

The Construct of Maternal Positivity in Mothers of Children with Intellectual Disability.

Background Despite the elevated levels of stress, anxiety and depression reported by mothers of children with intellectual disabilities (ID), these mothers also experience positive well-being and describe positive perceptions of their child. To date, maternal positivity has been operationalised in different ways using a variety of measures. In the present study, we tested whether a latent construct of maternal positivity could be derived from different measures of positivity.

Method One hundred and thirty five mothers of 89 boys and 46 girls with ID between 3 and 18 years of age completed measures on parental self-efficacy, their satisfaction with life, family satisfaction, their positive affect and their positive perceptions of their child with ID. We conducted a confirmatory factor analysis of latent positivity, and subsequently tested its association with child social skills and behaviour problems, and maternal mental health.

Results A latent maternal positivity factor achieved a statistically good fit using the five observed indicators of positivity. Parental self-efficacy had the strongest loading on the latent factor. Maternal positivity was significantly negatively associated with maternal psychological distress, maternal stress, and child problem behaviours and positively associated with child positive social behaviour.

Conclusions These findings lend support to the importance of examining parental positivity in families raising a child with ID, and using multiple indicators of positivity. Associations with negative psychological outcomes suggest that interventions focused on increasing parental positivity may have beneficial effects for parents. Further research is needed, especially in relation to such interventions.

Keywords

Positivity, Self-efficacy, Structural Equation Modelling, confirmatory factor analysis, families

Introduction

There is clear evidence in research literature attesting to the difficulties and negative outcomes associated with raising a child with intellectual disabilities (ID). Compared to mothers of typically developing children, mothers raising children with ID report higher levels of parenting stress, anxiety and symptoms of depression (Eisenhower et al, 2005; Estes et al, 2013; Olsson & Hwang, 2001). Children with ID tend to exhibit higher levels of behaviour problems compared with typically developing children and these behaviours very often explain the elevated parenting stress and negative mental health experienced by parents (Abbeduto et al, 2004; Glidden et al, 2014; Neece & Baker, 2008, Stores et al, 1998).

Although this negative impact is well documented throughout research literature, more recently it has become evident that parents of children with disabilities also experience positive mental health, positive perceptions, and report positive experiences (Hastings, 2016; Hastings & Taunt, 2002). For example, Totsika et al (2011a) conducted a population-based cross-sectional comparison of mothers who had a child with an Autism Spectrum Disorder (ASD) only, ID only, combined ASD and ID and a child with neither condition (comparison group). The children were a representative sample of school age children in the UK. Mothers of children in the disability groups were found to exhibit higher levels of emotional disorder than mothers of the comparison group. However, there were no significant group differences in levels of maternal positive mental health. Similar findings were evident from a nationally representative sample of five year old children: Mothers of children with ID reported higher levels of serious mental ill-health than mothers of children without ID yet still reported similarly high levels of satisfaction with life (Totsika et al, 2011b). These data suggest that positive aspects of psychological well-being do not necessarily have to be compromised due to raising a child with ID and that positive indicators of well-being likely exist in parallel to poorer mental health in mothers of children with developmental disabilities (Hastings, 2016).

There has been a shift within disability research from focusing on negative outcomes such as stress and depression, to exploring positive outcomes (Bolourian & Blacher, 2016; Hastings, 2016; Stainton & Besser, 1998; Trute et al, 2012). For example, the Family Impact Questionnaire (FIQ; Donenberg

& Baker, 1993) assesses parents' positive and negative perceptions of their child's impact on the family (compared to the impact of other children). Using the FIQ, Baker et al (2002) found that mothers of three year old children with ID viewed their child as having a positive impact on their family. It could be argued that these findings were due to lesser demands exhibited in younger children or that challenging behaviours are easier to manage in early childhood. However, also using the FIQ, Blacher et al (2013) reported similar findings in mothers of older children.

Several researchers have explicitly measured parental positive perceptions of children with ID using measures which are disability specific. For example, qualitative research conducted by Behr et al (1992) led to the development of the Kansas Inventory of Parental Perceptions (KIPP) which is specifically for families of children with disabilities. The KIPP consists of four domains, of which one is the Positive Contributions Scale (PCS). The PCS was designed to identify the positive contributions children with disabilities make to their parents and their family.

Using the PCS it has been identified that mothers of children with ID report positive perceptions of their child's contribution to their family and themselves. In a recent study, Vilaseca et al (2014) found that mothers of children with ID between one and nineteen years old reported clinically significant levels of anxiety. However, Vilaseca et al also found that these mothers had a strong positive perception of their child which was not significantly associated with their anxiety. These findings suggested that mothers perceive their child with ID positively from early childhood to late adolescence, and further that positive constructs exist relatively independently from negative maternal outcomes even when these are at clinical levels.

Findings from the latter study offer support to theories around positivity that have suggested that positivity and negativity are separate constructs (Watson & Clark, 1997) thus minimally related to one another, offering an explanation as to why mothers of children with ID are able to experience both positive and negative outcomes simultaneously. However, significant associations have been identified between parental positivity and psychological problems or distress in families of children with ID. For example, Hastings et al, (2005a) identified a small significant negative association

between maternal positive perceptions of their child with ID and parenting stress and depression. Furthermore, in a recent study of mothers of children with ASD Kayfritz et al (2010) found that maternal positive perceptions of their child were negatively associated with maternal parenting stress.

