

**Does 'Wanting the Best' Create More Stress? The Link
Between Baby Sign Classes and Maternal Anxiety**

Keywords: gesture, stress, infant, parent, baby sign

Abstract

This study investigated whether gesturing classes (baby sign) affected parental frustration and stress, as advertised by many commercial products. The participants were 178 mother-infant dyads, divided into a gesture group (n=89) and a non-gesture group (n=89), based on whether they had attended baby sign classes or not. Mothers completed a background demographics questionnaire and the Parenting Stress Index. Gesturing mothers had higher total stress scores, with higher scores on the child domain, despite having similar backgrounds to non-gesturing mothers. There was no relationship between the frequency or duration of gesture use and stress scores. It is suggested that gesturing mothers had higher pre-existing stress and were attracted to gesture classes because of the promoted benefits, which include stress reduction, although class attendance did not alleviate their stress. The possibility that attending gesturing classes made mothers view their infant in a more negative way, due to their heightened expectations not being met, is also discussed.

Does 'wanting the best' create more stress? The link between baby sign classes and maternal anxiety.

As long as there are parents who want the very best for their child, there will be companies keen to offer a vast range of products to promote the child's development. The linguistic and cognitive development of under-threes has become a growing target of the baby 'market'. Also the age at which parents are encouraged to intervene in their child's development is getting younger, before the child can even talk, despite evidence that some commercial products have a detrimental effect on early development (Zimmerman, Christakis & Meltzoff, 2007). A corresponding growth has been seen in the choice of classes available to mothers and infants, e.g. baby massage, music and gesturing classes. The latter (commonly referred to as baby signing classes) teaches mother and infant keyword gestures or 'baby signs' for everyday objects and concepts. The gestures come from American Sign Language (ASL), British Sign Language (BSL) and symbolic signs specifically created for gesture classes. Popularity of these classes is on the increase, with one company (TinyTalk) in the UK running over 400 classes, teaching over 5000 families, each week.

The promised benefits of attending gesture classes for infants are higher IQ, increased vocabulary size, enhanced intellectual and emotional development, greater confidence and higher self-esteem (e.g. www.tinytalk.co.uk; www.singandsign.com). However, the linguistic benefits for gesturing with infants are still equivocal (Johnston, Durieux-Smith & Bloom, 2005) and a recent longitudinal randomised controlled trial, the first of its kind, found no linguistic benefits for typically developing infants of educated mothers (Kirk, Howlett, Pine & Fletcher, under review). Parents are also promised benefits, including greater understanding of the infant's

needs, reduced frustration and stress, and a better relationship with the child (e.g. www.tinytalk.co.uk; www.singandsign.com). Advertising claims that baby sign will reduce parental frustration and stress have little empirical foundation, although there are valid reasons to suggest that gesturing with an infant could reduce parental stress. This paper evaluates that claim.

Gestures are an ever-present feature of human communication, but play a particularly important role in early development (Ozcaliskan & Goldin-Meadow, 2005). Before the age of 12 months, most infants have no mastery of the spoken word, yet they have already begun to communicate through gesture. Around 9 months of age infants use gestures for showing, pointing and requesting caregiver attention (e.g. Bates, 1976; Camaioni, Volterra & Bates, 1976), arguably reducing the need for crying. Although much of the research to date has focused on whether gesturing can enhance the infant's linguistic development (e.g. Rowe, Ozcaliskan & Goldin-Meadow, 2008; Rowe & Goldin-Meadow, 2009), research has begun to explore how teaching infants to gesture could replace crying and make the parenting experience less stressful (Thompson, Cotnoir-Bichelman, McKerchar, Tate & Dancho, 2007). Also Vallotton (2009) suggests that gestures may improve the quality of caregiver responsiveness.

