost never [1]
 - Sometimes [3]
 - Often or always [5]
-

3.17 SlapChild_PARYC

Do you slap your child with your hand in their face when he/ she has done something wrong?

Expects a single option response (required)

- Never or almost never [1]
 - Sometimes [3]
 - Often or always [5]
-

3.18: HitChild_PARYC

Do You hit your child with a belt, whip, stick or another object when he/she has done something wrong?

Expects a single option response (required)

Never or almost never [1]

Sometimes [2]

Often or always [3]

3.19: YellScream_PARYCS

You yell or scream at your child when he/she has done something wrong

Expects a single option response (required)

Never or almost never [1]

Sometimes [2]

Often or always [3]

Section 4. Child Behavior Checklist For Ages 6-18

4.1 Instructions_CBC 6-18

Below is a list of items that describe children and youths. For each item that describes your child now or within the past 6 months, please mark the 2 if the item is very true or often true of your child. Mark the 1 if the item is somewhat or sometimes true of your child. If the item is not true of your child, mark the 0. Please answer all items as well as you can, even if some do not seem to apply to your child. 0 = Not True (as far as you know) 1 = Somewhat or Sometimes True 2 = Very True or Often True

4.2 ActsTooYoung6to18_CBC

Acts too young for his/her age

Expects a single option response (required)

- Not true [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

4.3 AlcoholWithoutApproval6to18_CBC

Drinks alcohol without parents approval

Expects a single option response (required)

- Not true [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

4.4 ArguesALot6to18_CBC

Argues a lot

Expects a single option response (required)

- Not true [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

4.5 FailsToFinishThings6to18_CBC

Fails to finish things he/she starts

Expects a single option response (required)

- Not true [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

4.6 VeryLittleEnjoyment6to18_CBC

There is very little he/she enjoys

Expects a single option response (required)

- Not true [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

4.7: **BowelMovement6to18_CBC**

Bowel movements outside toilet

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.8: **BraggingBoasting6to18_CBC**

Bragging, boasting

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.9: **Can'tConcentrate6to18_CBC**

Can't concentrate, can't pay attention for long

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.10: **Ruminating6to18_CBC**

Can't get his/her mind off certain thoughts or obsessions

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.11: **Hyperactive6to18_CBC**

Can't sit still, restless, or hyperactive

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.12: **ClingsDependent6to18_CBC**

Clings to adults or too dependent

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.13 Loneliness6to18_CBC

Complains of loneliness

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.14 Confused6to18_CBC

Confused or seems to be in a fog

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.15 CriesALot6to18_CBC

Cries a lot

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.16 AnimalCruelty6to18_CBC

Cruel to animals

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.17 CrueltyToOthers6to18_CBC

Cruelty, bullying, or meanness to others

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.18 Daydreams6to18_CBC

Daydreams or gets lost in his/her thoughts

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.19: SelfHarmAttemptedSuicide6to18_CBC

Deliberately harms self or attempts suicide

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.20: DemandsAttention6to18_CBC

Demands a lot of attention

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.21: DestroysOwnThings6to18_CBC

Destroys his/her own things

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.22: DestroysOthersThings6to18_CBC

Destroys things belonging to his/her family or others

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.23: DisobedientAtHome6to18_CBC

Disobedient at home

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.24: DisobedientAtSchool6to18_CBC

Disobedient at school

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.25 EatsBadly6to18_CBC

Doesnt eat well

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.26 GettingAlongWithOtherKids6to18_CBC

Doesnt get along with other kids

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.27 GuiltAfterMisbehaving6to18_CBC

Doesn't seem to feel guilty after misbehaving

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.28 Jealousy6to18_CBC

Easily jealous

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.29 BreaksRules6to18_CBC

Breaks rules at home, school, or elsewhere

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.30 FearsOtherThanSchool6to18_CBC

Fears certain animals, situations, or places, other than school

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.31. FearsSchool6to18_CBC

Fears going to school:

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [1]
-

4.32. FearsDoingBad6to18_CBC

Fears he/she might think or do something bad:

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.33. NeedForPerfection6to18_CBC

Feels he/she has to be perfect:

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.34. ComplainNoLove6to18_CBC

Feels or complains that no one loves him/her:

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.35. OthersOutToGetThem6to18_CBC

Feels others are out to get him/her:

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.36. FeelsInferior6to18_CBC

Feels worthless or inferior:

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.37: Accident-Prone6to18_CBC

Gets hurt a lot, accident-prone

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.38: InManyFights6to18_CBC

Gets in many fights

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.39: Teased6to18_CBC

Gets teased a lot

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.40: TroubleMakerFriends6to18_CBC

Hangs around with others who get in trouble

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.41: HearsSounds6to18_CBC

Hears sound or voices that aren't there

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.42: Impulsive6to18_CBC

Impulsive or acts without thinking

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.43: PrefersBeingAlone6to18_CBC

Would rather be alone than with others

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.44: LyingCheating6to18_CBC

Lying or cheating

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.45: BitesFingernails6to18_CBC

Bites fingernails

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.46: NervousTense6to18_CBC

Nervous, high-strung or tense

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.47: NervousTwitching6to18_CBC

Nervous movements or twitching

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.48: Nightmares6to18_CBC

Nightmares

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.49: NotLiked6to18_CBC

Not liked by other kids

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.50: Constipated6to18_CBC

Constipated, doesn't move bowels

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.51: FearfulAnxious6to18_CBC

Too fearful or anxious

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.52: DizzyLight-headed6to18_CBC

Feels dizzy or light-headed

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.53: TooGuilty6to18_CBC

Feels too guilty

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.54: Overeating6to18_CBC

Overeating

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.55: Overtired6to18_CBC

Overtired without good reason:

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.56: Overweight6to18_CBC

Overweight

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.57: AchesPains6to18_CBC

Aches or pains (not stomach or headaches)

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.58: Headaches6to18_CBC

Headaches

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.59: Nausea6to18_CBC

Nausea, feels sick

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.60: EyeProblems6to18_CBC

Problems with eyes (not if corrected by glasses)

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.61 SkinRashes6to18_CBC

Rashes or other skin problems

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.62 StomachAches6to18_CBC

Stomach aches

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.63 Vomiting6to18_CBC

Vomiting, throwing up

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.64 PhysicallyAttacks6to18_CBC

Physically attacks people

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.65 Picks6to18_CBC

Picks nose, skin, or other parts of body

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.66 TouchingGenitaliaInPublic6to18_CBC

Plays with own sex parts in public

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.67: TouchingGenitaliaFrequently6to18_CBC

Plays with own sex parts too much

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.68: PoorSchoolWork6to18_CBC

Poor school work

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.69: Clumsy6to18_CBC

Poorly coordinated or clumsy

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.70: PrefersOlderKids6to18_CBC

Prefers being with older kids

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.71: PrefersYoungerKids6to18_CBC

Prefers being with younger kids

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.72: RefuseToTalk6to18_CBC

Refuses to talk

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.73: Compulsions6to18_CBC

Repeats certain acts over and over; compulsions

Expects a single option response (required)

- Not true [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

4.74: RunsAway6to18_CBC

Runs away from home

Expects a single option response (required)

- Not true [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

4.75: ScreamsFrequently6to18_CBC

Screams a lot

Expects a single option response (required)

- Not true [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

4.76: Secretive6to18_CBC

Secretive, keeps things to self

Expects a single option response (required)

- Not true [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

4.77: SeesThings6to18_CBC

Sees things that aren't there

Expects a single option response (required)

- Not true [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

4.78: Self-consciousEasilyEmbarrassed6to18_CBC

Self-conscious or easily embarrassed

Expects a single option response (required)

- Not true [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

4.79: SetsFires6to18_CBC

Sets fires

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.80: SexualProblems6to18_CBC

Sexual problems

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.81: ShowingOff6to18_CBC

Showing off or clowning

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.82: ShyTimid6to18_CBC

Too shy or timid

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.83: SleepsTooLittle6to18_CBC

Sleeps less than most kids

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.84: SleepsExcessively6to18_CBC

Sleeps more than most kids during day and/or night

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.85 InattentiveDistracted6to18_CBC

Inattentive or easily distracted

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.86 SpeechProblem6to18_CBC

Speech problem

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.87 StaresBlankly6to18_CBC

Stares blankly

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.88 StealsAtHome6to18_CBC

Steals at home

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.89 StealsOutsideHome6to18_CBC

Steals outside the home

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.90 StoresUnnecessaryThings6to18_CBC

Stores up too many things he/she doesn't need

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.91 StrangeBehavior6to18_CBC

Strange behavior

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.92 StrangeIdeas6to18_CBC

Strange ideas

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.93 StubbornSullenIrritable6to18_CBC

Stubborn, sullen, or irritable

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.94 ChangedMoods6to18_CBC

Sudden changes in mood or feelings

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.95 Sulks6to18_CBC

Sulks a lot

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.96 Suspicious6to18_CBC

Suspicious

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.97: Swearing6to18_CBC

Swearing or obscene language

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.98: SuicideTalk6to18_CBC

Talks about killing self

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.99: SleepWalksTalks6to18_CBC

Talks or walks in sleep

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.100: ExcessiveTalking6to18_CBC

Talks too much

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.101: TeasesALot6to18_CBC

Teases a lot

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.102: TemperTantrums6to18_CBC

Temper tantrums or hot temper

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.103 ObsessedWithSex6to18_CBC

Thinks about sex too much

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.104 ThreatensPeople6to18_CBC

Threatens people

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.105 Thumb-sucking6to18_CBC

Thumb-sucking

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.106 SmokesTobacco6to18_CBC

Smokes, chews, or sniffs tobacco

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.107 TroubleSleeping6to18_CBC

Trouble sleeping

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.108 Truancy6to18_CBC

Truancy, bunks school

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.109 UnderactiveLacksEnergy6to18_CBC

Underactive, slow moving, or lacks energy

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.110 UnhappyDepressed6to18_CBC

Unhappy, sad, or depressed

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.111 UnusuallyLoud6to18_CBC

Unusually loud

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.112 UsesDrugs6to18_CBC

Uses drugs for nonmedical purposes (dont include alcohol or tobacco)

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.113 Vandalism6to18_CBC

Vandalism

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.114 WetsSelfinDay6to18_CBC

Wets self during the day

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.115: WetsBed6to18_CBC

Wets the bed

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.116: Whining6to18_CBC

Whining

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.117: OppositeSex6to18_CBC

Wishes to be of opposite sex

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.118: Withdrawn6to18_CBC

Withdrawn, doesn't get involved with others

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

4.119: Worries6to18_CBC

Worries

Expects a single option response (required)

- Not true [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

Section Prerequisites

Skip when ChildAgeCalculated (1.12) Less Than '1.5' OR

Skip when ChildAgeCalculated (1.12) Equals '6' OR

Skip when ChildAgeCalculated (1.12) Greater Than '6'

Section 5. Child Behavior Checklist For Ages 18 Months - 5

5.1 Instructions_CBC 18m-5y

Below is a list of items that describe children. For each item that describes your child now or within the past 6 months, please mark the 2 if the item is very true or often true of your child. Mark the 1 if the item is somewhat or sometimes true of your child. If the item is not true of your child, mark the 0. Please answer all items as well as you can, even if some do not seem to apply to your child. 0 = Not True (as far as you know) 1 = Somewhat or Sometimes True 2 = Very True or Often True

5.2 AchesPains185_CBC

Aches or pains (without medical cause; do not include stomach or headaches)

Expects a single option response (required)

- Not True (as far as you know) [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]

5.3 ActsTooYoung185_CBC

Acts too young for age

Expects a single option response (required)

- Not True (as far as you know) [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]

5.4 AfraidTryThings185_CBC

Afraid to try new things

Expects a single option response (required)

- Not True (as far as you know) [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]

5.5 AvoidsEyeContact185_CBC

Avoids looking others in the eye

Expects a single option response (required)

- Not True (as far as you know) [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]

5.6 Concentrate185_CBC

Can't concentrate, can't pay attention for long

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.7 SitStill185_CBC

Can't sit still, restless, or hyperactive

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.8 ThingsOutPlace185_CBC

Can't stand having things out of place

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.9 Impatient185_CBC

Can't stand waiting; wants everything now

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.10 ChewsUnedible185_CBC

Chews on things that aren't edible

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.11 ClingsDependent185_CBC

Clings to adults or too dependent

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.12 SeeksHelp185_CBC

Constantly seeks help

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.13 Constipated185_CBC

Constipated, doesn't move bowels (when not sick)

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.14 Cries185_CBC

Cries a lot

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.15 CruelToAnimals185_CBC

Cruel to animals

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.16 Defiant185_CBC

Defiant

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.17 Demands185_CBC

Demands must be met immediately

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.18 DestroysOwnThings185_CBC

Destroys his/her own things

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.19 DestroysOthersThings185_CBC

Destroys things belonging to his/her family or other children

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.20 Diarrhea185_CBC

Diarrhea or loose bowels (when not sick)

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.21 Disobedient185_CBC

Disobedient

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.22 ChangeInRoutine185_CBC

Disturbed by any change in routine

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.23 NotSleepAlone185_CBC

Doesn't want to sleep alone

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.24 Ignore185_CBC

Doesn't answer when people talk to him/her

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.25. EatBadly185_CBC

Doesn't eat well

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.26. NotGetAlong185_CBC

Doesn't get along with other children

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.27. CantHaveFun185_CBC

Doesn't know how to have fun; acts like a little adult

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.28. NotGuilty185_CBC

Doesn't seem to feel guilty after misbehaving

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.29. DoesnLeaveHome185_CBC

Doesn't want to go out of home

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.30. Frustrated185_CBC

Easily frustrated

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.31 Jealous185_CBC

Easily jealous

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.32 EatsDrinksNotFood185_CBC

Eats or drinks things that are not food - don't include sweets

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.33 Fears185_CBC

Fears certain animals, situations, or places

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.34 HurtFeelings185_CBC

Feelings are easily hurt

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.35 AccidentProne185_CBC

Gets hurt a lot, accident-prone

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.36 Fights185_CBC

Gets in many fights

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.37: GetsIntoEverything185_CBC

Gets into everything

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.38: UpsetWhenSeparated185_CBC

Gets too upset when separated from parents

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.39: TroubleSleeping185_CBC

Has trouble getting to sleep

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.40: Headaches185_CBC

Headaches (without medical cause)

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.41: HitsOthers185_CBC

Hits others

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.42: HoldsBreath185_CBC

Holds his/her breath

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.43: HurtsAnimalsPeople185_CBC

Hurts animals or people without meaning to

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.44: LooksUnhappy185_CBC

Looks unhappy without good reason

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.45: AngryMoods185_CBC

Angry moods

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.46: Nausea185_CBC

Nausea, feels sick (without medical cause)

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.47: NervousMovements185_CBC

Nervous movements or twitching

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.48: Nervous185_CBC

Nervous, highstrung, or tense

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.49: Nightmares185_CBC

Nightmares

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.50: Overeating185_CBC

Overeating

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.51: Overtired185_CBC

Overtired

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.52: ShowsPanic185_CBC

Shows panic for no good reason

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.53: PainfulBowel185_CBC

Painful bowel movements (without medical cause)

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.54: PhysicallyAttacks185_CBC

Physically attacks people

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.55 PicksNoseSkin185_CBC

Picks nose, skin, or other parts of body

Expects a single option response (required)

- Not True (as far as you know) [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

5.56 SexParts185_CBC

Plays with own sex parts too much

Expects a single option response (required)

- Not True (as far as you know) [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

5.57 Clumsy185_CBC

Poorly coordinated or clumsy

Expects a single option response (required)

- Not True (as far as you know) [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

5.58 EyeProblems185_CBC

Problems with eyes (without medical cause)

Expects a single option response (required)

- Not True (as far as you know) [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

5.59 PunishmentNoEffect185_CBC

Punishment doesn't change his/her behaviour

Expects a single option response (required)

- Not True (as far as you know) [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

5.60 ShiftActivity185_CBC

Quickly shifts from one activity to another

Expects a single option response (required)

- Not True (as far as you know) [0]
- Somewhat or Sometimes True [1]
- Very True or Often True [2]
-

5.61 SkinProblems185_CBC

Rashes or other skin problems (without medical cause)

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.62 RefuseEat185_CBC

Refuses to eat

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.63 RefuseActiveGame185_CBC

Refuses to play active games

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.64 RocksBodyHead185_CBC

Repeatedly rocks head or body

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.65 ResistBed185_CBC

Resists going to bed at night

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.66 ResistToilet185_CBC

Resists toilet training

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.67. Screams185_CBC

Screams a lot

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.68. UnresponsiveAffect185_CBC

Seems unresponsive to affection

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.69. Selfconscious185_CBC

Self-conscious or easily embarrassed

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.70. Selfish185_CBC

Selfish or won't share

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.71. LittleAffection185_CBC

Shows little affection toward people

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.72. LittleInterest185_CBC

Shows little interest in things around him/her

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.73 LittleFearHurt185_CBC

Shows too little fear of getting hurt

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.74 Shy185_CBC

Too shy or timid

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.75 SleepsLess185_CBC

Sleeps less than most kids during day and/or night

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.76 SmearsPlaysBowels185_CBC

Smears or plays with bowel movements

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.77 Speech185_CBC

Speech problem

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.78 Preoccupied185_CBC

Stares into space or seems preoccupied

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.79: Stomachaches185_CBC

Stomachaches or cramps (without medical cause)

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.80: MoodShift185_CBC

Rapid shifts between sadness and excitement

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.81: StrangeBehave185_CBC

Strange behaviour

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.82: Stubborn185_CBC

Stubborn, sullen, or irritable

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.83: FeelingsChange185_CBC

Sudden changes in mood or feelings

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.84: Sulks185_CBC

Sulks a lot

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.85. **TalkCrySleep185_CBC**

Talks or cries out in sleep

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.86. **TemperTantrum185_CBC**

Temper tantrums or hot temper

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.87. **Neatness185_CBC**

Too concerned with neatness or cleanliness

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.88. **TooAnxious185_CBC**

Too fearful or anxious

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.89. **Uncooperative185_CBC**

Uncooperative

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.90. **Underactive185_CBC**

Underactive, slow moving, or lacks energy

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.91. Unhappy185_CBC

Unhappy, sad, or depressed

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.92. Loud185_CBC

Unusually loud

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.93. UpsetByNew185_CBC

Upset by new people or situations

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.94. Vomiting185_CBC

Vomiting, throwing up (without medical cause)

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.95. WakesOften185_CBC

Wakes up often at night

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.96. Wanders185_CBC

Wanders away

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.97 WantsAttention185_CBC

Wants a lot of attention

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.98 Whining185_CBC

Whining

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.99 Withdrawn185_CBC

Withdrawn, doesn't get involved with others

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

5.100 Worries185_CBC

Worries

Expects a single option response (required)

- Not True (as far as you know) [0]
 - Somewhat or Sometimes True [1]
 - Very True or Often True [2]
-

Section 6. Parenting Stress Index Short Form

6.1 Instructions_PSI-SF

Below are a list of statements. Read each one carefully and then select the extent to which you agree or disagree with each statement. Select 1 if you strongly disagree with the statement, 2 if you just disagree with the statement, 3 if you are not sure whether you agree or disagree with the statement, 4 if you agree with the statement, or 5 if you strongly agree with the statement. 1 = Strongly Disagree; 2 = Disagree; 3 = Not Sure; 4 = Agree; 5 = Strongly Agree.