The relationship between challenging behaviour exhibited in children with disabilities and maternal mental health problems is well documented (e.g., Bromley et al, 2004; Gray et al, 2011; Hastings, 2002; Johnston et al, 2003; McConkey et al, 2008; Plant & Sanders, 2007). However the relationship between indicators of positivity and child behaviour problems has received less research attention.

The limited research that does exist suggests that child problem behaviours relate with positive indicators very much in the same way that poor maternal mental health does (i.e., there is a negative association) (Crnic et al, 2005; Suldo & Heubner, 2004; Totsika et al., 2013. In addition to positive perceptions and impact, researchers have considered the role of parental feelings of self-efficacy as a single indicator of positivity. In the context of childhood disability, a parent who is positive about his/her parenting efficacy is likely to be confident in dealing with, and perceive to be in control of their child's behaviour problems. Existing research studies have generally found significant associations between parenting efficacy and child behaviour problems (Jones & Prinz, 2005; Lloyd & Hastings, 2009; Sanders & Woolley, 2004) in addition to associations between efficacy and depression and associations between efficacy and parental stress (Kuhn & Carter, 2006).

Much less attention has been paid to the positive social behaviours than the behaviour problems of children with ID. We might expect positive child behaviours to have a positive association with positive parental outcomes. Prosocial/positive behaviours include turn taking, sharing and compliance with adult instructions. Although prosocial behaviours are exhibited less in children with ID compared to typically developing children, evidence indicates that parents of children with higher levels of prosocial behaviours report higher scores on individual indicators of positivity including positive perceptions and parental efficacy (Lloyd & Hastings, 2009).

In ID family research with a focus on parental positivity, researchers have used a variety of single measures of positivity including general positive constructs (life satisfaction, family satisfaction, and

positive affect: Ekas et al, 2010; Hassall et al, 2005; Lloyd and Hastings 2009), and disability specific measures such as the FIQ, Positive Gain Scale (PGS) and the PCS (Blacher & Baker, 2007; Cianfaglione et al., 2015; Jones et al, 2013; Weiss & Lunsky, 2011).

However, to date the associations between single indicators of positivity and child and maternal outcomes have been relatively small in comparable cross-sectional studies with correlation coefficients either near zero (e.g., $r = -.02$; Positive Contributions and child behaviour problems; Hastings et al, 2005b) or small (e.g., $r = -.29$; Positive Gains and Parental Distress; Minnes et al, 2015). It is possible that positive and negative constructs are not closely related (i.e., are relatively independent). However, researchers have also not explored the relationships between different indicators of parental positivity in ID family research. In addition, there is no consensus on an overall construct of parental positivity. Given that some indicators of positivity used in ID research have been disability-specific; KIPP-PC: Behr et al, 1992; FIQ: Donenberg & Baker, 1993; PGS: Pit-ten Cate, 2003) and others more general (Hope: The Trait Hope Scale, THS: Snyder et al, 1991; The Family Satisfaction Scale, FSS: Olson & Wilson, 1982), it is important to explore whether these represent one underlying positivity construct or distinct domains.

The primary aim of the present study was to investigate whether it was possible to describe maternal positivity by developing a latent construct drawing on several indicators of positivity. Given previous research findings concerning the relationship between single indicators of positivity and child and maternal outcomes, our secondary aim was to clarify whether the association between a latent construct of maternal positivity and maternal negative psychological outcomes and maternal positivity and child behaviours would follow the same direction of associations as previous research on single indicators of positivity and child and maternal outcomes.

Our approach to the identification of putative indicators of maternal positivity was pragmatic and represents an exploratory approach within the current study. We included constructs that were identified in an early literature review and conceptual analysis of parental positive perceptions and outcomes (Hastings & Taunt, 2002). Parenting efficacy has been explored most regularly in existing

research and higher levels of reported efficacy have been reported with increased child behaviour problems (Jones & Prinz, 2005; Lloyd & Hastings, 2009; Sanders & Woolley, 2005), and lower levels of parental depression and stress (Kuhn & Carter, 2006). Both general life satisfaction and family satisfaction have been explored in previous research as indicators of positivity (Griffith et al., 2010), as have general positive affect and perceived positive contributions by the child with ID (Hastings et al., 2005).

Methods

Participants

One hundred and thirty five mothers of children with ID participated in the research. Their ages ranged from 23 years to 57 years ($M=39.45$ years, $SD=7.23$). A majority of the mothers were married or living with a partner ($n=102$), although 33 (24.44%) were divorced. The majority of mothers in the sample were well educated: 68 (50.37%) had a college or university education, 47 (34.81%) had secondary school leaving qualifications, and 20 (14.81%) mothers had no formal educational qualifications. Sixty-five mothers (48.15%) had paid work outside the home and the remaining 70 (51.85%) mothers were not in paid employment. Of the 65 mothers who were in paid employment, 18 (27.69%) worked full-time and 47 (72.31%) worked part-time.

The children with ID were 89 (65.93%) boys and 46 (34.07%) girls. Their ages ranged from 3 years to 18 years ($M=10.02$ years; $SD= 4.11$ years). Fifty-five (40.74%) children were reported as having a diagnosis of Autism in addition to ID, 25 (18.52%) had Down Syndrome, 16 (11.85%) had Cerebral Palsy, and the remainder were a mixed aetiology ID group (20.89%). The diagnoses were based on parental reports, and we did not have access to clinical notes to establish the validity of these reports. At the time of data collection, all the children attended Special Schools in North Wales or the North West of England in which primarily children with severe intellectual disability were educated. The majority of households had a total of 1 (22.22%) or 2 (42.22%) children living at home. Thirty five

households had 3 (25.93%) children at home, nine had 4 (6.67%) children and 3 had 5 (2.22%) children. One mother did not report on the total number of children living in the family home.