This research investigates whether gesturing with an infant affects parenting stress. Parenting stress is defined as negative emotions connected with the requirements of being a parent (Deater-Deckard, 1998). Before becoming a parent, many adults have little or no experience of the difficulties that a helpless infant can present (Deater-Deckard, 1998). Infant crying can be a particularly stressful sound and experience (Frodi & Lamb, 1980). Parents with high levels of stress tend to interact less with their children (McBride & Mills, 1994) and are less able to communicate and excite their child's attention (Adamakos et al. 1986). This can have a

serious impact upon on a child's socio-emotional development, interfering with the formation of a secure attachment (Isabella & Belsky, 1991), which in turn is important for healthy long-term development (e.g. Grossman & Grossman, 1991).

There are a number of ways that parenting stress can be reduced. Parents are less stressed if they feel they have the means and ability to deal with the requirements of parenthood (Deater-Deckard & Scarr, 1996), so interventions that teach parents additional skills and coping mechanisms have had some success (Anastopoulos, Shelton, DuPaul & Guevremont, 1993). Studies that have focused on attentiveness to infant behaviour and reactions (Cohn & Tronick, 1988), infant reactions to adult behaviour (Bell & Chapman, 1986) and 'rhythmic' dyadic exchanges (Lester, Hoffman & Brazelton, 1985) have found these all contribute to effective parenting and positive interactions.

By giving mothers an additional communicative tool (gesture), some of the stress that arises from not being able to interpret an infant's needs could be alleviated. This in turn could result in mothers perceiving themselves as more able, thereby reducing stress (Deater-Deckard & Scarr, 1996). However, the question of whether this means of communicating affects the parental experience by, for example, making it less stressful, remains unanswered. The current study seeks to address this question, using standardised instruments and a large sample size of mothers and infants who did, or did not, attend gesturing classes.

The aim of the study was to investigate whether gesturing with an infant impacts self-reported parental stress, as measured by the Parenting Stress Index (Abidin, 1995). We operationalised gesturing with an infant as mothers that attended gesturing classes with their infant (e.g. TinyTalk, Sing and Sign). The frequency and duration of gesture use was also measured to see whether these mediated the relationship between gesture use and stress. A

broader aim is to add to the body of research on infant gesturing, and to provide caregivers with objective evidence about the benefits of attending gesture classes.

Method

Participants

The participants ($N=178$) were recruited from a variety of gesture classes (e.g. TinyTalk, Sing and Sign, the Best Start Club), toddler groups (e.g. Little Monkees, Play Away, Buttercup Club), internet sites (e.g. Netmums, local NCT sites) and community organisations in the south-east of England. Mother and infant dyads had either attended gesturing classes (Gesture group, $n=89$) or classes that engaged in activities other than gesture (Non-gesture group, $n=89$). The infants (91 boys and 87 girls) ranged in age from 3 to 36 months, with a mean age of 15.99 ($SD = 8.24$) months in the gesture group and 16.22 ($SD = 6.40$) months in the control group. The overall response rate for data collection was 32.1%.

Materials/Apparatus

Participants provided demographic information and completed the Parenting Stress Index 3rd edition standard form (Abidin, 1995), containing a 120-question booklet and an answer sheet. The answer sheet consists of one page. Each of the 120 questions requires an answer on a four or five point scale. The 13 subscales comprise parent, child and situational variables. The child domain includes the subscales titled Distractibility/Hyperactivity, Adaptability, Reinforces Parent, Demandingness, Mood and Acceptability.

The Parent domain includes subscales for Competence, Isolation, Attachment, Health, Role Restriction, Depression and Spouse. There is also a Life Stress measure, with 19 events and a Defensive Responding subscale. The questionnaire takes 25-30 minutes to complete.

Procedure

Contact was made with the infant groups and permission was sought from the instructor to allow a researcher to attend the infant groups to explain the purpose of the research and to recruit participants. The participants, all mothers, were given the PSI and either returned the completed questionnaire to the group leader or posted it back to the researcher.

Results

The results are presented in two sections. The first section presents the demographic information for the mothers. The second section presents the PSI total and subscale scores. Data in both sections are analysed by group.