6.2 NotHandle_PSI-SF

I often have the feeling that I cannot handle things very well.

Expects a single option response (required)

- Strongly Agree [5]
- Agree [4]
- Not Sure [3]
- Disagree [2]
- Strongly Disagree [1]
-

6.3 GivingMore_PSI-SF

I find myself giving up more of my life to meet my childrens needs than I ever expected.

Expects a single option response (required)

- Strongly Agree [5]
- Agree [4]
- Not Sure [3]
- Disagree [2]
- Strongly Disagree [1]
-

6.4 Trapped_PSI-SF

I feel trapped by my responsibilities as a parent.

Expects a single option response (required)

- Strongly Agree [5]
- Agree [4]
- Not Sure [3]
- Disagree [2]
- Strongly Disagree [1]
-

6.5 UnableNewThings_PSI-SF

Since having this child, I have been unable to do new and different things.

Expects a single option response (required)

- Strongly Agree [5]
- Agree [4]
- Not Sure [3]
- Disagree [2]
- Strongly Disagree [1]
-

6.6 UnableToDoThingsILike_PSI5F

Since having this child, I feel that I can almost never do the things I would like to and enjoy doing.

Expects a single option response (required)

- Strongly agree [5]
 - Agree [4]
 - Not sure [3]
 - Disagree [2]
 - Strongly disagree [1]
-

6.7 ClothingPurchaseUnhappy_PSI5F

I am unhappy with the last purchase of clothing I made for myself.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.8 ThingsBother_PSI5F

There are quite a few things that bother me about my life.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.9 RelationshipProblem_PSI5F

Having a child has caused more problems than I expected in my relationship with my spouse/partner.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.10 Lonely_PSI5F

I feel alone and without friends.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.11 PartyNotEnjoy_PSISF

When I go to a party, I usually expect not to enjoy myself.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.12 NoInterestPeople_PSISF

I am not as interested in people as I used to be.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.13 NoEnjoyment_PSISF

I dont enjoy things as I used to.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.14 ChildNotMakeFeelGood_PSISF

My child rarely does things for me that make me feel good.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.15 ChildDislikesMe_PSISF

Sometimes I feel my child doesnt like me and doesnt want to be close to me.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.16. ChildSmilesLess_PSI5F

My child smiles at me much less than I expected.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.17. ChildUnappreciative_PSI5F

When I do things for my child, I get the feeling that my efforts are not appreciated very much.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.18. ChildNotLaugh_PSI5F

When playing, my child doesnt often giggle or laugh.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.19. ChildSlowLearnOthers_PSI5F

My child doesnt seem to learn as quickly as most children.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.20. ChildSmileLessOthers_PSI5F

My child doesnt seem to smile as much as most children.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.21 ChildDoLess_PISIF

My child is not able to do as much as I expected.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.22 ChildSlowAdapt_PISIF

It takes a long time and it is very hard for my child to get used to new things.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.23 Parent_PISIF

I feel that I am:

Expects a single option response (required)

- NOT a very good parent [5]
 - A person who has some trouble being a parent [4]
 - An average parent [3]
 - A better than average parent [2]
 - A very good parent [1]
-

6.24 WarmerFeelingsToChild_PISIF

I expect to have closer and warmer feelings for my child than I do and this bothers me.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.25 ChildDoesThings_PISIF

Sometimes my child does things that bother me just to be mean.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.26 ChildCryFuss_PSISF

My child seems to cry or fuss more often than most children.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.27 ChildWakesBadMood_PSISF

My child generally wakes up in a bad mood.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.28 ChildVeryMoody_PSISF

I feel that my child is very moody and easily upset.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.29 ChildThingsBotherMe_PSISF

My child does a few things which bother me a great deal.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.30 ChildReactsStrongly_PSISF

My child reacts very strongly when something happens that my child doesn't like.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.31: ChildUpsetEasily_PSISF

My child gets upset easily over the smallest thing.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.32: ChildSleepingEating_PSISF

My child's sleeping or eating schedule was much harder to establish than I expected.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.33: GettingChildToDoSomething_PSISF

I have found that getting my child to do something or stop doing something is:

Expects a single option response (required)

- Much harder than I expected [5]
 - Somewhat harder than I expected [4]
 - About as hard as I expected [3]
 - Somewhat easier than I expected [2]
 - Much easier than I expected [1]
-

6.34: CountThingsThatBother_PSISF

Think carefully and count the number of things which your child does that bothers you (For example: dawdles, refuses to listen, overactive, cries, interrupts, fights, whines, etc.):

Expects a single option response (required)

- 10+ [5]
 - 8-9 [4]
 - 6-7 [3]
 - 4-5 [2]
 - 1-3 [1]
-

6.35: ChildDoesBotherALot_PSISF

There are some things my child does that really bother me a lot.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.36 ChildMoreProblem_PSI5F

My child turned out to be more of a problem than I had expected.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

6.37 ChildDemands_PSI5F

My child makes more demands on me than most children.

Expects a single option response (required)

- Strongly Agree [5]
 - Agree [4]
 - Not Sure [3]
 - Disagree [2]
 - Strongly Disagree [1]
-

Section 7. Conflict Tactics Scale

7.1 Relationship

Are you currently in a relationship?

Expects a single option response (required)

- No [0]
- Yes [1]
- Never been in a relationship before. [999]

Branches:

If response Equals 'No [0]' then skip to *LastRelationship (7.2)*

If response Equals 'Yes [1]' then skip to *Instructions_CTS (7.3)*

If response Equals 'Never been in a relationship before. [999]' then skip to *Instructions_GHQ (8.1)*

7.2 LastRelationship

When were you last in a relationship (please specify the month/ year): Please answer the following questions about that relationship.

Expects a single line text response (required)

7.3 Instructions_CTS

No matter how well a couple gets along, there are times when they disagree, get annoyed with the other person, want different things from each other, or just have spats or fights because they are in a bad mood, are tired, or for some other reason. Couples also have many different ways of trying to settle their differences. This is a list of things that might happen when you have differences. Please circle how many times you did each of these things in the past year, and how many times your partner did them in the past year. If you or your partner did not do one of these things in the past year, but it happened before that, circle 7. How often did any of the following happen? (Interviewer: show prompt card) 0 = never happened 1 = once in the past year 2 = twice in the past year 3 = More than 3 times in the past year 7 = Happened before but not in the past year.

7.4 PartnerInsultedSwore_CTS

My partner insulted or swore at me.

Expects a single option response (required)

- Never happened [0]
- Once in the past year [1]
- Twice in the past year [2]
- More than 3 times in the past year [3]
- Happened before but not in the past year [7]
-

7.5 InsultedSwore_CTS

I insulted or swore at my partner.

Expects a single option response (required)

- Never happened [0]
- Once in the past year [1]
- Twice in the past year [2]
- More than 3 times in the past year [3]
- Happened before but not in the past year [7]
-

7.6 PartnerThrew_CTS

My partner threw something at me that could hurt.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.7 Ithrew_CTS

I threw something at my partner that could hurt.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.8 PartnerTwisted_CTS

My partner twisted my arm or hair.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.9 Itwisted_CTS

I twisted my partners arm or hair.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.10 PartnerPushed_CTS

My partner pushed or shoved me.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.11. IPushed_CTS

I pushed or shoved my partner.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.12. PartnerKnifeGun_CTS

My partner used a knife or gun on me.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.13. IKnifeGun_CTS

I used a knife or a gun on my partner.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.14. PartnerPunchedHit_CTS

My partner punched or hit me with something that could hurt.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - More than 3 times in the past year [3]
 - Happened before but not in the past year [7]
-

7.15. IPunchedHit_CTS

I punched or hit my partner with something that could hurt.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - More than 3 times in the past year [3]
 - Happened before but not in the past year [7]
-

7.16: PartnerChoked_CTS

My partner choked me.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - More than 3 times in the past year [3]
 - Happened before but not in the past year [7]
-

7.17: IChoked_CTS

I choked my partner.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - More than 3 times in the past year [3]
 - Happened before but not in the past year [7]
-

7.18: PartnerShoutedYelled_CTS

My partner shouted or yelled at me.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.19: IShoutedYelled_CTS

I shouted or yelled at my partner.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.20: PartnerSlammed_CTS

My partner slammed me against a wall.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.21 ISlammed_CTS

I slammed my partner against a wall.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.22 PartnerBeat_CTS

My partner beat me up.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.23 IBeat_CTS

I beat my partner up.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.24 PartnerGrabbed_CTS

My partner grabbed me.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.25 IGrabbed_CTS

I grabbed my partner.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.26 PartnerStomped_CTS

My partner stomped out of the room or house during a disagreement.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.27 IStomped_CTS

I stomped out of the room or house during a disagreement.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.28 PartnerSlapped_CTS

My partner slapped me.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.29 ISlapped_CTS

I slapped my partner.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.30 PartnerBurnedScalded_CTS

My partner burned or scalded me on purpose.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Three or more times in the past year [2]
 - More than 3 times in the past year [3]
 - Happened before but not in the past year [7]
-

7.31 IBurnedScalded_CTS

I burned or scalded partner on purpose.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - More than 3 times in the past year [3]
 - Happened before but not in the past year [7]
-

7.32 PartnerSpite_CTS

My partner did something to spite me.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.33 ISpite_CTS

I did something to spite my partner.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.34 PartnerKickedBitPunched_CTS

My partner kicked, bit or punched me.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

7.35 IKickedBitPunched_CTS

I kicked, bit or punched my partner.

Expects a single option response (required)

- Never happened [0]
 - Once in the past year [1]
 - Twice in the past year [2]
 - Three or more times in the past year [3]
 - Happened before but not in the past year [7]
-

Section 8. General Health Questionnaire (GHQ)

8.1 Instructions_GHQ

We would like to know if you have had any medical complaints, and how your health has been in general, over the past four weeks. Please answer ALL the questions on the following pages. Interviewer: (show prompt card). Remember that we want to know about the present and recent complaints, not those that you had in the past. It is important that you try to answer ALL the questions. Thank you very much for your cooperation. Have you recently:

8.2 WellGoodHealth_GHQ

Been feeling perfectly well and in good health?

Expects a single option response (required)

- Better Than Usual [1]
 - Same As Usual [2]
 - Worse Than Usual [3]
 - Much Worse Than Usual [4]
-

8.3 NeedGoodTonic_GHQ

Been feeling in need of a good tonic? (vitamins, energiser, booster, pick-me-upper)

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much More Than Usual [4]
-

8.4 RunDown_GHQ

Been feeling run down and out of sorts?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.5 Feltill_GHQ

Felt that you were ill?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.6 PainsInHead_GHQ

Been getting any pains in your head?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.7 TightnessInHead_GHQ

Been getting a feeling of tightness or pressure in your head?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.8 HotColdSpells_GHQ

Been having hot or cold spells?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.9 LostSleepWorry_GHQ

Lost much sleep over worry?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.10 CantStayAsleep_GHQ

Had difficulty in staying asleep once you are off?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.11: UnderStrain_GHQ

Felt constantly under strain?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.12: BadTempered_GHQ

Been getting edgy and bad-tempered?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much More Than Usual [4]
-

8.13: ScaredPanicky_GHQ

Been getting scared or panicky for no good reason?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.14: GettingOnTop_GHQ

Found everything getting on top of you?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.15: NervousStrungUp_GHQ

Been feeling nervous and strung-up all the time?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.16 StayBusy_GHQ

Been managing to keep yourself busy and occupied?

Expects a single option response (required)

- More So Than Usual [1]
 - Same As Usual [2]
 - Rather Less Than Usual [3]
 - Much Less Than Usual [4]
-

8.17 TakingLonger_GHQ

Been taking longer over the things you do?

Expects a single option response (required)

- Quicker Than Usual [1]
 - Same As Usual [2]
 - Longer Than Usual [3]
 - Much Longer Than Usual [4]
-

8.18 DoingThingsWell_GHQ

Felt on the whole you were doing things well?

Expects a single option response (required)

- Better Than Usual [1]
 - About The Same [2]
 - Less Well Than Usual [3]
 - Much Less Well Than Usual [4]
-

8.19 SatisfiedTasks_GHQ

Been satisfied with the way you've carried out your tasks?

Expects a single option response (required)

- More Satisfied [1]
 - About The Same As Usual [2]
 - Less Satisfied Than Usual [3]
 - Much Less Satisfied Than Usual [4]
-

8.20 UsefulPart_GHQ

Felt that you were playing a useful part in things?

Expects a single option response (required)

- More So Than Usual [1]
 - Same As Usual [2]
 - Less Useful Than Usual [3]
 - Much Less Useful Than Usual [4]
-

8.21. MakingDecisions_GHQ

Felt capable of making decisions about things?

Expects a single option response (required)

- More So Than Usual [1]
 - Same As Usual [2]
 - Less Than Usual [3]
 - Much Less Capable Than Usual [4]
-

8.22. EnjoyDailyActivities_GHQ

Been able to enjoy your normal day-to-day activities?

Expects a single option response (required)

- More So Than Usual [1]
 - Same As Usual [2]
 - Rather Less Than Usual [3]
 - Much Less Than Usual [4]
-

8.23. Worthless_GHQ

Been thinking of yourself as a worthless person?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.24. Hopeless_GHQ

Felt that life is entirely hopeless?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.25. LifeNotWorthLiving_GHQ

Felt that life is NOT worth living?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.26 Suicide_GHQ

Thought of the possibility that you might make away with yourself?

Expects a single option response (required)

- Definitely Not [1]
 - I Don't Think So [2]
 - Has Crossed My Mind [3]
 - Definitely Have [4]
-

8.27 CantDoAnythingNerves_GHQ

Found at times you couldnt do anything because your nerves were too bad?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.28 WishingDead_GHQ

Found yourself wishing you were dead and away from it all?

Expects a single option response (required)

- Not At All [1]
 - No More Than Usual [2]
 - Rather More Than Usual [3]
 - Much MORE Than Usual [4]
-

8.29 TakingOwnLife_GHQ

Found that the idea of taking your own life kept coming into your mind?

Expects a single option response (required)

- Definitely Not [1]
 - I Don't Think So [2]
 - Has Crossed My Mind [3]
 - Definitely Have [4]
-

Section 9. The Assist

9.1 Instruction_TheAssist

Thank you for everything you have told us so far. Now we need to ask you about your use of alcohol. I am going to ask you some questions about your experience of using alcohol across your lifetime and in the past three months.

9.2 EverUsedAlcohol

In your life, have you ever used alcohol?

Expects a single option response (required)

- No [0]
 Yes [3]

Branches

If response Equals 'No [0]' then skip to *IntroductionHouseholdInventory (10.1)*

9.3 UsedAlcoholThreeMonths

In the past three months, how often have you used alcohol?

Expects a single option response (required)

- Never [0]
 Once or Twice [2]
 Monthly [3]
 Weekly [4]
 Daily or Almost Daily [5]
-

9.4 UrgeAlcoholThreeMonths

During the past three months, how often have you had a strong desire or urge to use alcohol?

Expects a single option response (required)

- Never [0]
 Once or Twice [2]
 Monthly [4]
 Weekly [5]
 Daily or Almost Daily [6]
-

9.5 AlcoholProblemsThreeMonths

During the past three months, how often has your use of alcohol led to health, social, legal or financial problems?

Expects a single option response (required)

- Never [0]
 Once or Twice [4]
 Monthly [5]
 Weekly [6]
 Daily or Almost Daily [7]
-

9.6 AlcoholFailedToDoThreeMonths

During the past three months, how often have you failed to do what was normally expected of you because of your use of alcohol?

Expects a single option response (required)

- Never [0]
 - Once or Twice [5]
 - Monthly [6]
 - Weekly [7]
 - Daily or Almost Daily [8]
-

9.7 FriendRelativeConcerned

Has a friend or relative or anyone else ever expressed concern about your use of alcohol?

Expects a single option response (required)

- No, Never [0]
 - Yes, in the past 3 months [6]
 - Yes, but not in the past 3 months [3]
-

9.8 ControlStopAlcoholUse

Have you ever tried to control, cut down or stop using alcohol?

Expects a single option response (required)

- No, Never [0]
 - Yes, in the past 3 months [6]
 - Yes, but not in the past 3 months [3]
-

Section 10. Household Inventory

10.1: IntroductionHouseholdInventory

Thank you very much!! We are almost at the end of the survey and the most difficult questions have been answered. The following questions will concern general household matters.