Measures

A total of nine measures were used in this study, in addition to a demographic questionnaire that assessed sociodemographic characteristics reported in the participants' section.

Maternal Positivity measures

Positivity data was collected from five measures: three general positive measures and two focused on positivity in the context of parenting the child with ID.

The Satisfaction With Life Scale (Diener et al, 1985) is a five- item scale that asks participants to report their degree of agreement or disagreement to statements such as, "The conditions of my life are excellent" on a seven-point Likert-type scale. This scale was designed to measure subjective well-being among normative populations but has been used successfully and shown to have excellent psychometric properties when used with mothers of children with ID (Griffith et al, 2010).

Cronbach's alpha for the present sample was .87.

The Family Satisfaction Scale has fourteen items and measures family cohesion and adaptability (Olson & Wilson, 1982). Participants are asked to report their degree of satisfaction to statements such as, "How satisfied are you with the amount of time you spend together as a family?" and "How satisfied are you with how often you make decisions as a family, rather than individually?" using a 5-point Likert- type scale. We modified this scale to be used by parents with a dependant. Therefore, we excluded two items ("How satisfied are you with how often parents make decisions in your family?" And "How satisfied are you with how much mother and father argue with each other?") as these items reflected the satisfaction of a dependent child. This scale was designed for a normative population but has been used successfully and shown to have good levels of reliability when used with mothers of children with ID (Griffith et al., 2010). Cronbach's alpha for the present sample was .94.

The Positive Affect Scale taken from the Positive and Negative Affect Scales (Watson et al. 1988) measures positive feelings and emotions, by asking mothers to rate 10 words such as “Interested” and “Determined” using a 5-point Likert-type scale. Mothers rated to what extent each word applied to them at the time of completion on a Likert-type scale ranging from “very slight or not at all” to “extremely.” This scale was designed for a normative population but has been used successfully and shown to have good levels of reliability when used with mothers of children with ID (Hastings et al, 2005a). Cronbach’s alpha for the present sample was .91.

The first of the positivity measures focused on experiences of parenting the child with ID was the Parental Self-Efficacy Scale (Hastings & Brown, 2002). This measure consisted of five efficacy items (e.g. feelings of confidence in parenting, a rating of how difficult they find it to parent their child with ID). Items are rated from “not at all” to “very” on a 7-point Likert-type scale. The Cronbach’s alpha for the present sample was .89.

The Positive Contributions Scale from the Kansas Inventory of Parental Perceptions (PCS; Behr et al.1992) was used to measure mothers’ perceptions of the positive contributions their child with a disability has brought to themselves (such as, personal growth and maturity, happiness and fulfilment), to the wider family (strength and family closeness) and that the child has a number of positive characteristics (such as, kind and loving). This scale was developed for parents of children with ID and has been used successfully demonstrating good reliability with mothers of children with ID (Lloyd & Hastings, 2008). Cronbach’s alpha for the total score on the PCS for the present sample was .93.

Maternal psychological problems measures

Two measures of mothers’ psychological problems were included. Maternal stress, related to having a child with a disability in the family was measured using the 52- item Parent and Family Problems subscale of the Questionnaire on Resources and Stress- Friedrich short form (QRS-F; Friedrich et al, 1983). We excluded five items as they have been identified as a robust measure of depression (Glidden & Floyd, 1997). This was to ensure that there was no overlap between the measures of stress

and of mental health problems used in the present research. Participants are asked whether each item is 'True' or 'False' for them. The QRS-F was designed for families of children with disability and has good reliability when used with mothers of children with ID (Griffith et al., 2011). A Kuder-Richardson coefficient of .84 was gained for the present sample for the total parent and family problems score.

Maternal psychological distress was assessed using the Hospital Anxiety and Depression Scales (HADS; Zigmond and Snaith, 1983). This consists of two, seven-item subscales that are rated from zero to three that measure levels of anxiety and depression. A dimensional approach was taken for the main analyses, with a total score of the two sub-scales being used. Combining scores of both scales is a method to obtain a general measure of psychological distress (Crawford et al, 2001). A total score of more than 22 indicates moderate to severe cases of psychological distress. The HADS was developed to be used in a medical outpatient clinic but has been widely used in samples of parents of children with disabilities (Beck et al, 2004; MacDonald et al, 2010). The Cronbach's alpha for the psychological distress total score for the present sample was .87.

Child behaviour measures

The Reiss Scales for Children's Dual Diagnosis (Reiss & Valenti-Hein, 1990) is a 60 item measure designed to assess psychopathology in children with intellectual disabilities. Each item is scored on a three point scale, "No Problem", "Problem", or "Major Problem". There are 10 subscales (attention deficit, anger, anxiety, conduct disorder, depression, autism, psychosis, self-esteem, somatoform and withdrawn behaviours). These scales can be used separately or summed to form a total behaviour problem score and this has been used in several studies of children with ID (Lloyd & Hastings, 2009; Maes et al, 2003). For the present study we used the total score only. The Cronbach's alpha for the total score in the present sample was .95.