Demographic Information

The two groups of mothers were compared to ensure equivalence on demographic data, including hours worked by the mother per week, maternal education, family income and siblings.

Working hours: There was no difference in the amount of hours worked between the gesturing mothers ($M = 14.14$, $SD = 14.38$) and non-gesturing mothers ($M = 13.68$, $SD = 13.64$), $t(174) = -.22$, $p = .83$.

Family income: Income levels were very evenly distributed between groups with over 60% of gesturing and non-gesturing mothers having family income in excess of £45,000. A Chi

Square test showed that there was no association between family income (Five Levels: £0-15,000, £15-25,000, £25-35,000, £35-45,000 and over £45,000) and group (Two levels: gesture and non-gesture), $\chi^2(4) = .60, p = .96$.

Maternal Education: Educational levels were evenly distributed between groups with over 50% of gesturing and non-gesturing mothers having achieved at least degree level. A Chi Square test showed that there was no association between maternal education (Five levels: Less than GCSE, GCSE, A Level, Degree, and Masters or above) and group (Two levels: gesture and non-gesture), $\chi^2(4) = 3.99, p = .41$.

Siblings: Within the gesture group 71 infants had at least one sibling and 18 did not. Within the non-gesture group 57 infants had at least one sibling and 31 did not. A Chi Square test revealed a significant association between sibling status (sibling and no sibling) and group, $\chi^2(1) = 4.98, p = .03$. Additionally, 78 of the gesture group infants were first borns, 8 were not whereas 61 of the non-gesture group infants were first borns and 26 were not. A Chi Square test revealed a significant association between birth order (first born and not first born) and group, $\chi^2(1) = 11.60, p = .00$. These differences are taken into account in the analysis of PSI scores.

Parenting Stress Index (PSI)

Mothers (N=178) completed the PSI with a target infant in mind. Mean scores on each PSI scale, by condition can be seen in Table 1.

(Table 1 about here)

Table 1 shows mean PSI scores for the gesture and non-gesture group mothers. Higher scores indicate a greater level of stress. All 17 scores on the PSI were subjected to two analyses of covariance (ANCOVA) to measure the differences between the groups' stress scores, taking account of condition and using siblings data as a co-variate. An ANCOVA was conducted with

group as the between subjects factor (Two levels: gesture group and non-gesture group) and sibling status (Two levels: sibling and no sibling) as the covariate. A second ANCOVA was conducted with group as the between subjects factor (Two levels: gesture group and non-gesture group) and birth order (Two levels: first born and not first born) as the covariate. Mothers who attended infant gesture classes had significantly higher mean total stress scores than mothers who had attended non-gesturing classes, even when the effects of birth order [$F(1,174) = 4.90, p = .03, e^2 = .03, \text{power} = .60$] and sibling status [$F(1,174) = 5.81, p = .02, e^2 = .03, \text{power} = .67$] were controlled for. The results including sub-scales are displayed in Table 2.

(Table 2 about here)

Gesturing mothers also scored significantly higher on the Adaptability, Demandingness, Acceptability, Health, Child Domain and Parent Domain scales after controlling for the effect of sibling status and birth order. There was also a difference approaching significance for the Depression and Parent Domain scales.

Next we examined whether there was a dose relationship between stress scores and frequency or duration of gesture usage in the group of gesturing mothers. A Pearson's r correlation found no relationship between how long (0-4 months, 4-8 months, 8-12 months or over 1 year) gesture group mothers had been gesturing with their infant, and the mothers' total stress scores, $r(87) = .15, p = .17$. A further Pearson's r correlation found no relationship between how often (occasionally, some days, most days and every day) gesture group mothers gestured with their infant and total stress scores, $r(87) = .10, p = .34$. Therefore, although gesture group mothers reported higher stress levels, this was not related to the amount of time, or length of time, they engaged in gesturing.