10.2: HouseholdInventory

How many of the following do you have in your household at this time? (please tick the box if you have at least one in your home)

Expects multiple selected options (required)

- Running water inside the house [1]
 - Flushing toilet inside the house [2]
 - Car [3]
 - Fridge [4]
 - Microwave Oven [5]
 - Washing machine [6]
 - Landline telephone [7]
 - Cellphone [8]
 - Electricity inside the house [9]
 - Radio/Hi-fi [10]
 - Television [11]
 - Video machine/DVD [12]
 - DSTV/ Satellite [13]
 - Computer [14]
 - Internet [15]
-

10.3: MaritalStatus

Marital Status:

Expects a single option response (required)

- Single [1]
 - Partnered [2]
 - Married [3]
 - Separated [4]
 - Divorced [5]
 - Widowed [6]
-

10.4: Education

Education:

Expects a single option response (required)

- Some primary schooling [1]
 - Completed primary schooling [2]
 - Some high school [3]
 - Completed high school [4]
 - Post-Matric: Degree / Diploma [5]
 - Post-Graduate training [6]
-

10.5: EmploymentStatus

Employment status:

Expects a single option response (required)

- Don't work [0]
- Work [1]

Branches:

If response Equals 'Don't work [0]' then skip to *Income (10.8)*

10.6: PartTimeFullTime

Employment status:

Expects a single option response (required)

- Part time [0]
 - Full time [1]
-

10.7: FormalInformal

Employment status

Expects a single option response (required)

- Informal (e.g., flea market) [0]
 - Formal (e.g., company) [1]
-

10.8: Income

Source/s of Income: (Tick all that apply)

Expects multiple selected options (required)

- Work [1]
 - Government pension [2]
 - Partner/spouse [3]
 - Child support grant [4]
 - Disability grant [5]
 - Money from family [6]
 - No income [7]
 - Other [8]
-

10.9: AdultInHouse

Is there an adult in the house all day?

Expects a single option response (required)

- Yes [1]
 - No [2]
-

10.10: OtherParentingRole

Is there anybody else who plays a parenting role to your children?

Expects a single option response (required)

- Yes [1]
 - No [2]
-

10.11 CaregivingRole

How many of the other adults in the household play a caregiving role?

Expects a numeric response (required)

10.12 NumberWorking

How many caregivers/parents in your household work?

Expects a numeric response (required)

10.13 HouseholdNumber

How many people live in your household?

Expects a numeric response (required)

Repeat this section for value of *HouseholdNumber* (10.13)

Section 11. HouseholdSurvey

11.1. HouseholdSurvey

Please list the FULL NAME and SURNAME of the adult/child number REPEAT IDX living in your house:

Expects a long text response (required)

11.2. Household Age

What is the age of person number REPEAT IDX that lives in your house:

Expects a decimal response (required)

Section 12. Hunger Scale

12.1 FoodMoney

Does your household ever run out of money to buy food?

Expects multiple selected options (required)

No [0]

Yes [1]

Branches

If response Includes 'No [0]' then skip to *CutSizeOfMeal (12.4)*

12.2 Afgelope30dae

Has your household run out of money to buy food in the past 30 days.

Expects a single option response (required)

No [0]

Yes [1]

Branches

If response Equals 'No [0]' then skip to *CutSizeOfMeal (12.4)*

12.3 5OfMeerDae

Has your household run out of money to buy food 5 or more times in the past 30 days?

Expects a single option response (required)

No [0]

yes [1]

12.4 CutSizeOfMeal

Do you ever cut the size of meals or skip any meals because there is not enough food in the house?

Expects multiple selected options (required)

No [0]

Yes [1]

Branches

If response Includes 'No [0]' then skip to *GoToBedHungry (12.7)*

12.5 CutMealPast30Days

In the past 30 day, have you cut the size of meals or skipped any meals because there was not enough food in the house?

Expects a single option response (required)

No [0]

Yes [1]

Branches

If response Equals 'No [0]' then skip to *GoToBedHungry (12.7)*

12.6 CutMealMoreThan5Days

Have you cut the size of meals or skipped any meals more than 5 times in the past 30 days because there was not enough food in the house?

Expects a single option response (required)

No [0]

Yes [1]

12.7. GoToBedHungry

Do you or any of your children ever go to bed hungry because there is not enough money to buy food?

Expects multiple selected options (required)

No [0]

Yes [1]

Branches

If response Includes 'No [0]' then skip to *GettingFoodElsewhere (12.10)*

12.8. BedHungryPast30Days

In the past 30 days, have you or any of your children gone to bed hungry because there was not enough money to buy food?

Expects a single option response (required)

No [0]

Yes [1]

Branches

If response Equals 'No [0]' then skip to *GettingFoodElsewhere (12.10)*

12.9. BedHungry5OrMoreDays

Have you any of your children gone to bed hungry more than 5 times in the past 30 days because there was not enough money to buy food?

Expects a single option response (required)

No [0]

Yes [1]

12.10. GettingFoodElsewhere

Are your children regularly getting food from somewhere else (somewhere other than home)?

Expects multiple selected options (required)

School [1]

Soup Kitchen [2]

Seven Passes [3]

Somewhere else [4]

Nowhere else [5]

12.11. VegGarden

Do you have a vegetable garden?

Expects a single option response (required)

No [0]

Yes [1]

Section 13. Social Capital Questions

13.1 MOS_SSS

People sometimes look to others for companionship, assistance, or other types of support. How often is each of the following kinds of support available to you if you need it?

13.2 MOS_1

If you needed it, how often is someone available to help you if you were confined to bed?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.3 MOS_2

If you needed it, how often is someone available to take you to the doctor if you need it?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.4 MOS_3

If you needed it, how often is someone available to prepare your meals if you are unable to do it yourself?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.5 MOS_4

If you needed it, how often is someone available to help with daily chores if you were sick?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.6. MOS_5

If you needed it, how often is someone available to have a good time with?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.7. MOS_6

If you needed it, how often is someone available to turn to for suggestions about how to deal with a personal problem?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.8. MOS_7

If you needed it, how often is someone available who understands your problems?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.9. MOS_8

If you needed it, how often is someone available to love and make you feel wanted?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.10. MOS_9

If you needed it, how often is someone available you can count on to listen to you when you need talk?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.11 MOS_10

If you needed it, how often is someone available to give you good advice about a crisis?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.12 MOS_11

If you needed it, how often is someone available who shows you love and affection?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.13 MOS_12

If you needed it, how often is someone available to give you information to help you understand a situation?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.14 MOS_13

If you needed it, how often is someone available to confide in or talk to about yourself or your problems?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.15 MOS_14

If you needed it, how often is someone available who hugs you?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.16: MOS_15

If you needed it, how often is someone available to get together with for relaxation?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.17: MOS_16

If you needed it, how often is someone available whose advice you really want?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.18: MOS_17

If you needed it, how often is someone available to do things with to help you get your mind off things?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.19: MOS_18

If you needed it, how often is someone available to share your most private worries and fears with?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.20: MOS_19

If you needed it, how often is someone available to do something enjoyable with?

Expects a single option response (required)

- None of the time [1]
 - A little of the time [2]
 - Some of the time [3]
 - Most of the time [4]
 - All of the time [5]
-

13.21 Social Activation

The following questions are about the Saamstaangroep. Please select all the options that apply to you:

Expects multiple selected options (options)

- You know about the Saamstaangroep. [1]
- You have attended a meeting held by the Saamstaangroep. [2]
- You live with someone that has attended one of the Saamstaangroep meetings. [3]
- You talk about the saamstaan meetings at home? [4]
- You have attended an event that the Saamstaangroep has organized (e.g. street cleanup, park celebration, painting of wall mural). [5]
- You have read and signed the positive parenting/saam staan vir verandering manifesto. [6]
- You have a saamstaan vir verandering sticker on your house. [7]
- You have a positive parenting T-shirt. [8]
- You have seen the the samewerking vir verandering painting on the wall next to the shop. [9]
- You know the songs about positive parenting in Touwsranten (b.v. Touwsranten kan verander word en Malibongwe). [10]
- You live with someone that has completed a parenting programme. [11]
- You talk about what you or your the person that has attended the parenting programme has learned at home. [12]
- You have used the Clinic, Library or Creche in the past year. [13]
- You walk down the street and greet the people you pass. [14]
- People in the street greet you when you walk past them. [15]
- In the past month you had a pleasant conversation with someone in your street. [16]
- Have you attended a parenting programme [17]

13.22 ParentingProblems

What are the two biggest problems that make being a parent in Touwsranten difficult?

Expects a long text response (required)

13.23 FemaleCaregiverLIST

Please look at the list of caregivers and insert the names from the list to answer the following questions:

13.24 Mothers

How many mothers/FEMALE caregivers who live in TOUWSRANTEN do you speak to about PARENTING/raising children?

Expects a numeric response (required)

13.25 Friends

How many FEMALE FRIENDS do you have in Touwsranten?

Expects a numeric response (required)

Repeat this section for value of *Mothers* (13.24)

Section 14. Social Network Mothers

14.1 SNA_1

We would like to understand how parents and caregivers help each other in TOUWSRANTEN. We are interested in which female caregivers in Touwsranten you talk to about parenting. FOR MOTHER number REPEAT IDX Please list the FULL NAME. Please select the names of any FEMALE caregivers in the list provided, and make sure you enter their names in the same way as they are spelled in the list.

Expects a long text response (required)

14.2 SNA_1_Frequency

How frequently do you speak to MOTHER number REPEAT IDX:

Expects a single option response (required)

Daily or almost daily [3]

Weekly [2]

Monthly [1]

Repeat this section for value of Friends (13-25)

Section 15. Social Network Friends

15.1 SNA_2

We are interested in which female caregivers are your friends. FOR FRIEND number REPEAT IDX Please list the FULL NAME Please list the FULL NAMES of all the mothers/FEMALE caregivers who live in TOUWSRANTEN that are your friends. Please select the names of any female caregivers in the list provided, and make sure you enter their names in the same way as they are spelled in the list:

Expects a single line-text response (required)

15.2 SNA_2_Frequency

How frequently do you speak to FRIEND number REPEAT IDX:

Expects a single option response (required)

Daily or almost daily [3]

Weekly [2]

Monthly [1]

Section 16. End

16.1 End

This is the end of the survey. Thank the participant for their time. Press Back to edit your answers or Next to submit the survey.

16.2 Comments

Comments:

(required)

7.5 Appendix E: Factor Analysis

Scale Reliability Statistics of the 28-Item GHQ using both groups

	<i>M</i>	<i>SD</i>	Cronbach's α	McDonald's ω	Greatest lower bound
scale	1.368	0.161	0.932	0.934	0.941

Note. Of the observations, 473 were used, 0 were excluded listwise, and 473 were provided.
Factorial analysis output for the GHQ using the entire group

Exploratory Factor Analysis

Component Loadings

	RC 1	RC 2	RC 3	RC 4	Uniqueness
W1_GHQ1	.	.	.	0.529	0.571
W1_GHQ10	0.775	.	.	.	0.340
W1_GHQ11	0.930	.	.	.	0.232
W1_GHQ12	0.617	.	.	.	0.478
W1_GHQ13	0.711	.	.	.	0.383
W1_GHQ14	0.791	.	.	.	0.355
W1_GHQ15	.	.	0.457	.	0.738
W1_GHQ16	.	.	0.566	.	0.574
W1_GHQ17	.	.	0.755	.	0.441
W1_GHQ18	.	.	0.817	.	0.333
W1_GHQ19	.	.	0.652	.	0.563
W1_GHQ2	.	.	.	0.680	0.503
W1_GHQ20	.	.	0.823	.	0.412
W1_GHQ21	.	.	0.785	.	0.394
W1_GHQ22	.	0.409	.	.	0.671
W1_GHQ23	.	0.470	.	.	0.678
W1_GHQ24	.	0.779	.	.	0.365
W1_GHQ25	.	0.863	.	.	0.323
W1_GHQ26	.	0.665	.	.	0.435
W1_GHQ27	.	0.894	.	.	0.265
W1_GHQ28	.	0.824	.	.	0.400
W1_GHQ3	.	.	.	0.883	0.260
W1_GHQ4	.	.	.	0.829	0.322
W1_GHQ5	.	.	.	0.561	0.425
W1_GHQ6	.	.	.	0.425	0.546
W1_GHQ7	.	.	.	0.484	0.664
W1_GHQ8	0.620	.	.	.	0.490
W1_GHQ9	0.668	.	.	.	0.467

Component Correlations

	RC 1	RC 2	RC 3	RC 4
RC 1	1.000	.	.	.
RC 2	0.641	1.000	.	.
RC 3	0.405	0.424	1.000	.

Component Correlations

	RC 1	RC 2	RC 3	RC 4	
RC 4		0.698	0.476	0.477	1.000

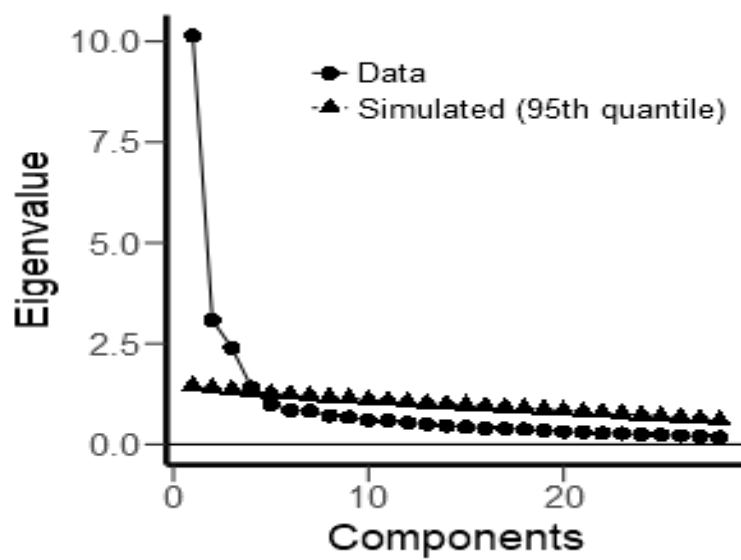
Chi-squared Test

Value	<i>d</i>	<i>df</i>	<i>p</i>
Model	820.989	272	< .001

Additional fit indices

	RMSEA	RMSEA 90% confidence	TLI	BIC
Model	0.067	0.06 - 0.071	0.896	-854.285

Scree Plot



Factorial analysis output for the PARYC using the entire group

Exploratory Factor Analysis

Component Loadings

	RC 1	RC 2	Uniqueness
W1_PARYC1	0.820	.	0.395
W1_PARYC10	.	0.601	0.409
W1_PARYC11	.	0.665	0.463
W1_PARYC12	.	0.789	0.444
W1_PARYC13	.	0.939	0.371
W1_PARYC14	.	0.850	0.333
W1_PARYC2	0.461	.	0.742
W1_PARYC3	0.848	.	0.358
W1_PARYC4	0.965	.	0.216
W1_PARYC5	0.892	.	0.378
W1_PARYC6	0.505	.	0.659
W1_PARYC7	0.575	.	0.438
W1_PARYC8	0.405	.	0.541
W1_PARYC9	.	0.493	0.487

Component Correlations

	RC 1	RC 2
RC 1	1.000	.
RC 2	0.675	1.000

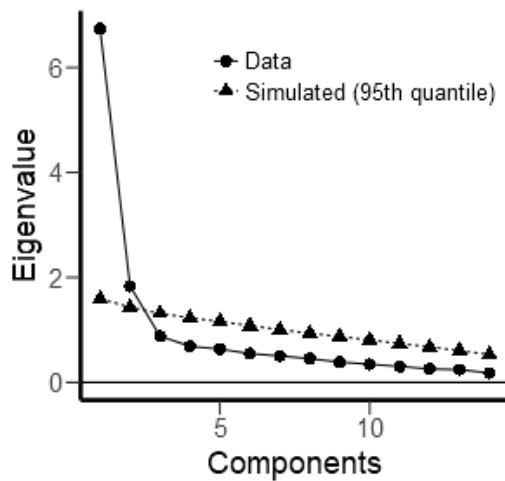
Chi-squared Test

	Value	df	p
Model	94.606	64	0.008

Additional fit indices

	RMSEA	RMSEA 90% confidence	TLI	BIC
Model	0.065	0.031 - 0.084	0.954	-219.332

Scree Plot



Factorial analysis output for the PSI-SF using the entire group

Component Loadings

	RC 1	RC 2	RC 3	Uniqueness
W1_PSI_SF1	.427	.	.618	
W1_PSI_SF10	0.434	.	.476	
W1_PSI_SF11	.745	.	.559	
W1_PSI_SF12	.758	.	.474	
W1_PSI_SF13	.	.	.883	
W1_PSI_SF14	0.570	.	.419	
W1_PSI_SF15	0.726	.	.326	
W1_PSI_SF16	0.559	.	.461	
W1_PSI_SF17	0.815	.	.342	
W1_PSI_SF18	0.614	.	.516	
W1_PSI_SF19	0.737	.	.400	
W1_PSI_SF2	.587	.	.647	
W1_PSI_SF20	0.580	.	.554	
W1_PSI_SF21	0.634	.	.468	
W1_PSI_SF22	-0.426	.	.735	
W1_PSI_SF23	.	.	.682	
W1_PSI_SF24	.	0.510	.533	
W1_PSI_SF25	0.785	.	.460	
W1_PSI_SF26	0.752	.	.508	
W1_PSI_SF27	0.737	.	.432	
W1_PSI_SF28	.	0.680	.395	
W1_PSI_SF29	.	0.573	.643	

Component Loadings

	RC 1	RC 2	RC 3	Uniqueness
W1_Psisf3	.	0.617	.	0.431
W1_Psisf30	.	.	0.549	0.500
W1_Psisf31	0.624	.	.	0.527
W1_Psisf32	.	.	.	0.751
W1_Psisf33	.	.	.	0.913
W1_Psisf34	.	.	0.671	0.580
W1_Psisf35	.	.	.	0.615
W1_Psisf36	.	.	0.429	0.757
W1_Psisf4	.	0.721	.	0.425
W1_Psisf5	.	0.721	.	0.419
W1_Psisf6	0.414	.	.	0.540
W1_Psisf7	.	0.636	.	0.492
W1_Psisf8	0.515	.	.	0.428
W1_Psisf9	.	0.533	.	0.452