The Nisonger Child Behaviour Rating Form (NCBRF; Aman et al, 1996) is a 76-item measure consisting of two scales designed to assess several different behaviours in children with ID. The social competence scale of the NCBRF was used to measure child positive social behaviour. This is a ten-

item scale of positive behaviours that are described as either calm/compliant (e.g., followed rules) or adaptive/ social behaviours (e.g., participated in group activities). Items are rated from “not true” to “completely always true” on a 4-point Likert-type scale. This measure has been used successfully with ID children (Walz & Benson, 2002) The Cronbach’s alpha for the total child positive social behaviour score for the present sample was .88.

Procedure

Participants were a sub-sample from a study of families of children with ID (Hastings et al., 2005a). Families were recruited through the child’s special school. Information packs about the research were sent to families via their children who attended a school for children with ID. Within the information pack was a response form and a business reply envelope. When response forms had been returned, separate questionnaire packs and consent forms were posted to the primary caregiver (mother). Families were offered a small payment for returning the questionnaires to recognise the time they had spent participating in the research.

Statistical Analysis

We conducted our analyses with structural equation modelling (SEM) using AMOS 22 (Arbuckle, 2013). Analyses were conducted in two distinct phases. We conducted a Confirmatory Factor Analysis (CFA) to test the hypothesis that a latent construct of maternal positivity could be generated from the five indicators of positivity. We then explored associations between maternal positivity and maternal mental health problems and associations between maternal positivity and child behaviour (behaviour problems and positive social behaviour) in 4 separate SEM models. The aim at this point was to explore which child and maternal outcomes correlated with the construct of maternal positivity rather than test whether the data fitted well with these models. However fit indices are presented for all models (see Table 3). To evaluate model fit we used several criteria: the ratio of chi-square to degrees of freedom (CMIN/DF) under 2 (Tabachnick & Fidell, 2007), Root Mean Square Error of Approximation (RMSEA) under .05 (Browne & Cudeck, 1993) and the Comparative Fit Index (CFI)

above .95 (Hu & Bentler, 1999). In addition, when fitting the confirmatory factor analyses, we used the Akaike Information Criterion (AIC) which is used in the comparison of two or more nested models, with smaller values representing a better fit of the hypothesised model (Hu & Bentler, 1995).

Results

Developing the Latent Construct of Maternal Positivity

We initially fit the five indicators to our latent construct without correlating any of their error terms. However, the fit indices exceeded the values we used as guidance for a good fit (see earlier). We then ran bivariate correlations between each of the measures of maternal positivity (see Table 1). Bivariate correlations coefficients that were at or greater than .45 were allowed to have correlated error terms in the model. However when parental efficacy was allowed to correlate with satisfaction with life and family satisfaction, the model did not fit to the data. Therefore, the error term of efficacy was not correlated with any other term. The final model with the selected correlated errors represented a good fit to the data as supported by the fit indices (see Table 2). As can be seen in Table 2, in addition to the other fit indices observed, the AIC also indicated the better fit of the model with correlated error terms.

In the final model (Figure 1), the factor loadings of the five indicators were all significant ($p < .001$) with Parental Efficacy having the strongest factor loading, $\beta = .80$ and thus the strongest contribution to the latent positivity construct.

Associations between Maternal Positivity and other maternal/child variables

We examined associations between the maternal positivity latent construct and other study variables. Maternal positivity had a significant negative association with maternal parenting stress ($\beta = -.74, p = < .001$), a significant negative association with maternal psychological distress ($\beta = -.76, p = .006$), a

significant positive association with child positive social behaviour ($\beta = .48, p < .001$), and a significant negative association with children's behaviour problems ($\beta = .54, p < .001$.) See Table 3 for model fit indices.

Discussion

In the present study, we tested the potential of fitting a latent maternal positivity factor using five indicators with some parenting or disability-specific (parenting self-efficacy, positive contribution) and others representing general positivity (family satisfaction, life satisfaction, positive affect). Findings suggested that there is indeed an underlying positivity construct that can be described using general positive measures as well as positivity measures specifically focused on the experience of parenting a child with ID.

In the current study, parental self-efficacy had the strongest loading on maternal positivity whereas positive contributions had the weakest loading (see Figure 1). It is not clear why parental self-efficacy loaded the strongest in this study. It may be that maternal belief in having a positive effect on their child drives the other indicators of positivity. However, this possibility would need to be explored further in longitudinal research.

In our second stage of analyses, we found that the latent construct of maternal positivity had a significant positive association with child positive social behaviour, and negative associations with maternal psychological distress, parental stress and child behaviour problems. These associations were reasonably substantial, suggesting robust relationships with both measures of maternal mental health and child functioning. These findings are in contrast to much of the previous research suggesting weak relationships between single indicators of positivity and both child functioning and maternal psychological problems (stress, anxiety and depression).

Importantly we were able to replicate the negative associations identified in previous studies, between single positivity indicators and child behaviour problems and maternal mental health problems using the latent construct of maternal positivity in place of a single indicator. Furthermore, we added to the extant literature by finding that positive child behaviours were positivity associated with maternal positivity.

In this study, all five indicators contributed to the latent positivity construct. Maternal Positivity had strong associations with all four child and maternal outcomes which suggests that single indicators are not broad enough to fully represent maternal positivity in its entirety but isolated, they do not have particularly strong associations with child and maternal outcomes.