Discussion

The aim of the study was to investigate the impact of gesturing with an infant upon parental stress. Overall, gesture group mothers were more stressed than non-gesture group mothers; in particular, on the scales of Adaptability, Demandingness, Acceptability and Health, the Child Domain score and the Total Stress score. Gesture group mothers also had borderline higher scores on the Depression scale and Parent Domain score. After adjusting for sibling status and birth order, gesturing mothers overall stress scores were significantly higher than those of non-gesturing mothers.

There are a number of possible explanations for these findings. There may have been a difference between gesturing and non-gesturing mothers, before they attended classes. Gesture classes claim to improve the infant's development and the infant-mother relationship. Mothers may have chosen gesturing classes to alleviate pre-existing feelings of stress and frustration, related to parenting. Non-gesturing mothers were attending a variety of general activity classes that were based purely on interacting and having fun, such as painting, playing with toys and singing, with no explicit developmental agenda.

Although no baseline data are available, the lack of any correlation between gesture use and stress scores lends some support to the view that the mothers differed in stress levels from the outset. If gesture usage was responsible for the higher PSI scores then, we might have expected to find a positive correlation between the duration or frequency of gesture use and PSI scores, which we did not. Thus, contrary to the advertised claims, gesture classes did not appear to reduce parental stress.

It is acknowledged, of course, that without baseline measures we cannot assume that gesturing mothers had higher stress levels before attending classes. It is feasible, for example, that mothers who attended gesturing classes started off with stress levels that were no different to other mothers. The advertised claims may have raised their expectations about accelerated infant development or a stronger mother-infant bond, and induced anxiety if these were not met. Most of the gesturing mothers' higher stress scores were on the child domain, suggesting the mothers were not more stressed about themselves, but about their infant. Although feasible, the lack of correlation between gesture use and stress scores tends to militate against this explanation. If attending gesturing classes increased stress, one would expect to see a positive correlation between frequency and duration of gesture use and stress scores.

The higher stress scores of the gesturing mothers, poses an important question; what is the source of stress in this sample of well-educated mothers? The current trend to bombard mothers with parenting advice about how to maximise the development of infants may undermine the confidence of mothers who are naturally competent in their role. Most mothers have high aspirations for their child and the parenting industry may, albeit unwittingly, foster maternal insecurities. Perfectly adequate mothers of normally developing infants may be needlessly seeking assistance, in the form of commercial products, such as gesturing classes. Commercial claims may raise the ambitions of anxious mothers to unrealistic levels and, when these expectations are not fulfilled, leave mothers with a more negative perception of their infant. Companies that advertise increased confidence for mothers may in reality be undermining confidence, when the infant outcomes fail to materialise.

Maternal perceptions of infants' abilities and expectations have been shown to have a detrimental effect on mothers' interactions with her infant. Researchers have examined the

characteristics of mothers who subscribe to the view of hot housing, defined as the ‘process of inducing infants to acquire knowledge that is typically acquired at a later developmental level’ (Sigel, 1987 p.212). Mothers who chose more academically focused activities for their preschool children were found to be more controlling, more critical of their children and had higher ratings of anxiety (Hyson, 1991). Although mothers may be willing to pay the price of increased stress in return for enhancing their infant’s development, this may be in vain since a recent longitudinal randomised control trial found very little developmental advantage for infants using gesture (Kirk et al. under review).

In summary, mothers who gestured with their infants had higher stress scores than non-gesturing mothers. Mothers may have attended gesturing classes to increase their infant’s abilities, to gain more confidence in their role or reduce their stress and frustration. On the other hand, gesturing classes may raise maternal expectations of improved infant functioning, more than other types of classes. If these expectations were not met during classes, this could result in mothers perceiving their child as more demanding and less adaptable, and the mother as being less accepting of her infant.

As with any research, a note of caution needs to be mentioned when interpreting the results. The lack of baseline measures before attending classes precluded a comparison between the two groups at outset. In future mothers’ stress levels could be measured before and after a period of attending gesturing classes, although researchers could not determine the effect that knowing they were being studied would have on mothers.