Component Correlations

	RC 1	RC 2	RC 3
RC 1	1.000	.	.
RC 2	0.748	1.000	.
RC 3	0.486	0.389	1.000

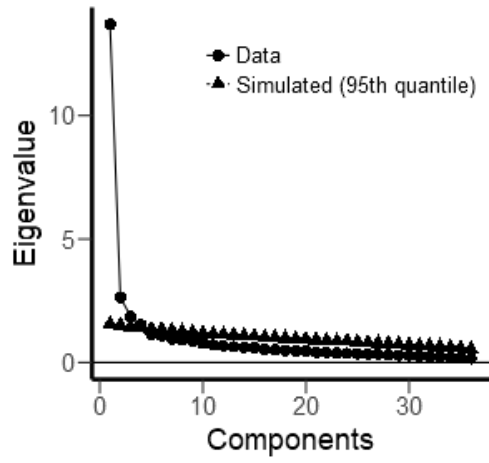
Chi-squared Test

	Value	<i>df</i>	<i>p</i>
Model	1830.040	525	< .001

Additional fit indices

	RMSEA	RMSEA 90% confidence	TLI	BIC
Model	0.074	0.069 - 0.076	0.826	-1403.485

Scree Plot



7.6 Appendix F: Growth Curve Model Fit Comparisons

Table 33

Linear GCMs Fit Statistics

Random Effects	Model	Name	<i>df</i>	AIC	BIC	logLik	deviance	χ^2	$\chi^2(df)$	<i>p</i>
Participant	baseline		4	2013.81	2032.61	-	2005.81	-	-	-
	attendance	0	5	2011.05	2034.54	-	2001.05	4.77	1	0.029
	interaction	1	6	2012.67	2040.85	-	2000.66	0.38	1	0.536
Participant and Wave	attendance	T0	7	1980.91	2013.80	-983.46	1966.91	33.75	1	0.000
	interaction	T1	8	1982.58	2020.16	-983.29	1966.58	0.33	1	0.564

Table 34

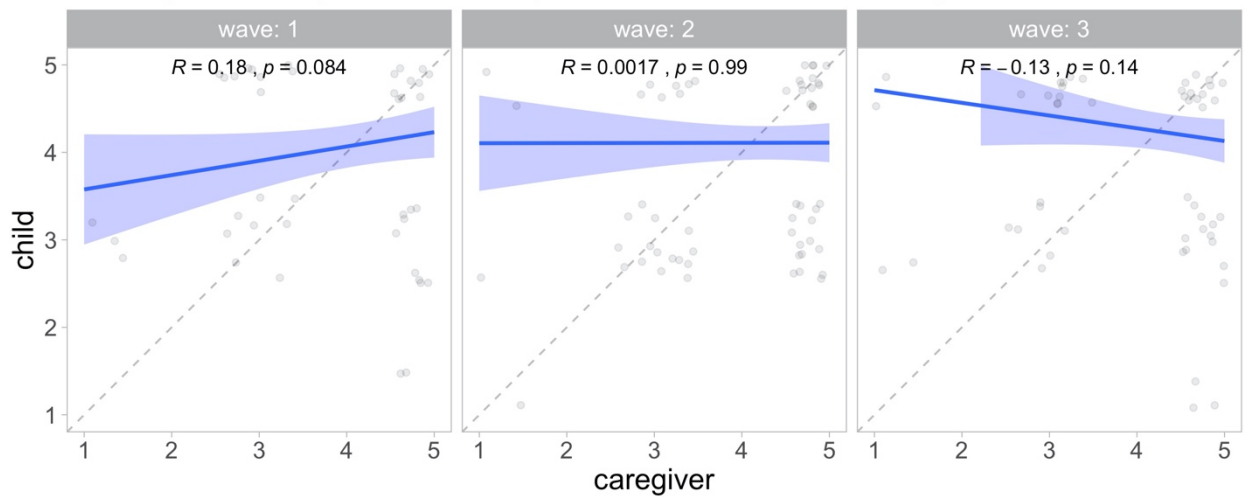
Quadratic GCMs Fit Statistics

Random Effects	Model	Name	<i>df</i>	AIC	BIC	logLik	deviance	χ^2	$\chi^2(df)$	<i>p</i>
Participant	baseline		5	2006.51	2030.00	-	1996.51	-	-	-
	attendance	0Q	6	2004.49	2032.68	-	1992.49	4.03	1	0.045
	interaction	1Q	7	2006.08	2038.97	-	1992.08	0.41	1	0.525
Participant and Wave	attendance	T0Q	8	1971.89	2009.48	-	1955.89	36.19	1	0.000
	interaction	T1Q	9	1973.53	2015.82	-	1955.53	0.36	1	0.551
	double interaction	T2Q	10	1429.00	1472.90	-	1409.00	0.09	1	0.768

7.7 Appendix G: Caregivers' and Children's responses to APQ Items

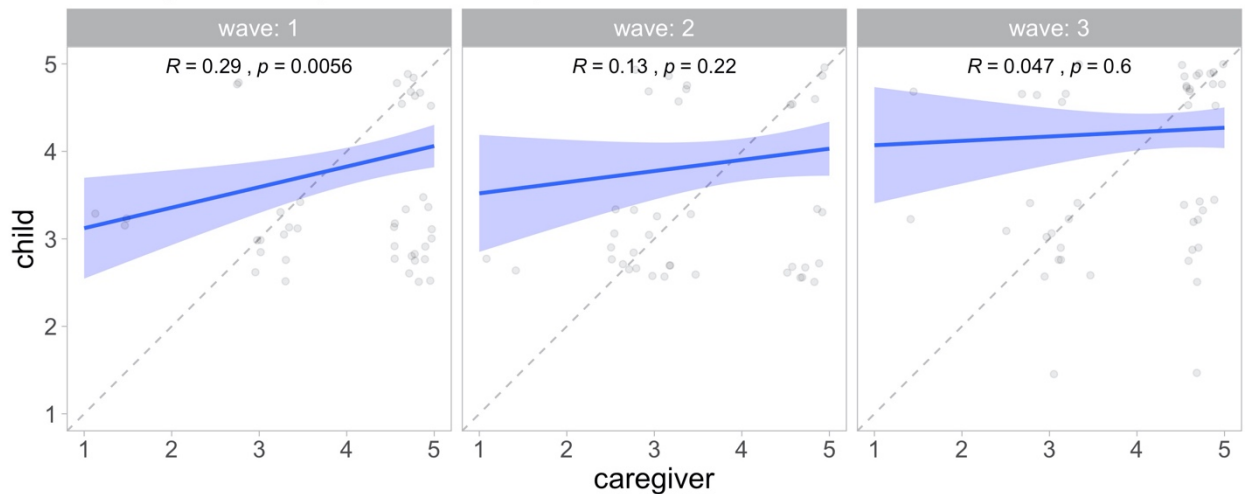
A Pearson product-moment correlation coefficient was computed to assess the relationship between each item on the APQ caregiver and child reports across all three waves of data collected. The scatter plots presented below, show the relationship between caregivers' self-reports and children's ratings of their caregivers behaviours for each of the 42-items.

Scatter plot of caregiver vs child responses for APQ item 1: FriendlyTalk.



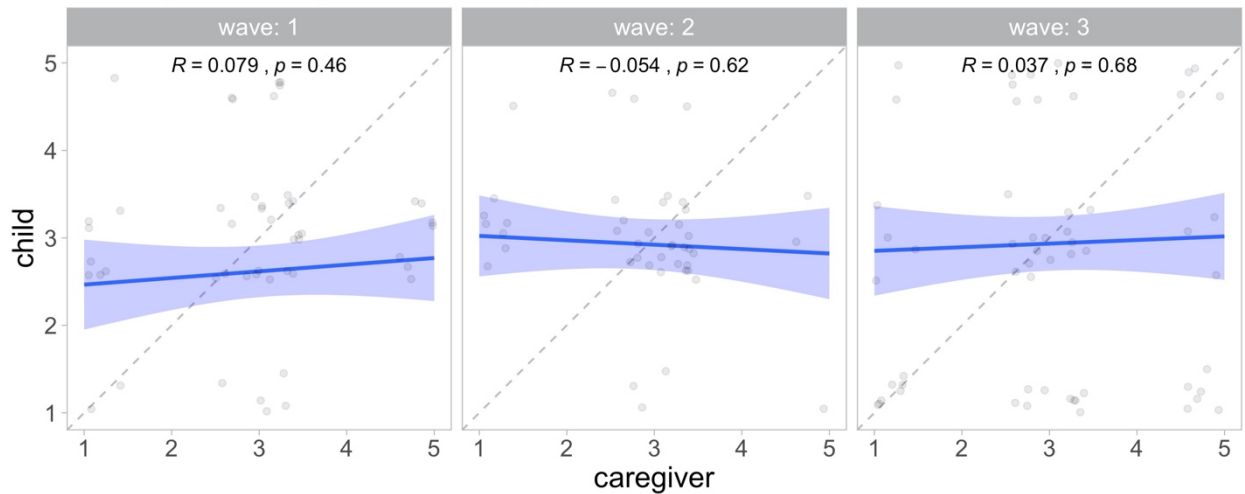
Number of dyads: W1 = 90; 2 = 128; 3 = 127
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 2: GoodJob.



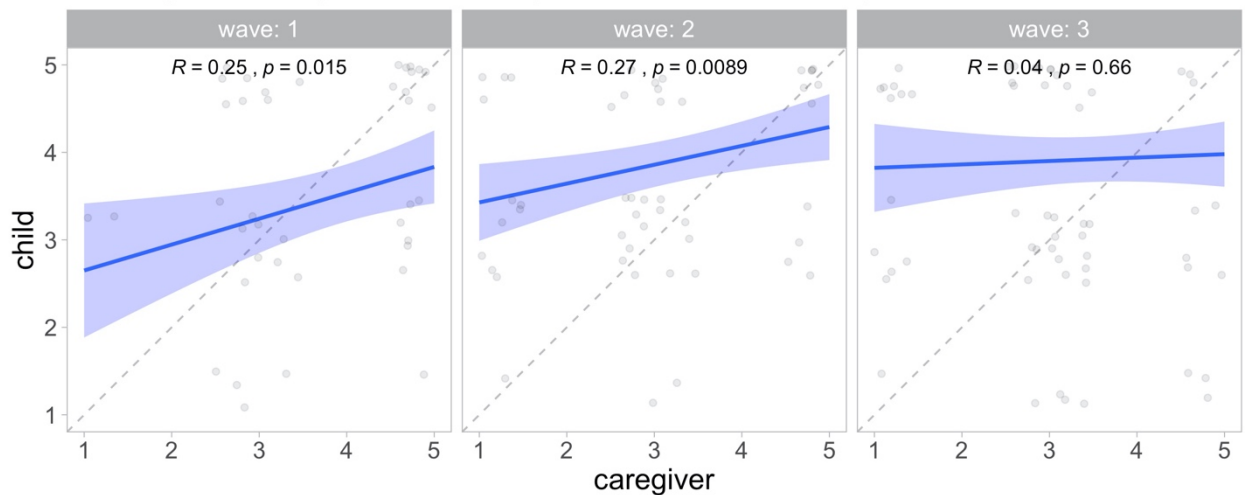
Number of dyads: W1 = 90; 2 = 90; 3 = 126
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 3: ThreatenPunishment.



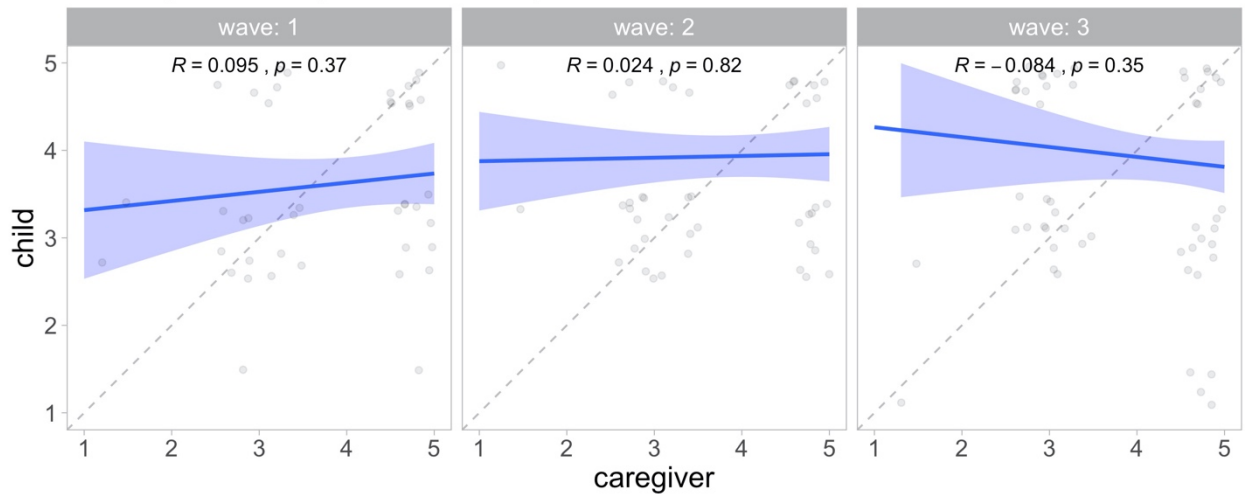
Number of dyads: W1 = 90; 2 = 87; 3 = 125
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 4: SpecialActivities.



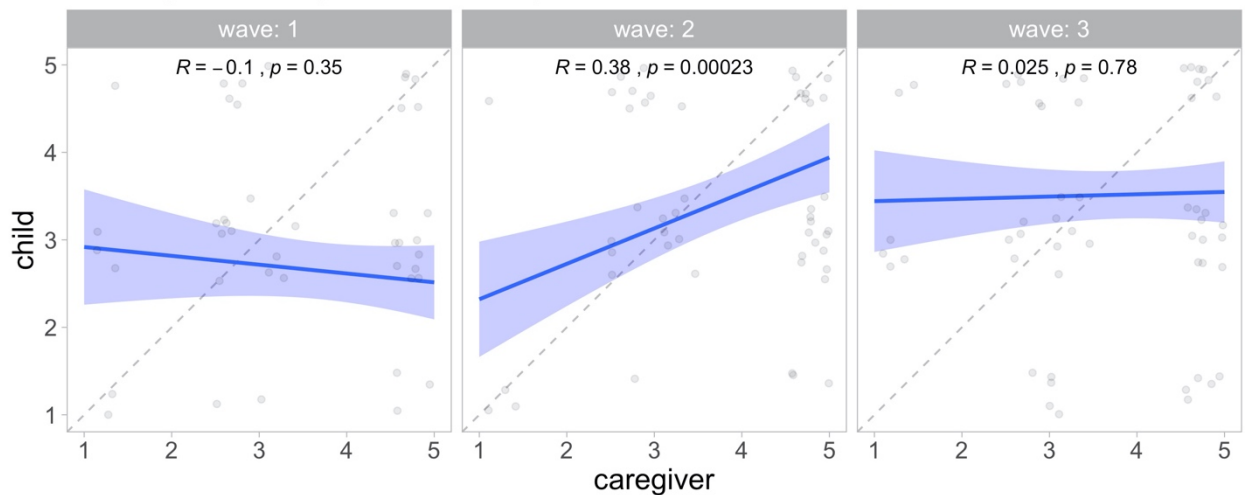
Number of dyads: W1 = 90; 2 = 90; 3 = 124
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 5: RewardBehaviour.



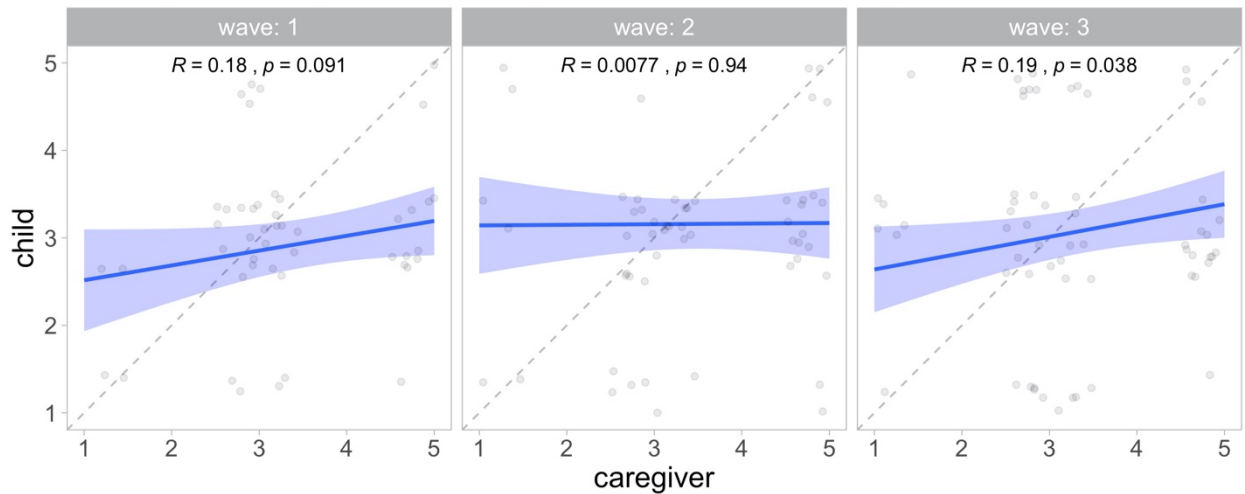
Number of dyads: W1 = 90; 2 = 90; 3 = 126
 Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 6: LeavesNote.



