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RESEARCH ARTICLE

Maternal sensitivity in Singapore: early educators' beliefs and mothers' reported versus observed behavior

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ABSTRACT

To better understand perceptions and self-evaluations of sensitive caregiving in Singapore we examined observed (n=301) and self-reported (n=85) maternal behavior, as well as local early educators' ($n = 57$) opinions concerning ideal maternal behavior, which we then used to create a local MBQS ideal criterion. The association between local educators' MBQS sorting and the standard MBQS ideal criterion was $r = 0.67$, indicating alignment. Maternal observed and self-reported scores were not significantly associated (MBQS sensitivity criterion: $r = -0.13$, $p = .317$; Local criterion: $r = -0.10$, $p = .441$). Observed scores (Sensitivity: $M = 0.21$, Local criterion: $M = 0.27$) were lower than self-reported scores (Sensitivity: $M = 0.62$, $t(63) = -8.05$, $p < .001$; Local criterion: $M = 0.59$, $t(57) = -7.77$, $p < .001$). The findings reinforce those of past research concerning cross-cultural similarities and limitations in self-reports. Regarding interventional efforts, these point to the need to counter parental resistance to intervention as "unnecessary" with a better understanding of the limits of self-evaluation. Concerning interventional efficacy, the need for observational assessment of change is reinforced.

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Maternal sensitivity; video observation; culture; self-reporting bias; early educators

Maternal sensitivity is increasingly recognized in children's developmental outcomes across cultures and all strata of society (Bakermans-Kranenburg et al., 2003; Mesman et al., 2012, 2016; van der Voort et al., 2014). As such, many are keen to deepen their

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understanding of maternal sensitivity and apply their findings to actionable interventions and policies.

Yet, as research becomes increasingly global, concerns remain about the appropriateness of assessing and promoting "Western" notions of parenting. Understanding the perceived value of sensitivity in Singapore is therefore of interest. On the one hand, Singapore is a highly modernized country. According to the World Bank Group (n.d.), as of 2023, Singapore's per capita income was positioned between that of the United States and Norway at 84,734 USD. As most, but not all, of the cross-cultural variance concerning beliefs about ideal parenting is ameliorated when considering demographics (Mesman et al., 2016), this suggests that Singaporean mothers, like other mothers worldwide, will be found to value sensitive caregiving. Still, Singaporean findings regarding the normative nature of physical discipline (Sudo et al., 2023) and limitations concerning the functional impact of authoritarian parenting (Ang & Goh, 2006; Cho et al., 2022), leave room for the possibility that the ascribed value of sensitive care is comparatively low in Singapore society.

In addition, there is also reason to examine the relation between self-reported and observed assessments of parenting behavior. Practically, as science increasingly moves towards big data, there is continued pressure to limit costly and time-consuming assessments and instead rely more on self-reports. While ample evidence suggests parental reports are not good proxies for behavior (Hendriks et al., 2018; van Ijzendoorn & Bakermans-Kranenburg, 2024), some cultural variation has been observed in the extent of overlap between these sources of information (Bornstein et al., 2015). Moreover, within Singapore, to our knowledge such research has not been conducted among mothers of infants (Cheung, 2021), and caveats within past research have focused on concerns regarding generalization across age ranges (Bornstein et al., 2015).