Interestingly, the fit indices for the maternal positivity and psychological distress model presented a poorer fit with the data (see Table 3) as only one of the reported indices (CFI) indicated a good fit. Although our primary aim was to explore the direction of associations between the new positivity construct and other key constructs, the fit for this model should indicate cautious interpretation of the findings. To improve fit in future research, a wider range of key variables would probably need to be included.

There is a need for mothers to find effective ways to reduce the levels of stress and other negative outcomes associated with raising a child with ID. The current theoretical findings have practical implications for targeting key constructs for intervention. Longitudinal data are required to confirm our findings. However, our findings suggest that targeting parental positivity (especially mothers' feelings of efficacy in the parenting role) may help to reduce maternal psychological problems and potentially also improve child functioning. These suggestions are borne out by results from existing intervention studies. For example, Hudson et al (2003) found that intervention methods which increased feelings of parental efficacy in families of children with ID led to a reduction in child behaviour problems and parental stress.

It is important that a number of methodological limitations of the current study are considered. First, diagnostic status was not confirmed by a practitioner or clinical reports. However, the children were

all attending specialist schools and so were likely to have clinically diagnosed ID. Second, mothers completed all measures. Therefore, there is a problem of source variance that may have inflated associations between study variables. Future research studies should incorporate multi-informant measures especially of child functioning or independent measures of maternal well-being perhaps incorporating observations of happiness for example. As suggested earlier, due to the cross-sectional study design, causality cannot be inferred and there is a clear need for longitudinal studies of parental positivity building on multiple indicators of positivity. Further research should also investigate which indicators make up paternal positivity and whether such a construct would have similar associations with child and paternal outcomes in an effort to support fathers raising children with ID.

References

- Abbeduto, L., Seltzer, M. M., Shattuck, P., Krauss, M. W., Orsmond, G., & Murphy, M. M. (2004). Psychological well-being and coping in mothers of youths with autism, down syndrome, or fragile X syndrome. *American Journal on Mental Retardation*, *109*(3), 237-254.
- Aman, M. G., Tassé, M. J., Rojahn, J., & Hammer, D. (1996). The Nisonger CBRF: A child behavior rating form for children with developmental disabilities. *Research in developmental disabilities*, *17*(1), 41-57.
- Arbuckle, J. (2013). *AMOS 22. User's Guide*. Chicago, IL: SmallWaters Corporation.
- Baker, B. L., Blacher, J., Crnic, K. A., & Edelbrock, C. (2002). Behavior problems and parenting stress in families of three-year-old children with and without developmental delays. *American Journal on Mental Retardation*, *107*(6), 433-444.
- Beck, A., Hastings, R. P., Daley, D., & Stevenson, J. (2004). Pro-social behaviour and behaviour problems independently predict maternal stress. *Journal of Intellectual and Developmental Disability*, *29*(4), 339-349.
- Behr, S. K., Murphy, D. L., & Summers, J. A. (1992). *User's Manual: Kansas Inventory of Parental Perceptions (KIPP): Measures of Perceptions of Parents who Have Children with Special Needs*. Beach Center on Families and Disability, University of Kansas.
- Blacher, J., & Baker, B. L. (2007). Positive impact of intellectual disability on families. *American Journal on Mental Retardation*, *112*(5), 330-348.
- Blacher, J., Begum, G. F., Marcoulides, G. A., & Baker, B. L. (2013). Longitudinal perspectives of child positive impact on families: Relationship to disability and culture. *American journal on intellectual and developmental disabilities*, *118*(2), 141-155.
- Bolourian, Y., & Blacher, J. (2016). Impact of Youth with Intellectual and Developmental Disabilities on Families: Balancing Perspectives. *Current Developmental Disorders Reports*, 1-8.
- Bromley, J., Hare, D. J., Davison, K., & Emerson, E. (2004). Mothers supporting children with autistic spectrum disorders social support, mental health status and satisfaction with services. *Autism*, *8*(4), 409-423.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. *Sage focus editions*, *154*, 136-136.
- Cianfaglione, R., Hastings, R. P., Felce, D., Clarke, A., & Kerr, M. P. (2015). Psychological well-being of mothers and siblings in families of girls and women with Rett syndrome. *Journal of autism and developmental disorders*, *45*(9), 2939-2946.
- Crawford, J. R., Henry, J. D., Crombie, C., & Taylor, E. P. (2001). Normative data for the HADS from a large non-clinical sample. *British Journal of Clinical Psychology*, *40*(4), 429-434.
- Crnic, K. A., Gaze, C., & Hoffman, C. (2005). Cumulative parenting stress across the preschool period: Relations to maternal parenting and child behaviour at age 5. *Infant and Child Development*, *14*(2), 117-132.

- Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of personality assessment*, 49(1), 71-75.
- Donenberg, G., & Baker, B. L. (1993). The impact of young children with externalizing behaviors on their families. *Journal of abnormal child psychology*, 21(2), 179-198.
- Eisenhower, A. S., Baker, B. L., & Blacher, J. (2005). Preschool children with intellectual disability: syndrome specificity, behaviour problems, and maternal well-being. *Journal of Intellectual Disability Research*, 49(9), 657-671.
- Ekas, N. V., Lickenbrock, D. M., & Whitman, T. L. (2010). Optimism, social support, and well-being in mothers of children with autism spectrum disorder. *Journal of autism and developmental disorders*, 40(10), 1274-1284.
- Estes, A., Olson, E., Sullivan, K., Greenson, J., Winter, J., Dawson, G., & Munson, J. (2013). Parenting-related stress and psychological distress in mothers of toddlers with autism spectrum disorders. *Brain and Development*, 35(2), 133-138.
- Friedrich, W. N., Greenberg, M. T., & Crnic, K. (1983). A short-form of the Questionnaire on Resources and Stress. *American journal of mental deficiency*.
- Glidden, L. M., & Floyd, F. J. (1997). Disaggregating parental depression and family stress in assessing families of children with developmental disabilities: A multisample analysis. *American Journal on Mental Retardation*, 102, 250-266.
- Glidden, L. M., Grein, K. A., & Ludwig, J. A. (2014). The Down syndrome advantage: it depends on what and when you measure. *American journal on intellectual and developmental disabilities*, 119(5), 389-404.
- Gray, K. M., Piccinin, A. M., Hofer, S. M., Mackinnon, A., Bontempo, D. E., Einfeld, S. L., ... & Tonge, B. J. (2011). The longitudinal relationship between behavior and emotional disturbance in young people with intellectual disability and maternal mental health. *Research in developmental disabilities*, 32(3), 1194-1204.
- Griffith, G. M., Hastings, R. P., Nash, S., & Hill, C. (2010). Using matched groups to explore child behavior problems and maternal well-being in children with Down syndrome and autism. *Journal of autism and developmental disorders*, 40(5), 610-619.
- Griffith, G. M., Hastings, R. P., Oliver, C., Howlin, P., Moss, J., Petty, J., & Tunnicliffe, P. (2011). Psychological well-being in parents of children with Angelman, Cornelia de Lange and Cri du Chat syndromes. *Journal of Intellectual Disability Research*, 55(4), 397-410.
- Hassall, R., Rose, J., & McDonald, J. (2005). Parenting stress in mothers of children with an intellectual disability: The effects of parental cognitions in relation to child characteristics and family support. *Journal of Intellectual Disability Research*, 49(6), 405-418.
- Hastings, R. P. (2016). Do Children With Intellectual and Developmental Disabilities Have a Negative Impact on Other Family Members? The Case for Rejecting a Negative Narrative. *International Review of Research in Developmental Disabilities*.
- Hastings, R. P. (2002). Parental stress and behaviour problems of children with developmental disability. *Journal of Intellectual and Developmental Disability*, 27(3), 149-160.

- Hastings, R. P., Beck, A., & Hill, C. (2005a). Positive contributions made by children with an intellectual disability in the family Mothers' and fathers' perceptions. *Journal of Intellectual Disabilities*, 9(2), 155-165.
- Hastings, R. P., & Brown, T. (2002). Behavior problems of children with autism, parental self-efficacy, and mental health. *American journal on mental retardation*, 107, 222-232.
- Hastings, R. P., Kovshoff, H., Ward, N. J., Degli Espinosa, F., Brown, T., & Remington, B. (2005b). Systems analysis of stress and positive perceptions in mothers and fathers of pre-school children with autism. *Journal of autism and developmental disorders*, 35(5), 635-644.
- Hastings, R. P., & Taunt, H. M. (2002). Positive perceptions in families of children with developmental disabilities. *American journal on mental retardation*, 107(2), 116-127.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, 6(1), 1-55.
- Hu, L. T., & Bentler, P. M. (1995). Evaluating model fit.
- Hudson, A. M., Matthews, J. M., Gavidia-Payne, S. T., Cameron, C. A., Mildon, R. L., Radler, G. A., & Nankervis, K. L. (2003). Evaluation of an intervention system for parents of children with intellectual disability and challenging behaviour. *Journal of Intellectual Disability Research*, 47(4-5), 238-249.
- Johnston, C., Hessel, D., Blasey, C., Eliez, S., Erba, H., Dyer-Friedman, J., ... & Reiss, A. L. (2003). Factors associated with parenting stress in mothers of children with fragile X syndrome. *Journal of Developmental & Behavioral Pediatrics*, 24(4), 267-275.
- Jones, T. L., & Prinz, R. J. (2005). Potential roles of parental self-efficacy in parent and child adjustment: A review. *Clinical psychology review*, 25(3), 341-363.
- Jones, L., Totsika, V., Hastings, R. P., & Petalas, M. A. (2013). Gender differences when parenting children with autism spectrum disorders: A multilevel modeling approach. *Journal of Autism and Developmental Disorders*, 43(9), 2090-2098.
- Kayfitz, A. D., Gragg, M. N., & Robert Orr, R. (2010). Positive experiences of mothers and fathers of children with autism. *Journal of Applied Research in Intellectual Disabilities*, 23(4), 337-343.
- Kuhn, Jennifer C., and Alice S. Carter. "Maternal self-efficacy and associated parenting cognitions among mothers of children with autism." *American Journal of Orthopsychiatry* 76, no. 4 (2006): 564-575.
- Lloyd, T. J., & Hastings, R. (2009). Hope as a psychological resilience factor in mothers and fathers of children with intellectual disabilities. *Journal of Intellectual Disability Research*, 53(12), 957-968.
- Lloyd, T., & Hastings, R. P. (2008). Psychological variables as correlates of adjustment in mothers of children with intellectual disabilities: cross-sectional and longitudinal relationships. *Journal of Intellectual Disability Research*, 52(1), 37-48.