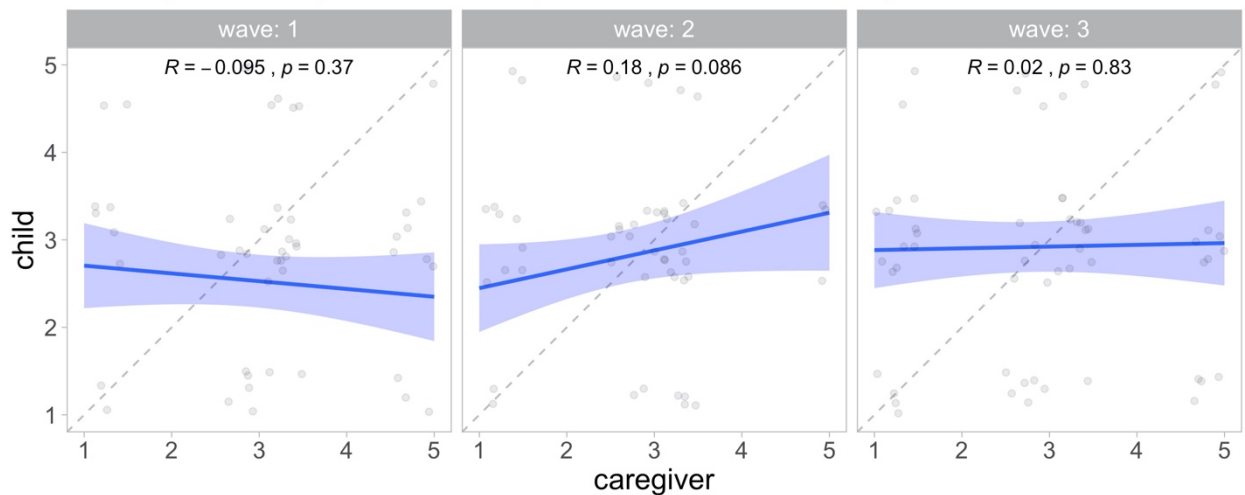
Number of dyads: W1 = 90; 2 = 89; 3 = 128
 Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 7: PlayGames.



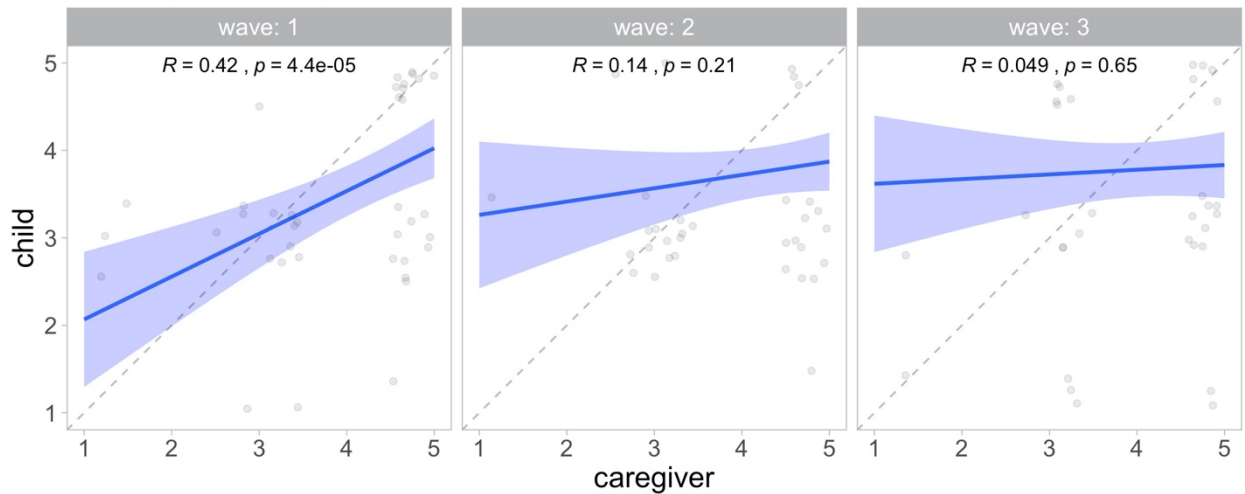
Number of dyads: W1 = 90; 2 = 88; 3 = 124
 Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 8: NegotiatePunishment.



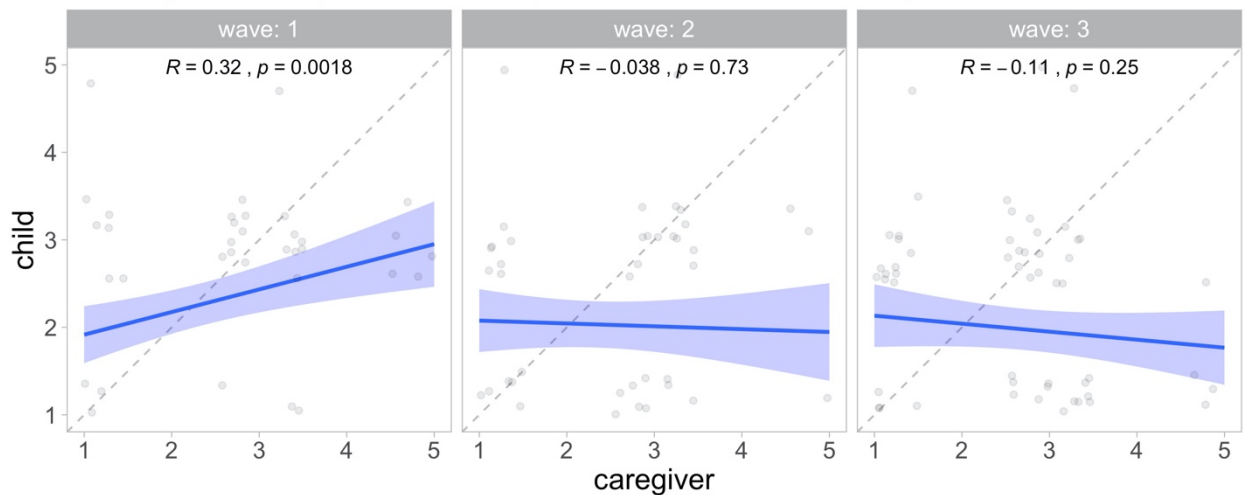
Number of dyads: W1 = 90; 2 = 88; 3 = 124
 Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 9: AskAboutSchool.



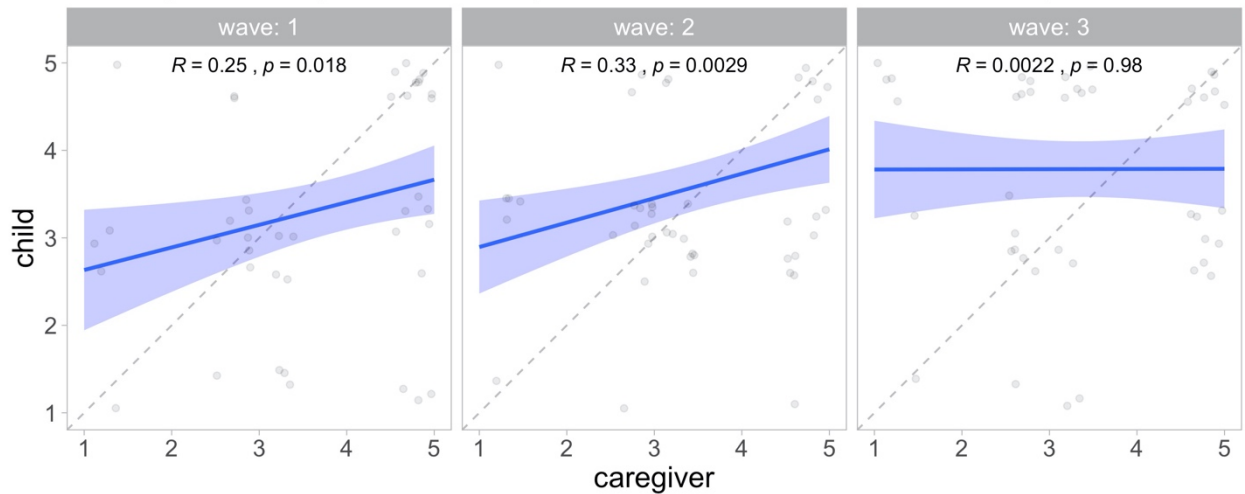
Number of dyads: W1 = 90; 2 = 79; 3 = 87
 Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 10: StaysOutTooLate.



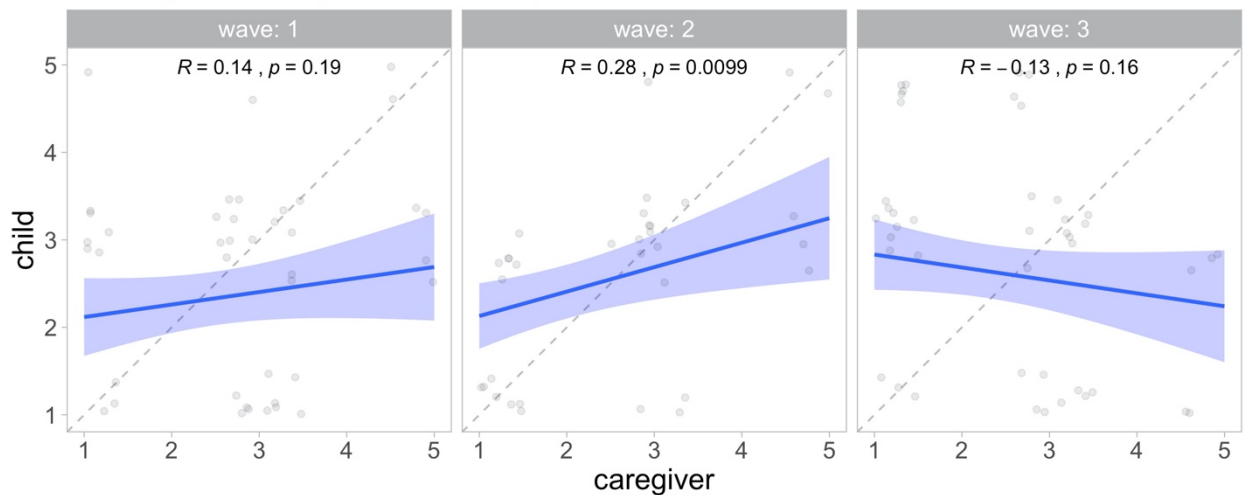
Number of dyads: W1 = 90; 2 = 89; 3 = 119
 Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 11: HomeworkHelp.



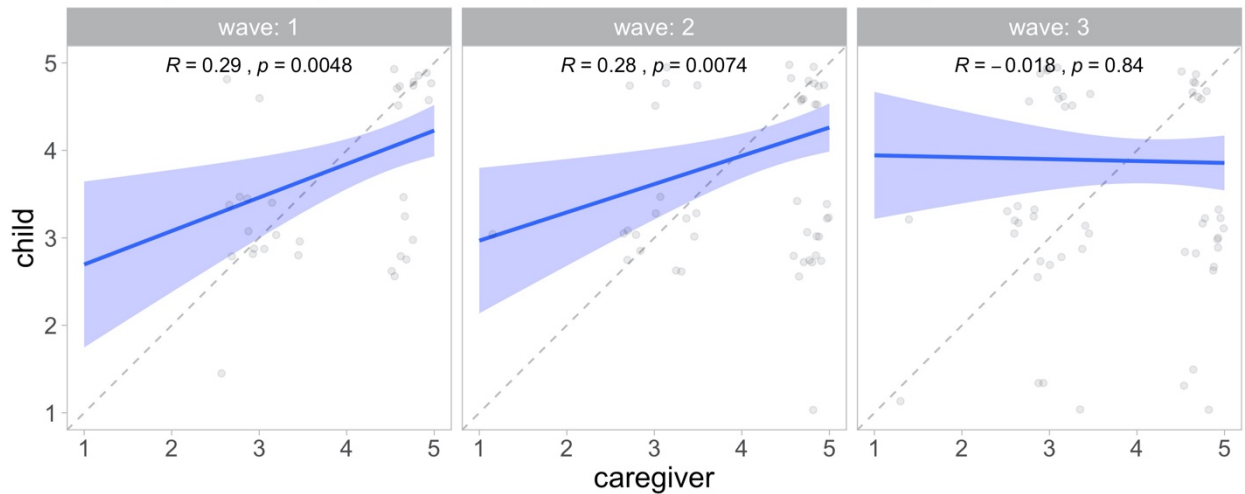
Number of dyads: W1 = 90; 2 = 80; 3 = 84
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 12: Obedience.



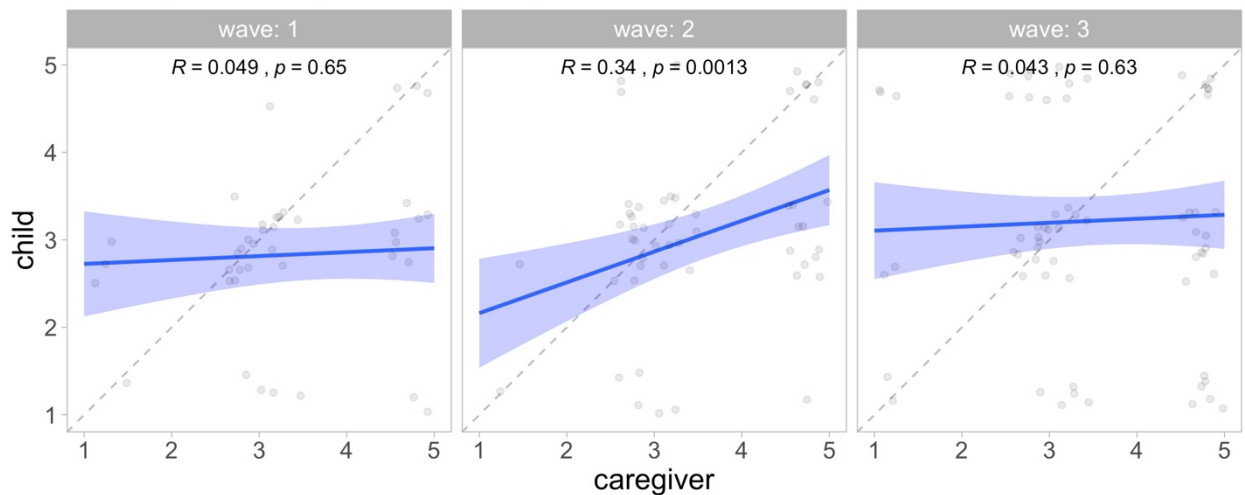
Number of dyads: W1 = 90; 2 = 85; 3 = 118
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 13: Compliments.



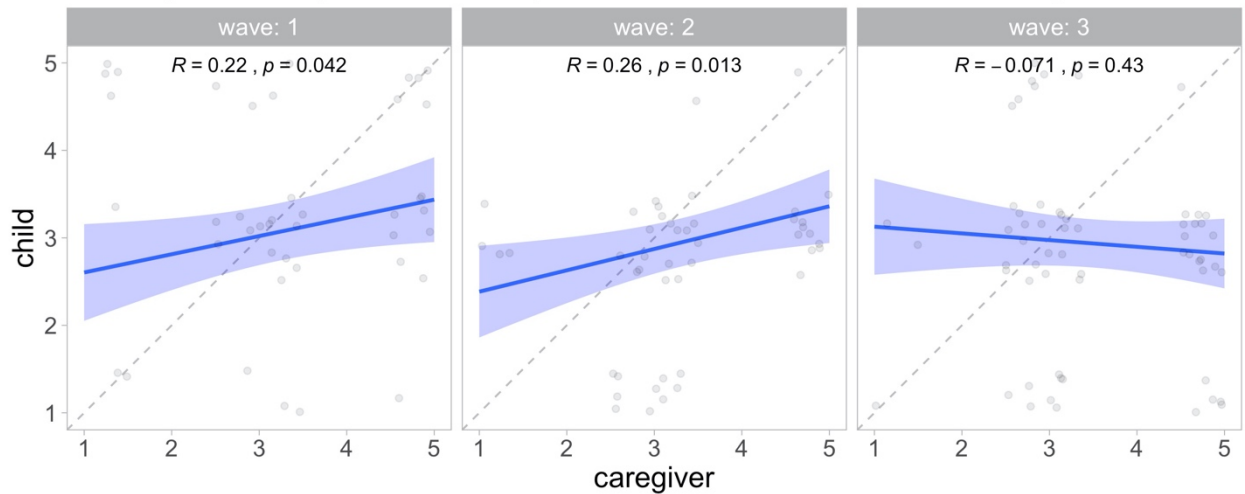
Number of dyads: W1 = 90; 2 = 90; 3 = 128
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 14: AskAboutPlans.



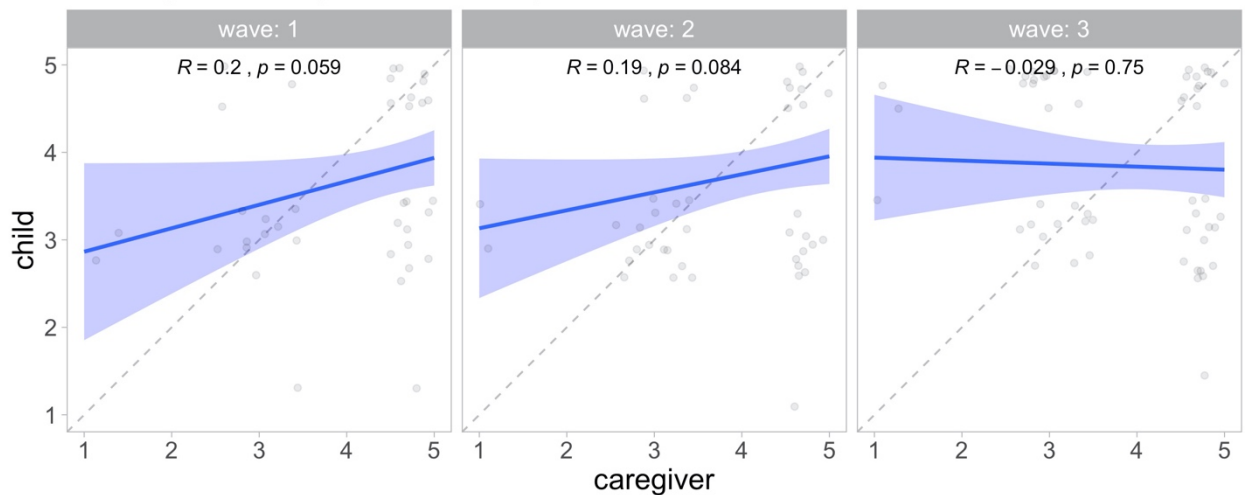
Number of dyads: W1 = 90; 2 = 87; 3 = 127
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 15: TakesToActivity.