We conclude that mothers who attended gesturing classes were likely to have higher pre-existing stress levels, which may have motivated them to attend. It is also possible that gesturing classes may have affected mothers’ perceptions of their infant in a negative way. Ultimately

there was no correlation between gesture usage and stress levels, suggesting gesturing does not provide a reduction in stress and frustration. Gesture classes claim to reduce stress and create a better bond between child and mother; our results find no evidence for this and even suggest the effect may be detrimental.

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Appendices

Table 1

Mean (SD) stress scores for each item on the Parenting Stress Index by condition.

Parenting Stress Index Subscale and Totals	Gesture Group Mean Scores (SD) n=89	Non-gesture Group Mean Scores (SD) n=89
<u>Child Domain</u>		
Distractibility/Hyperactivity	24.10 (4.50)	23.57 (4.26)
Adaptability	24.33 (5.62)	22.87 (4.54)
Reinforces Parent	8.83 (3.62)	8.17 (2.41)
Demandingness	16.62 (4.69)	15.25 (3.82)
Mood	9.37 (3.14)	8.81 (2.61)
Acceptability	11.11 (3.36)	9.91 (3.00)
Child Domain	94.36 (18.78)	88.57 (13.54)
<u>Parent Total</u>		
Competence	27.35 (6.18)	25.96 (5.72)
Isolation	12.60 (4.02)	11.94 (4.08)
Attachment	11.36 (2.95)	11.11 (2.42)
Health	13.57 (3.54)	12.57 (3.40)
Role Restriction	18.69 (4.91)	18.67 (4.71)
Depression	20.19 (6.02)	18.79 (5.54)

Spouse	18.45 (5.08)	17.78 (4.94)
Parent Domain	121.87 (22.93)	116.82 (22.30)
 <u>Overall</u>		
Total Stress	216.22 (38.14)	205.51 (33.33)
Life Stress	7.60 (5.49)	7.00 (5.84)

Table 2

Summary of two ANCOVA results for each item on the Parenting Stress Index with condition as the between subjects factor. Firstly, with sibling status (siblings vs no siblings) and secondly with birth order (first born vs not first born) as the covariates.

Parenting Stress Index Subscale and Totals	ANCOVA results with sibling status as the covariate	ANCOVA results with birth order as the covariate
<u>Child Domain</u>		
Distractibility/Hyperactivity	$F(1,174) = .60$	$F(1,170) = 1.37$
Adaptability	$F(1,174) = 4.16^*$	$F(1,170) = 5.18^*$
Reinforces Parent	$F(1,174) = 1.72$	$F(1,170) = 2.07$
Demandingness	$F(1,174) = 6.11^*$	$F(1,170) = 7.05^{**}$
Mood	$F(1,174) = 1.69$	$F(1,170) = 2.46$
Acceptability	$F(1,174) = 6.30^*$	$F(1,170) = 6.45^*$
Child Domain	$F(1,174) = 5.99^*$	$F(1,170) = 7.65^{**}$
<u>Parent Domain</u>		
Competence	$F(1,174) = 2.44$	$F(1,170) = 2.77$
Isolation	$F(1,174) = 1.68$	$F(1,170) = 1.33$
Attachment	$F(1,174) = .26$	$F(1,170) = .34$
Health	$F(1,174) = 5.19^*$	$F(1,170) = 6.18^*$

Role Restriction	$F(1,174) = .12$	$F(1,170) = .31$
Depression	$F(1,174) = 3.60$	$F(1,170) = 3.35$
Spouse	$F(1,174) = 1.05$	$F(1,170) = 1.24$
Parent Domain	$F(1,174) = 3.12$	$F(1,170) = 3.49$
 <u>Overall</u>		
Total Stress	$F(1,174) = 4.90^*$	$F(1,170) = 5.81^*$
Life Stress	$F(1,174) = .50$	$F(1,170) = .13$

Note: * denotes $p < .05$; ** denotes $p < .01$ (all two-tailed)