MacDonald, E. E., Hastings, R. P., & Fitzsimons, E. (2010). Psychological acceptance mediates the impact of the behaviour problems of children with intellectual disability on fathers' psychological adjustment. *Journal of Applied Research in Intellectual Disabilities*, 23(1), 27-37.

Maes, B., Broekman, T. G., Došen, A., & Nauts, J. (2003). Caregiving burden of families looking after persons with intellectual disability and behavioural or psychiatric problems. *Journal of Intellectual Disability Research*, 47(6), 447-455.

McConkey, Roy, Maria Truesdale-Kennedy, Mei-Ying Chang, Samiha Jarrah, and Raghda Shukri. "The impact on mothers of bringing up a child with intellectual disabilities: A cross-cultural study." *International Journal of Nursing Studies* 45, no. 1 (2008): 65-74.

Minnes, P., Perry, A., & Weiss, J. A. (2015). Predictors of distress and well-being in parents of young children with developmental delays and disabilities: The importance of parent perceptions. *Journal of Intellectual Disability Research*, 59(6), 551-560.

Neece, C., & Baker, B. (2008). Predicting maternal parenting stress in middle childhood: The roles of child intellectual status, behaviour problems and social skills. *Journal of Intellectual Disability Research*, 52(12), 1114-1128.

Olson, D. H., & Wilson, M. A. (1982). *Family satisfaction*. University of Minnesota, family social science.

Olsson, M. B., & Hwang, C. P. (2001). Depression in mothers and fathers of children with intellectual disability. *Journal of Intellectual Disability Research*, 45(6), 535-543.

Pit-ten Cate, I. (2003). Positive gain in mothers of children with physical disabilities. *Unpublished Doctoral Dissertation, University of Southampton, UK*.

Plant, K. M., & Sanders, M. R. (2007). Predictors of care-giver stress in families of preschool-aged children with developmental disabilities. *Journal of Intellectual Disability Research*, 51(2), 109-124.

Reiss, S., & Valenti-Hein, D. (1990). The Reiss scales for children's dual diagnosis. *Chicago: IDS*.

Sanders, M. R., & Woolley, M. L. (2005). The relationship between maternal self-efficacy and parenting practices: Implications for parent training. *Child: care, health and development*, 31(1), 65-73.

Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., Sigmon, S. T., ... & Harney, P. (1991). The will and the ways: development and validation of an individual-differences measure of hope. *Journal of personality and social psychology*, 60(4), 570.

Stainton, T., & Besser, H. (1998). The positive impact of children with an intellectual disability on the family. *Journal of Intellectual and Developmental Disability*, 23(1), 57-70.

Stores, R., Stores, G., Fellows, B., & Buckley, S. (1998). Daytime behaviour problems and maternal stress in children with Down's syndrome, their siblings, and non-intellectually disabled and other intellectually disabled peers. *Journal of Intellectual Disability Research*, 42(3), 228-237.

Suldo, S. M., & Huebner, E. S. (2004). The role of life satisfaction in the relationship between authoritative parenting dimensions and adolescent problem behavior. In *Quality-of-Life Research on Children and Adolescents* (pp. 165-195). Springer Netherlands.

Tabachnick, B. G., & Fidell, L. S. (2007). Multivariate analysis of variance and covariance. *Using multivariate statistics*, 3, 402-407.

Totsika, V., Hastings, R. P., Emerson, E., Berridge, D. M., & Lancaster, G. A. (2011b). Behavior problems at 5 years of age and maternal mental health in autism and intellectual disability. *Journal of abnormal child psychology*, 39(8), 1137-1147.

Totsika, V., Hastings, R. P., Emerson, E., Lancaster, G. A., & Berridge, D. M. (2011a). A population-based investigation of behavioural and emotional problems and maternal mental health: Associations with autism spectrum disorder and intellectual disability. *Journal of Child Psychology and Psychiatry*, 52(1), 91-99.

Totsika, V., Hastings, R. P., Emerson, E., Lancaster, G. A., Berridge, D. M., & Vagenas, D. (2013). Is there a bidirectional relationship between maternal well-being and child behavior problems in autism spectrum disorders? Longitudinal analysis of a population-defined sample of young children. *Autism Research*, 6(3), 201-211.

Trute, Barry, Karen M. Benzies, and Catherine Worthington. "Mother positivity and family adjustment in households with children with a serious disability." *Journal of child and family studies* 21, no. 3 (2012): 411-417.

Vilaseca, R., Ferrer, F., & Olmos, J. G. (2014). Gender differences in positive perceptions, anxiety, and depression among mothers and fathers of children with intellectual disabilities: a logistic regression analysis. *Quality & Quantity*, 48(4), 2241-2253.

Walz N. C. & Benson B. A. (2002) Behavioral phenotypes in children with Down syndrome, Prader-Willi syndrome, or Angelman syndrome. *Journal of Developmental and Physical Disabilities* 14, 307-21.

Watson, D. and Clark, L.A., 1997. Measurement and mismeasurement of mood: Recurrent and emergent issues. *Journal of personality assessment*, 68(2), pp.267-296.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of personality and social psychology*, 54(6), 1063.

Weiss, J. A., & Lunsy, Y. (2011). The brief family distress scale: A measure of crisis in caregivers of individuals with autism spectrum disorders. *Journal of child and family studies*, 20(4), 521-528.