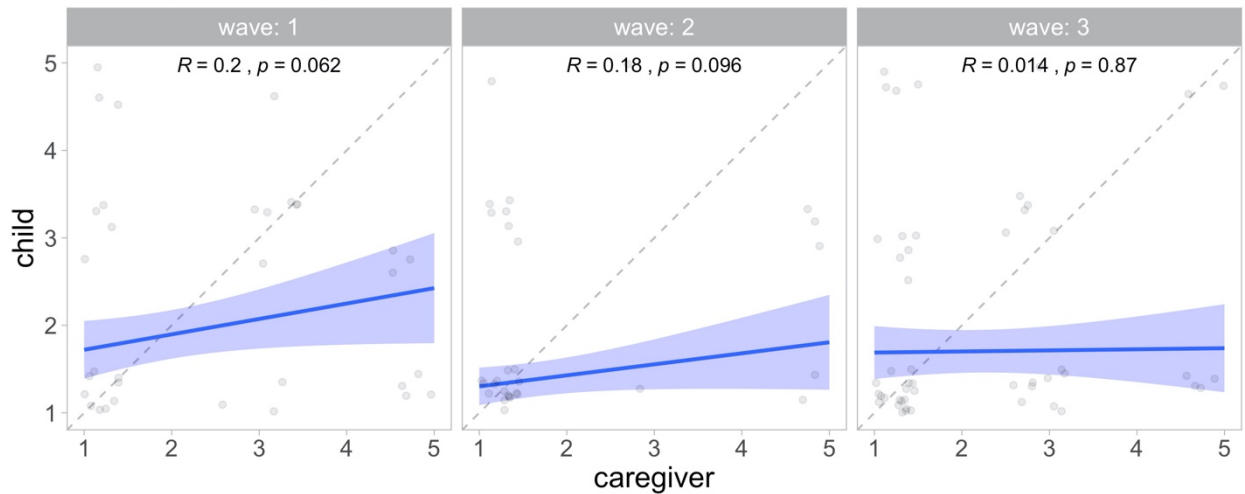
Number of dyads: W1 = 90; 2 = 89; 3 = 126
 Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 16: PraiseBehaviour.



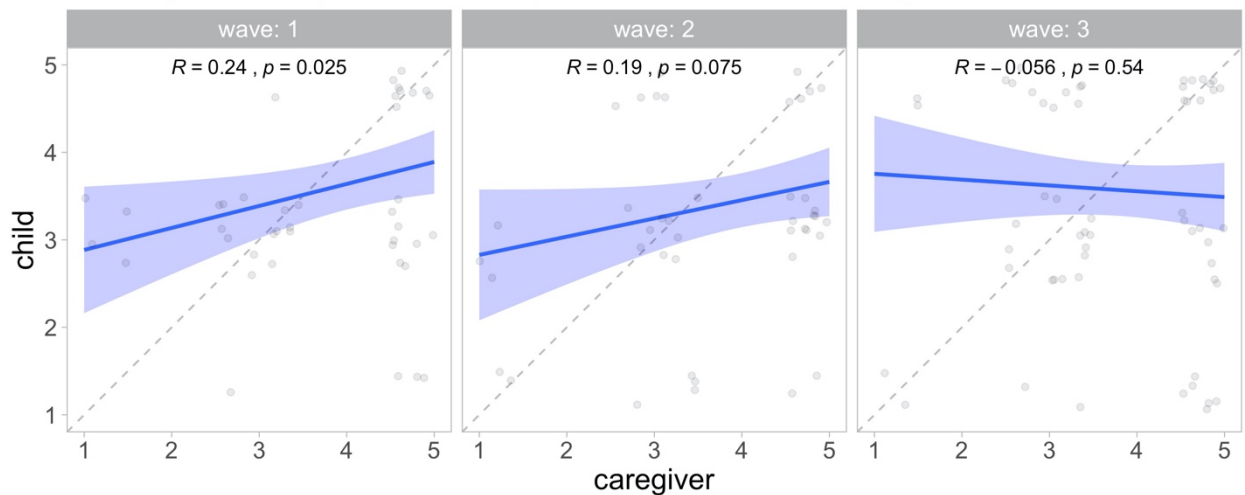
Number of dyads: W1 = 90; 2 = 88; 3 = 125
 Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 17: DoNotKnowFriends.



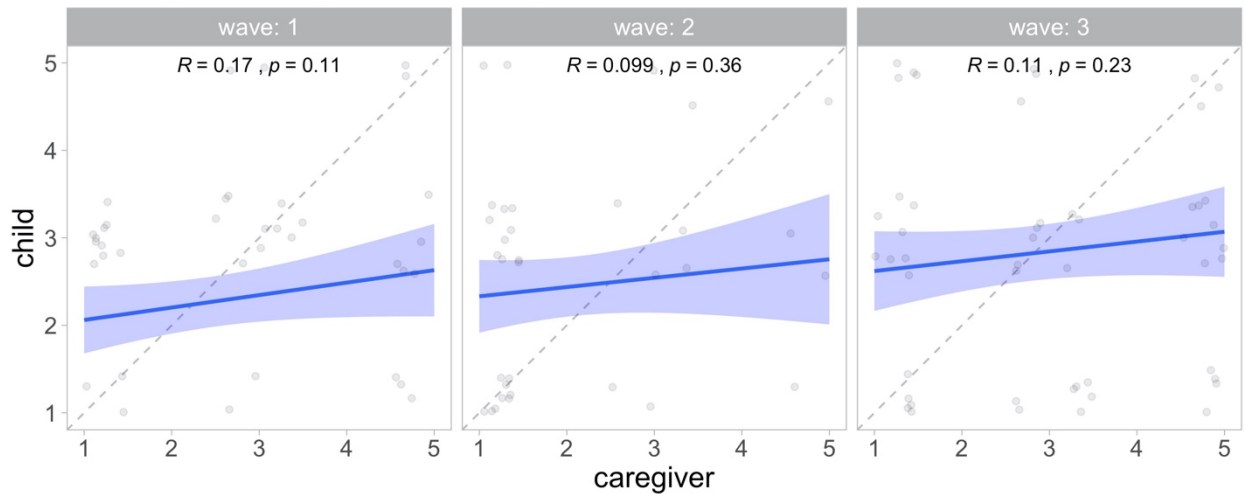
Number of dyads: W1 = 90; 2 = 90; 3 = 128
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 18: HugsKisses.



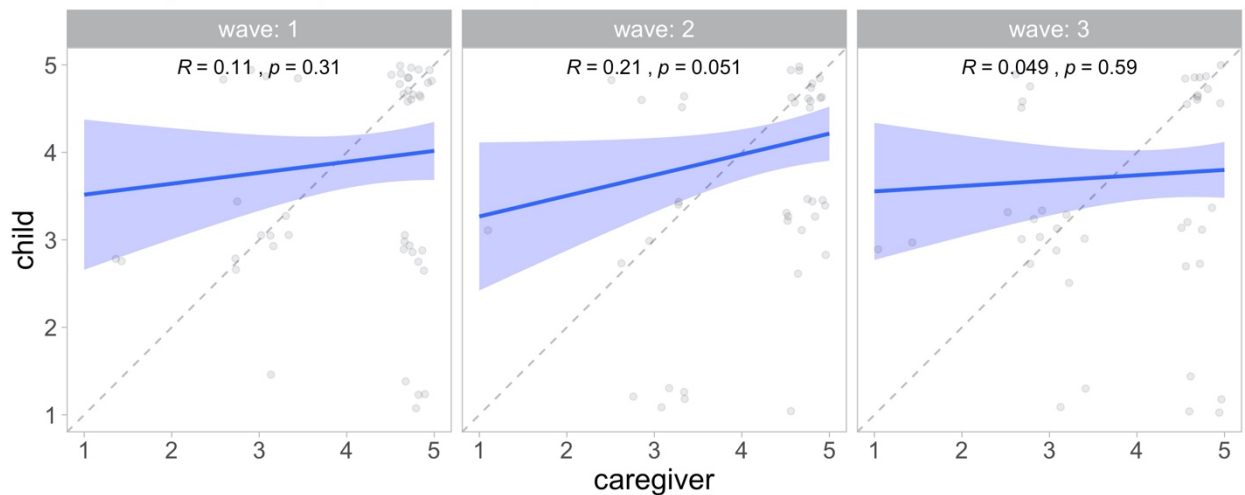
Number of dyads: W1 = 90; 2 = 90; 3 = 123
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 19: NoCurfew.



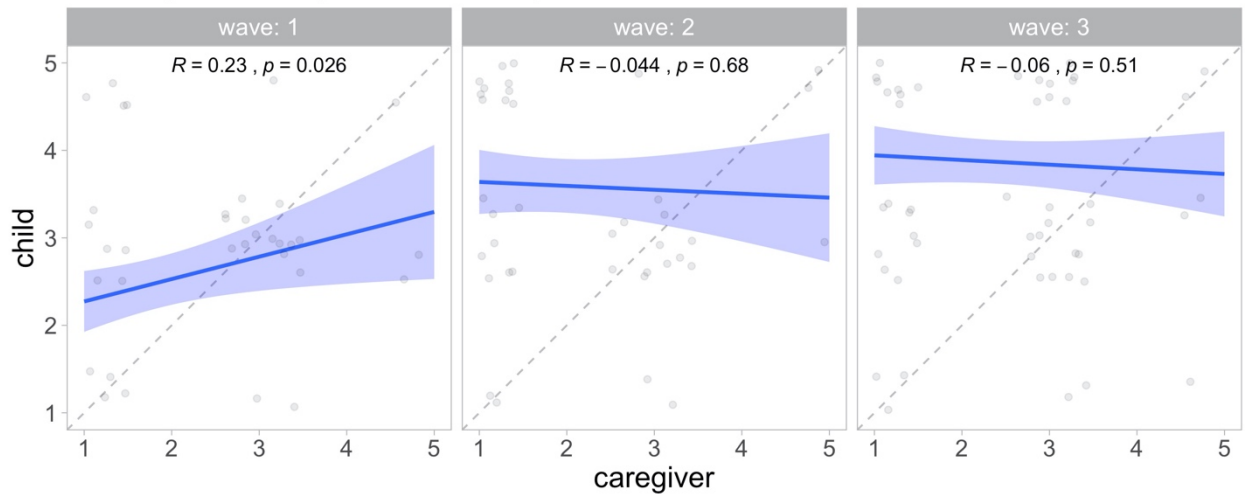
Number of dyads: W1 = 90; 2 = 90; 3 = 123
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 20: TalkAboutFriends.



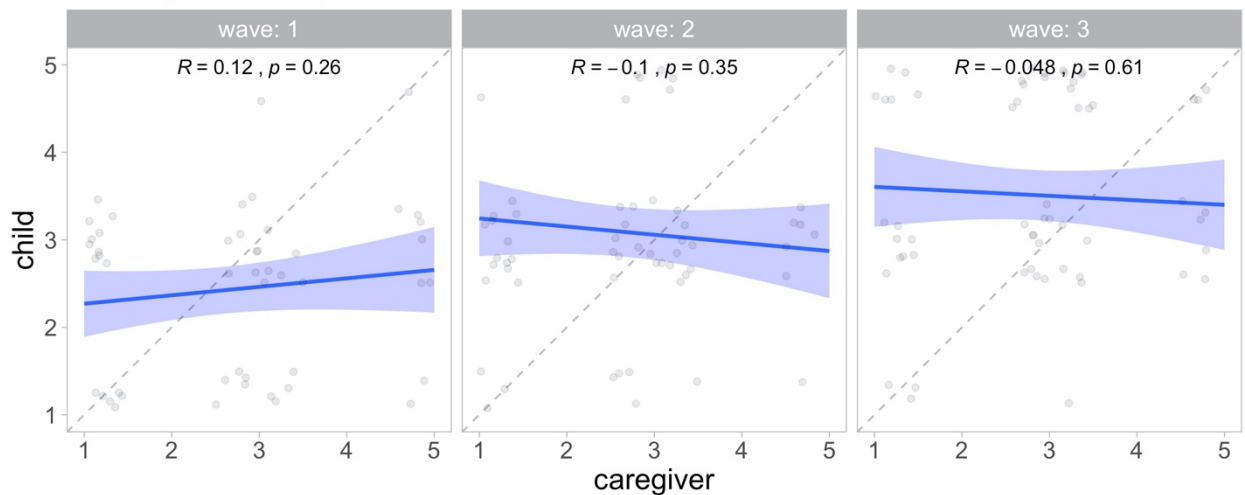
Number of dyads: W1 = 90; 2 = 90; 3 = 127
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 21: OutLateWithoutAdult.



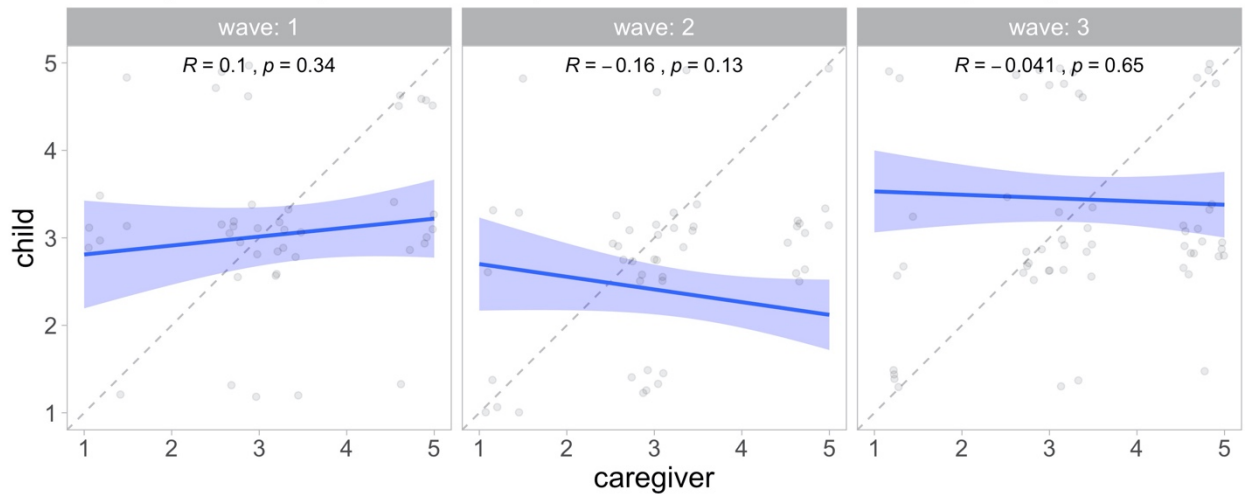
Number of dyads: W1 = 90; 2 = 87; 3 = 122
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 22: LetOutPunishment.



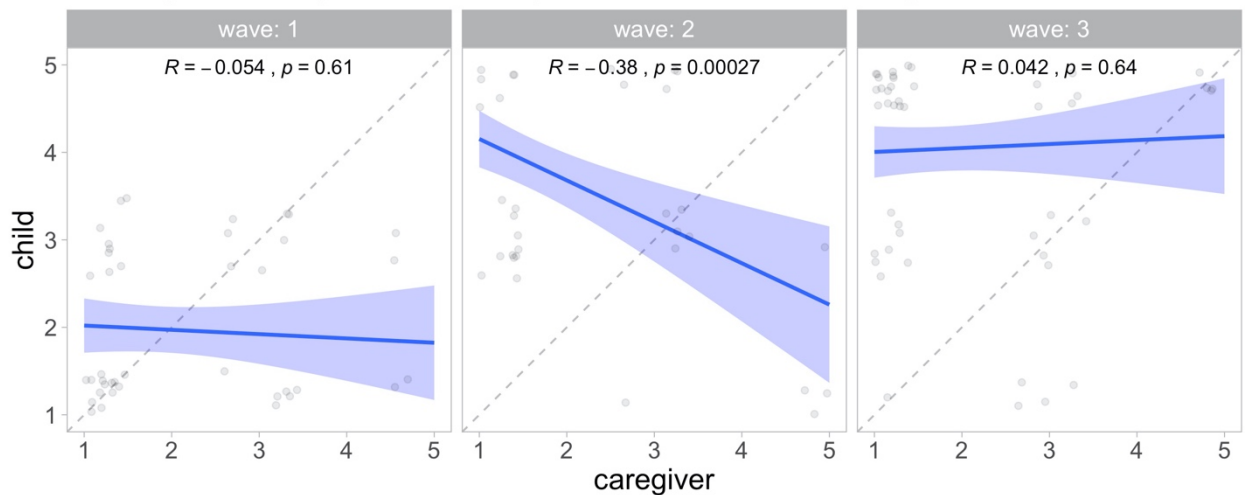
Number of dyads: W1 = 90; 2 = 89; 3 = 117
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 23: PlanningFamilyActivities.



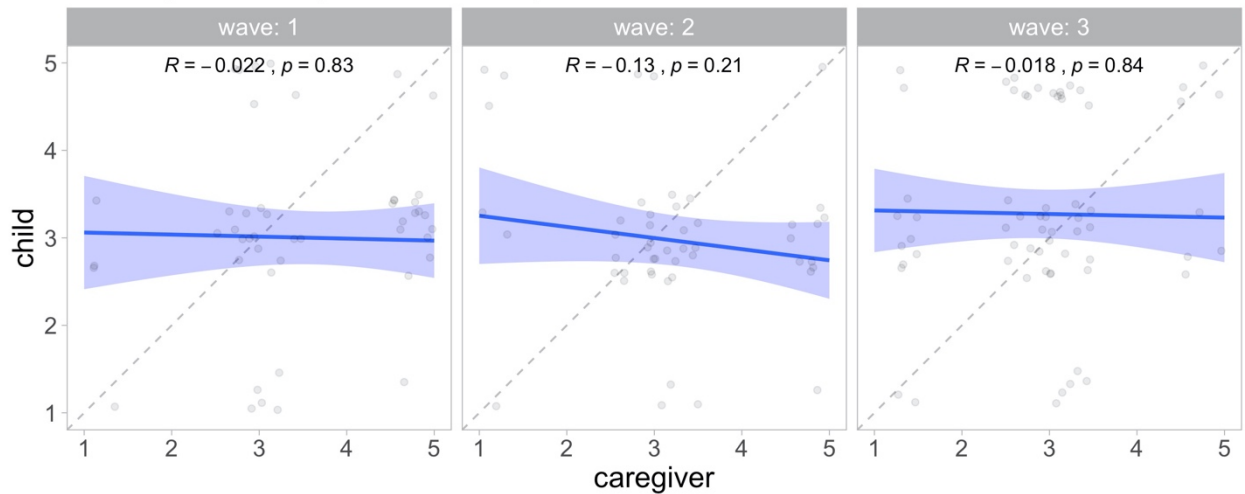
Number of dyads: W1 = 90; 2 = 89; 3 = 127
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 24: ForgetChild.