Zigmond, A. S., & Snaith, R. P. (1983). The hospital anxiety and depression scale. *Acta psychiatrica scandinavica*, 67(6), 361-370

Figure 1. The latent construct of maternal positivity and the factor loadings of the 5 indicators of positivity.

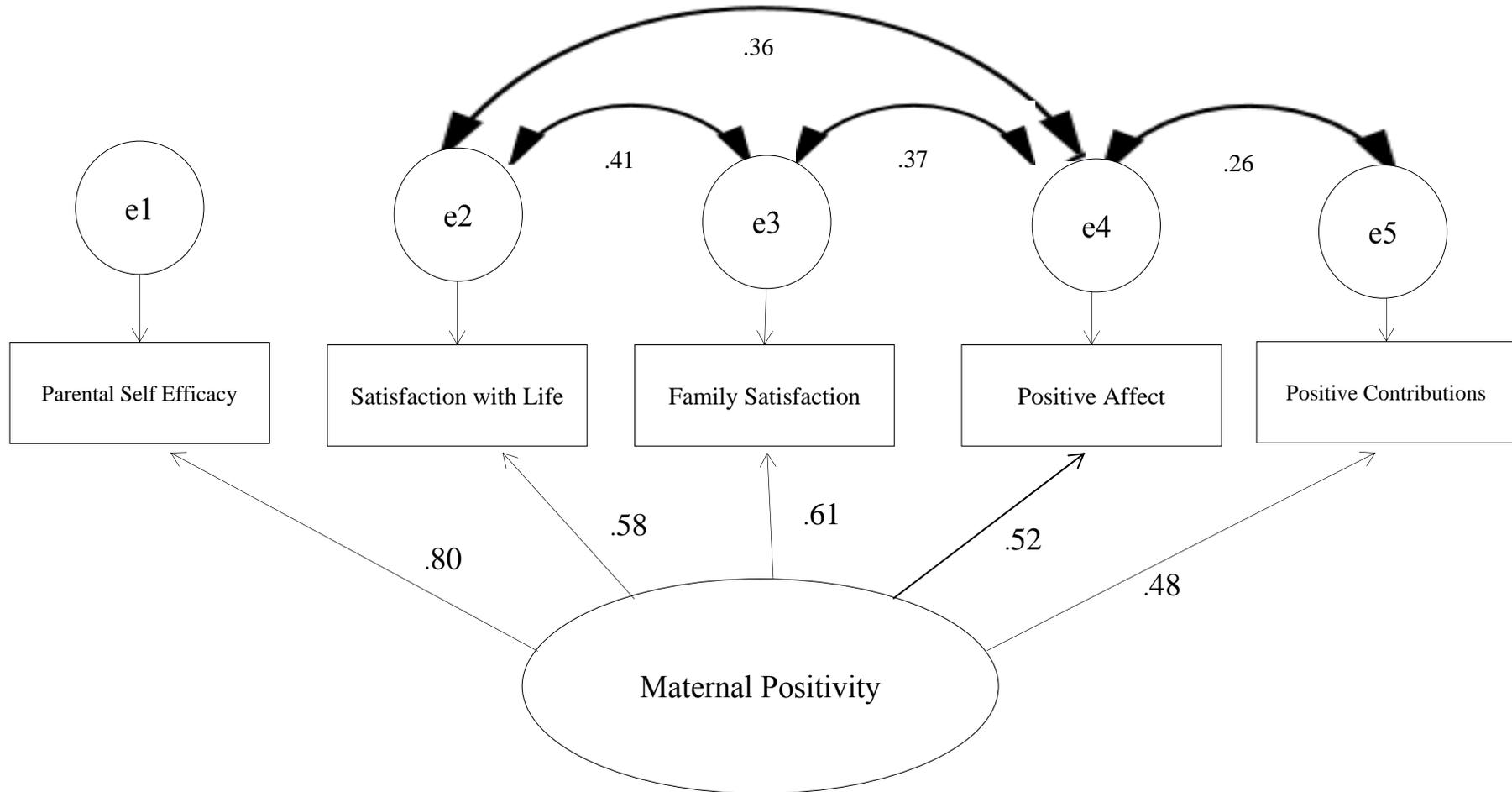


Table 1. Associations (Pearson's correlation Coefficient) between child behaviour and maternal measures.

Measure	1	2	3	4	5
1.Parental Self Efficacy	-	.45**	.46**	.40**	.37**
2.Satisfaction with Life		-	.62**	.54**	.24**
3.Family Satisfaction			-	.57**	.33**
4.Positive Affect				-	.45**
5. Positive Contributions					-

** Correlation is at the 0.01 level (2-tailed),* Correlation is at the 0.05 level (2-tailed)

Table 2. Model fit indices for the latent constructs of maternal positivity.

	χ^2	p-value	CMIN/DF	RMSEA	CFI	AIC
Uncorrelated errors terms	13.77	.02	2.76	.11	.96	43.77
Correlated error terms	1.33	.25	1.33	.05	1	39.33

Table 3. Model fit indices for associations between the latent construct of maternal positivity and child and maternal outcomes.

Model	χ^2	p-value	CMIN/DF	RMSEA	CFI
Maternal Positivity x Parental Stress	3.91	.56	.78	<.001	1
Maternal Positivity x Psychological Distress	19.09	.002	3.82	.14	.95
Maternal Positivity x Child Positive Social Behaviours	4.15	.53	.83	<.001	1
Maternal Positivity x Child Behaviour Problems	3.15	.68	.63	<.001	1