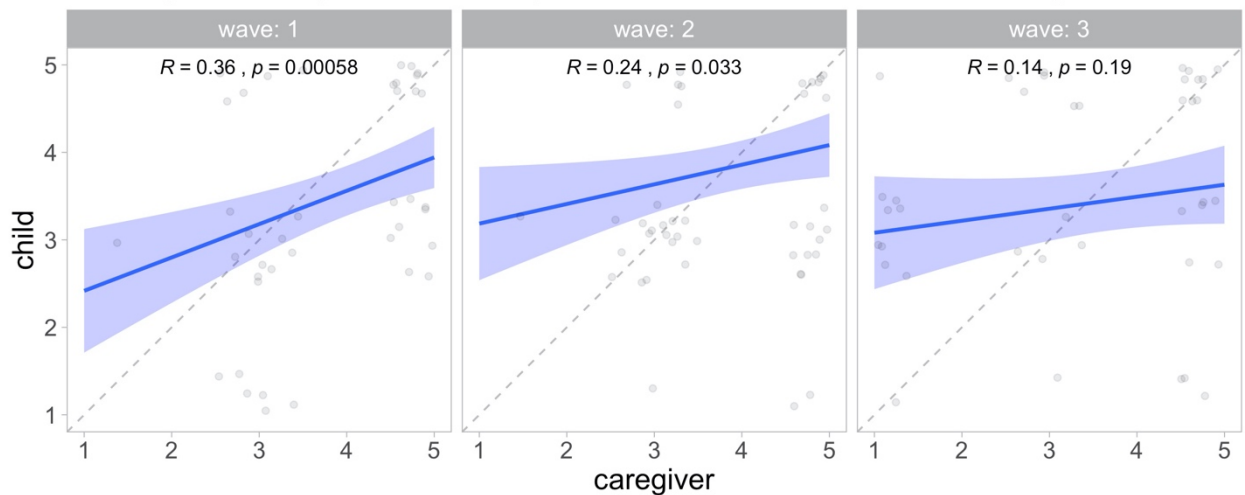
Number of dyads: W1 = 90; 2 = 89; 3 = 125
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 25: PunishesBehaviour.



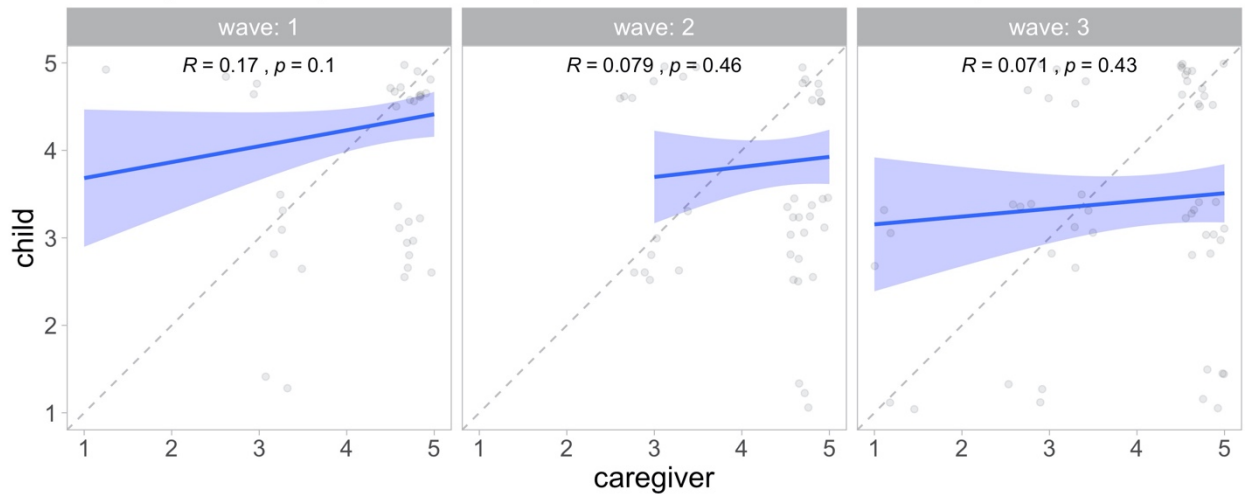
Number of dyads: W1 = 90; 2 = 88; 3 = 124
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 26: AttendsMeetings.



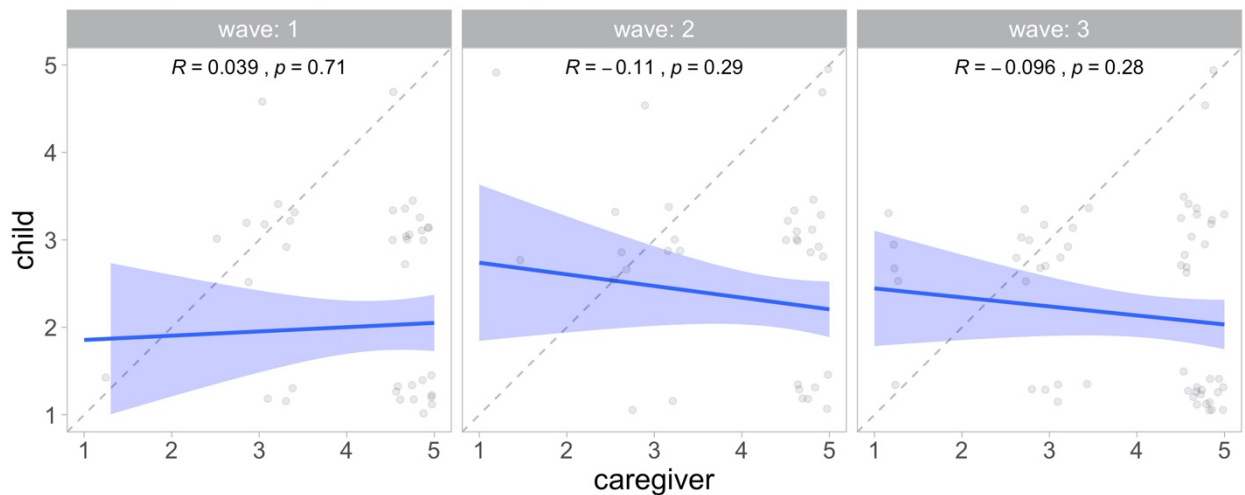
Number of dyads: W1 = 90; 2 = 80; 3 = 86
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 27: LikesHelp.



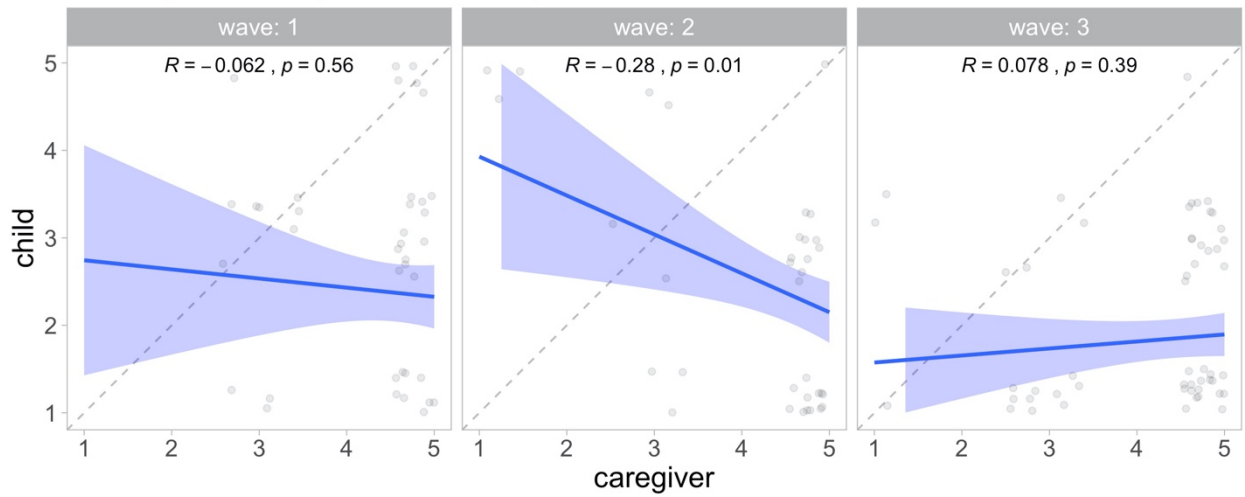
Number of dyads: W1 = 90; 2 = 90; 3 = 127
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 28: CheckHomeTime.



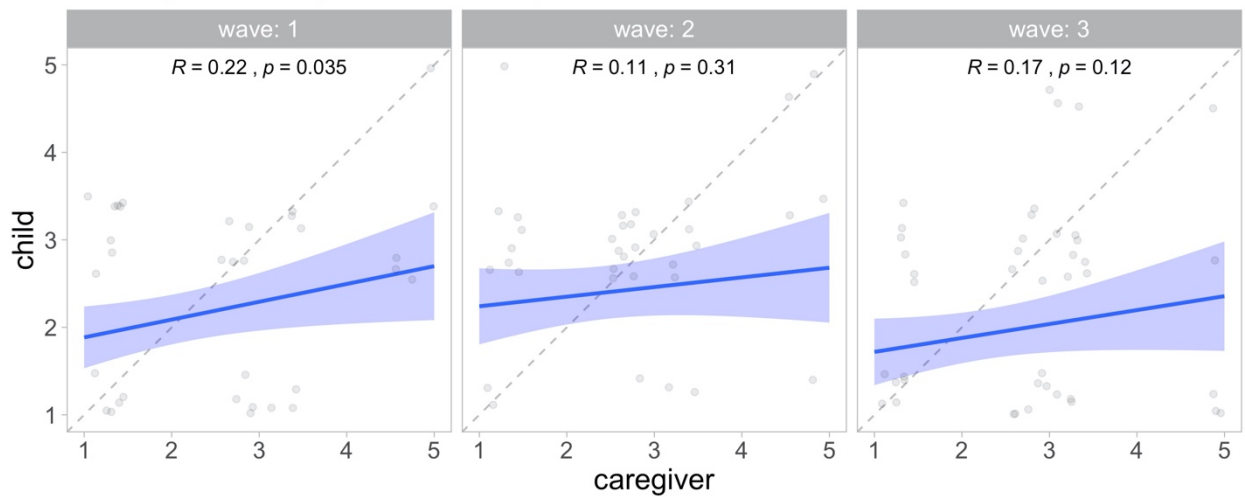
Number of dyads: W1 = 90; 2 = 89; 3 = 126
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 29: TellChildYourWhereabouts.



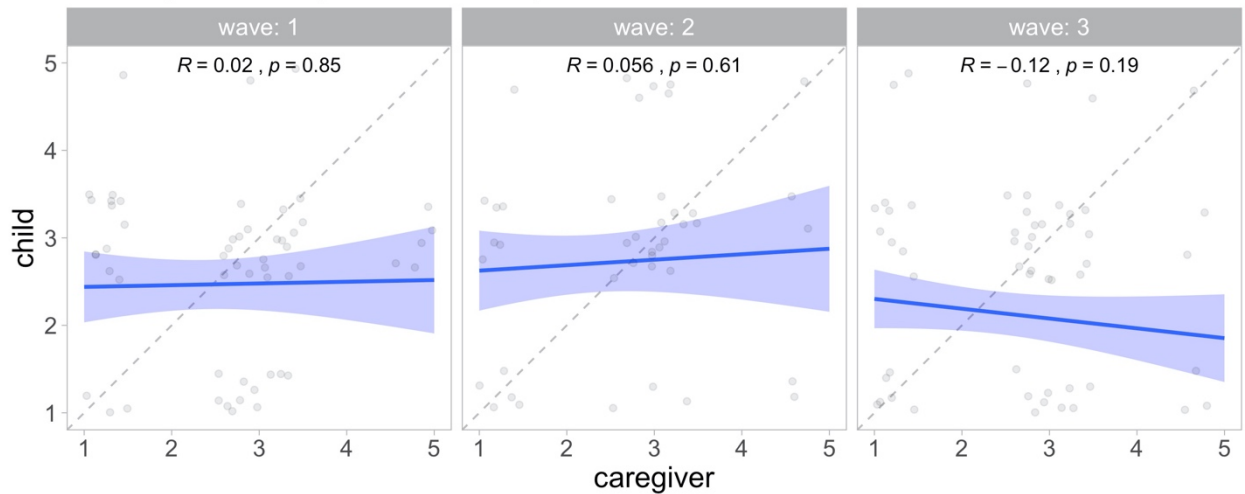
Number of dyads: W1 = 89; 2 = 86; 3 = 125
 Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 30: LateFromSchool.



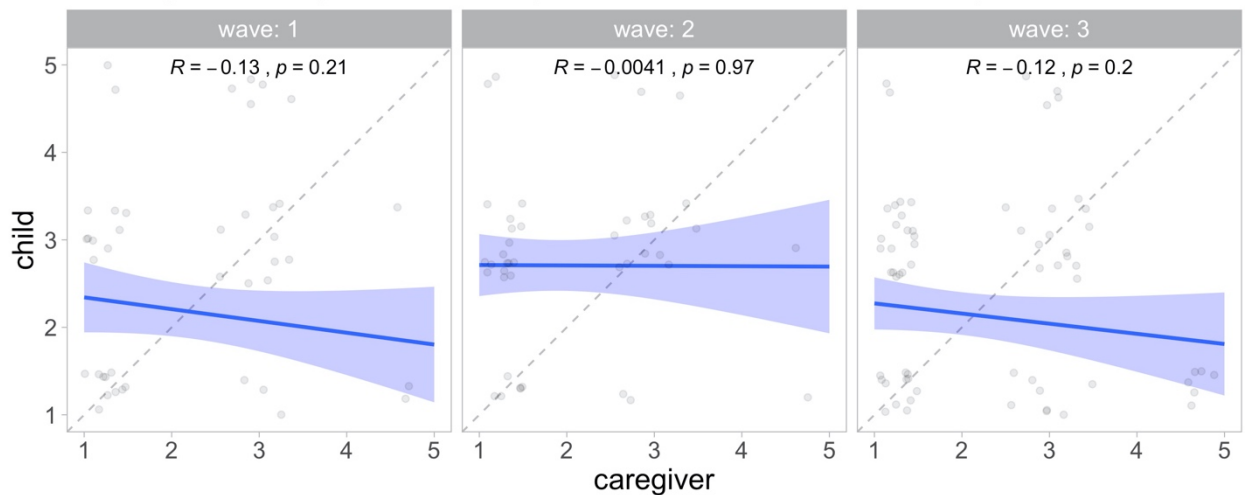
Number of dyads: W1 = 90; 2 = 80; 3 = 85
 Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 31: PunishmentMood.



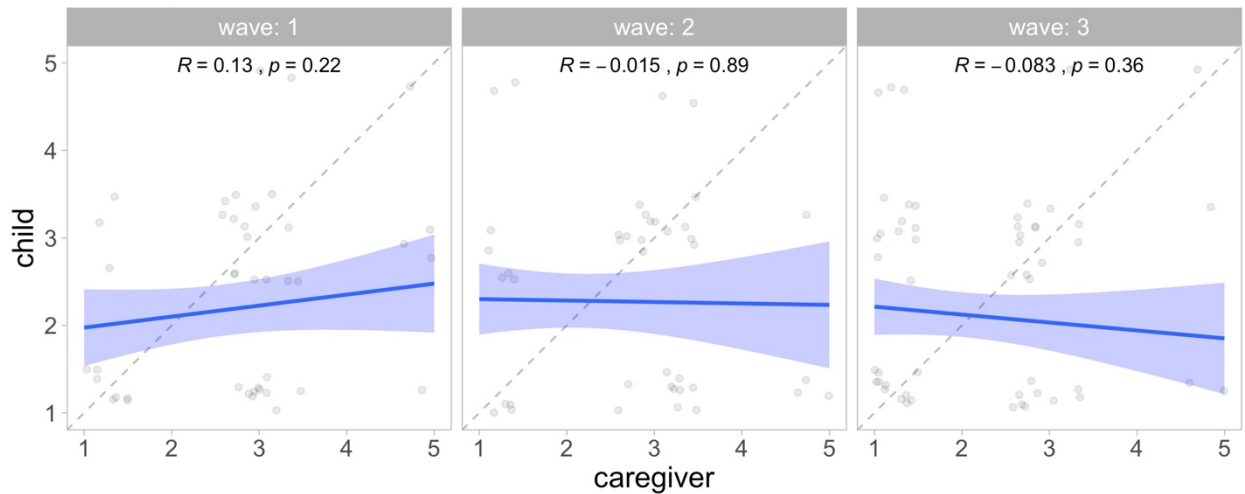
Number of dyads: W1 = 90; 2 = 89; 3 = 122
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 32: HomeSupervision.



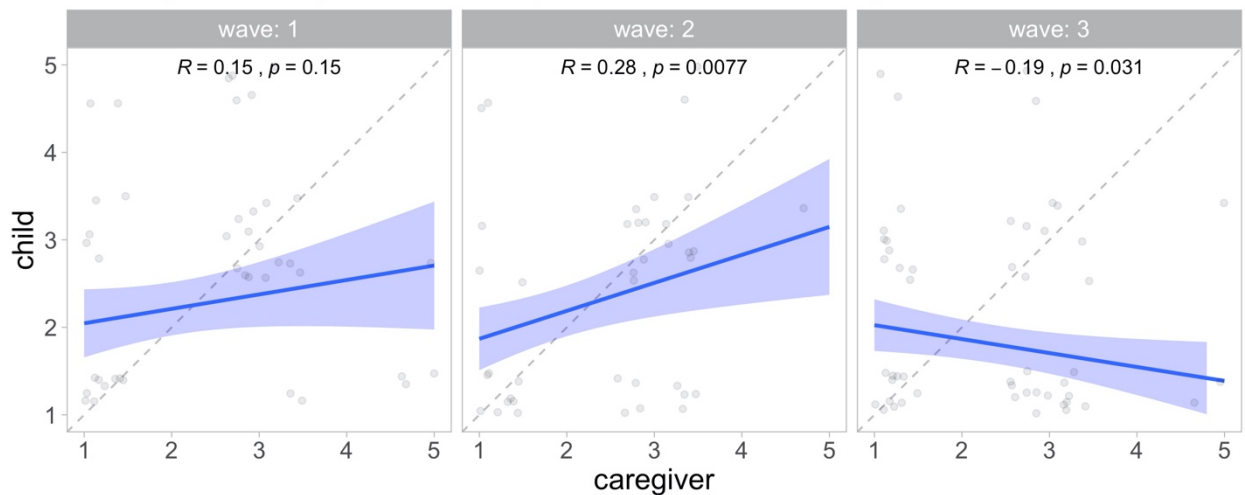
Number of dyads: W1 = 90; 2 = 89; 3 = 124
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 33: SpankHand.



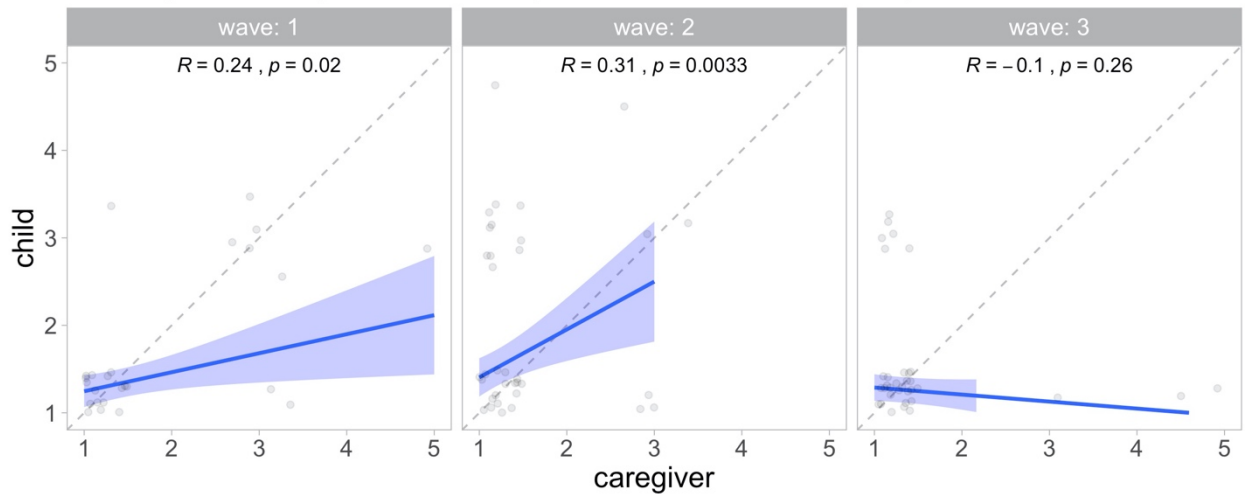
Number of dyads: W1 = 90; 2 = 89; 3 = 123
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 34: IgnoreMisbehaviour.



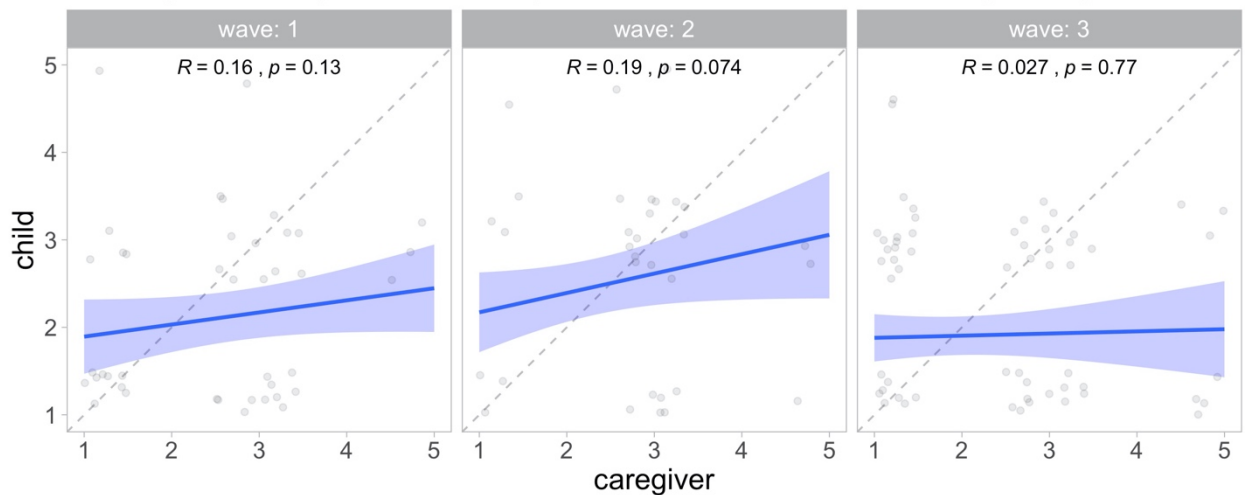
Number of dyads: W1 = 90; 2 = 88; 3 = 124
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 35: SlapChild.



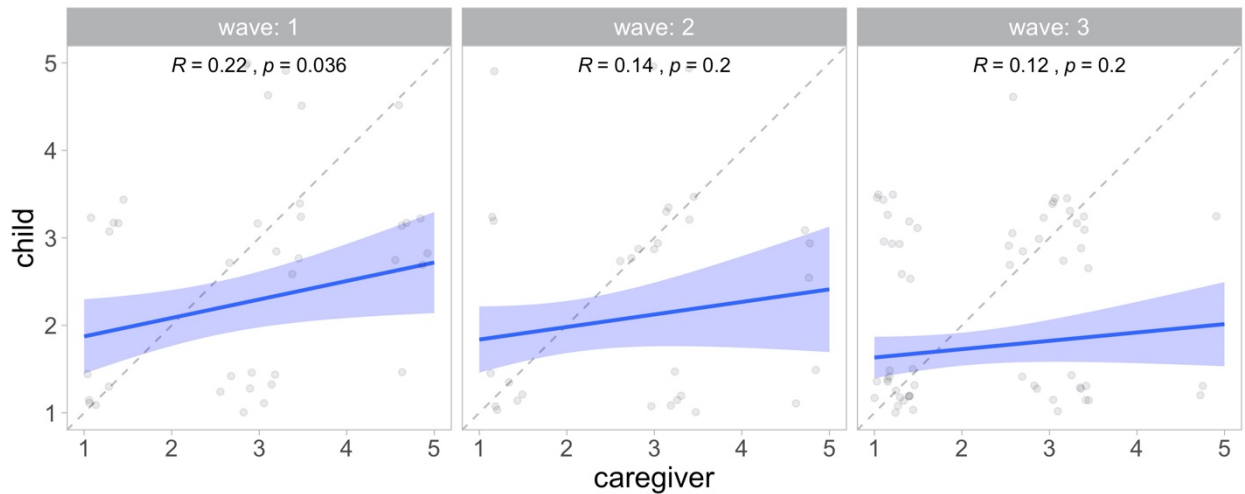
Number of dyads: W1 = 90; 2 = 87; 3 = 122
 Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 36: TakeAwayPrivileges.



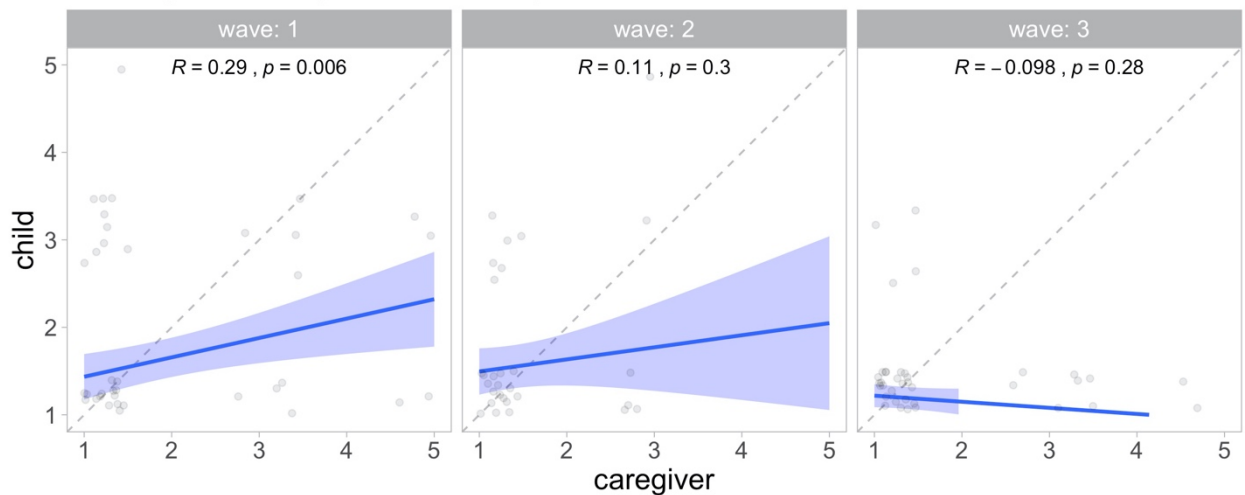
Number of dyads: W1 = 90; 2 = 86; 3 = 124
 Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 37: RoomPunishment.



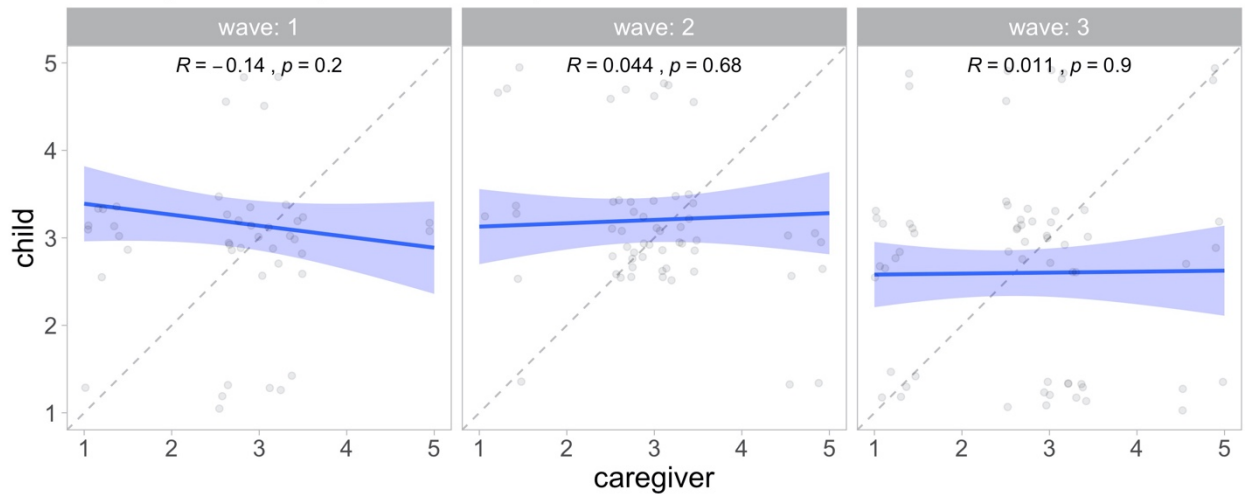
Number of dyads: W1 = 89; 2 = 89; 3 = 124
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 38: HitsWithBelt.



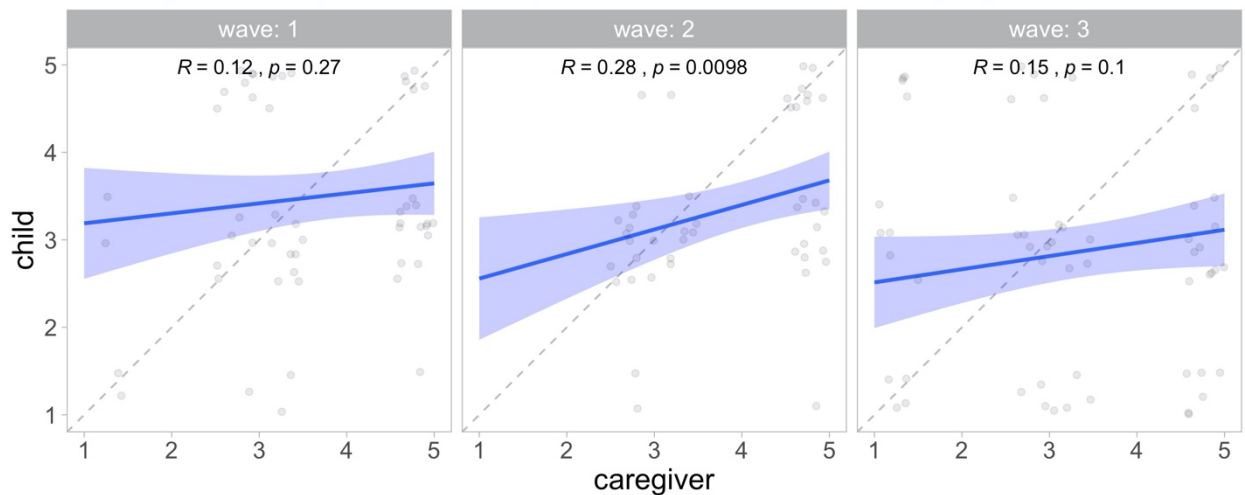
Number of dyads: W1 = 90; 2 = 88; 3 = 123
Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 39: YellScream.



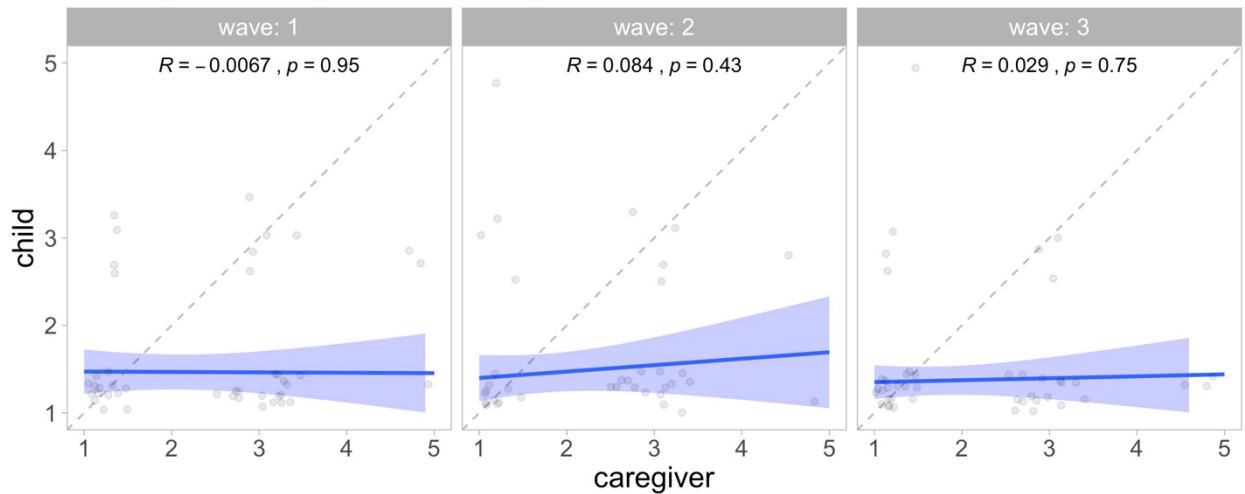
Number of dyads: W1 = 90; 2 = 90; 3 = 124
 Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 40: CalmlyExplains.



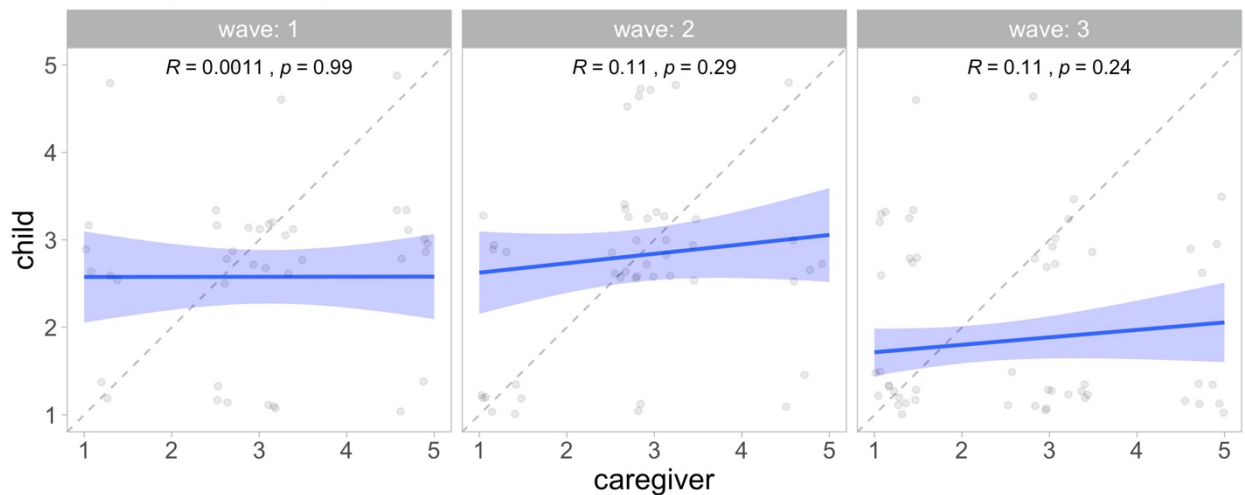
Number of dyads: W1 = 90; 2 = 86; 3 = 125
 Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 41: TimeOut.



Number of dyads: W1 = 90; 2 = 88; 3 = 120
 Some jitter has been added to points in both dimensions to increase data visibility.

Scatter plot of caregiver vs child responses for APQ item 42: ExtraChores.



Number of dyads: W1 = 90; 2 = 88; 3 = 125
 Some jitter has been added to points in both dimensions to increase data visibility.