Observed maternal sensitivity

Maternal sensitivity is considered to occur when mothers notice offspring signals and respond to them in a way that is both timely and appropriate (e.g. Ainsworth et al., 1978). One common way of assessing maternal sensitivity is via the Maternal Behavior Q-Sort (Pederson & Moran, 1995, 1996). This instrument has a variety of versions, including ones specified for shorter parent–child interactions (e.g. Tarabulsy et al., 2009). Over 90 studies have employed forms of the MBQS (hereafter MBQS unless otherwise specified) to investigate observed sensitivity across different cultures and strata of society (Booth et al., 2018). Across the globe, MBQS assessed sensitivity has been found to be related to child attachment and child outcomes and has demonstrated consistent associations with various sociodemographic predictors (Behrens et al., 2011; Booth et al., 2018; Heng et al., 2018; McIntosh et al., 2024; Pederson et al., 2014). Within Asia, studies conducted in Shanghai, South Korea, and Thailand have similarly found associations between attachment security and MBQS sensitivity to be consistent with those found outside of Asia (Chaimongkol & Flick, 2006; Ding et al., 2012; Park, 2001). Specific to Singapore, observed MBQS sensitivity assessed within the GUSTO cohort has been found to be related to child neuroanatomical trajectories, executive functioning, and emotion regulation (A. Lee et al., 2019; Rifkin-Graboi et al, 2015; Rifkin-Graboi et al., 2021; Tan et al., 2019; Rifkin-Graboi et al., 2018; Tsotsi et al., 2020), and work in a separate Singaporean study has linked MBQS

sensitivity among mothers of preschoolers to preschoolers' emotional memory (Rifkin-Graboi et al., 2023). Similar patterns of associations that have been uncovered with established precursors and outcome variables provide support for the construct validity of the mini-MBQS-V and its applicability in Asia and within the Singapore context.

Early educators' ideal mother beliefs

Understanding what early educators believe constitutes ideal parenting is crucial because these beliefs are likely to influence how they assess, support, and guide parents in caregiving within their capacity as an educator. Early childhood educators serve a vital role as envoys of knowledge to parents within a given society, as parents often turn to them for advice and support on child-rearing (Cheatham & Ostrosky, 2011; Cummings, 2016; Karuppiah, 2022; Mortensen & Barnett, 2019). Understanding these locally held ideals can provide insight concerning parenting expectations embedded within the local caregiving ecology.

Yet, to our knowledge, there has yet to be research focused on understanding what MBQS behaviors early childhood educators believe would be representative of an ideal mother. Nevertheless, work examining early Singaporean educators' observed classroom behavior (Karuppiah, 2021) may suggest that either they do not fully believe that internationally recognized forms of ideal parenting (Mesman et al., 2016) are similar to ideal teaching behavior or that they are unable to fully actualize beliefs about ideal behavior. That is, Karuppiah (2021)'s work revealed that early educators were rarely aware of and responsive to children's signals, seldom expanded on children's responses and actions, and mostly directed the interactions.

Observed versus self-reported behavior in mothers

A recent meta-analysis on the validity of the Attachment Q-sort (AQS) revealed incongruence between parents' evaluations and observers' assessments of infant attachment behaviors displayed within the parent–child interaction (Cadman et al., 2018). It was found that the mean self-reported security score was significantly higher than the mean observed security score. This finding foregrounds concerns commonly associated with parental self-reports, such as, naïve confidence and social desirability (Bornstein et al., 2015; Cadman et al., 2018; Hess et al., 2004).

Notwithstanding the known limitations of parental self-reports, understanding how parents perceive their behavior in relation to trained observers is crucial to parental engagement efforts (Keyes, 2000). As Salari and Filus (2017) emphasize, parents' perceptions of how much they stand to benefit from a parenting support program are the strongest predictors of their willingness to participate. Logically then, it is important to know what parents think of their parenting in order to better encourage participation in intervention programs.

Although no Singaporean research has examined observed versus self-reported sensitivity among mothers of infants, one Singaporean study (Cheung, 2021) has examined observed versus self-reported behaviors with mothers of 4-to-6-year-olds assessed via the sensitivity subscale of the Emotional Availability Scales. Of note, it did not reveal

a significant positive relation between observed and self-reported sensitivity (Cheung, 2021), consistent with international evidence concerning discrepancies between observed and self-reported behavior.

The current research

Within Singapore, the current study asked: 1) How similar are local early educators' ideas concerning an ideal mother and the MBQS developers' ideas concerning the prototypically sensitive mother?; and 2) What is the relation between self-reported and observed maternal behavior assessed in mothers of Singaporean infants?

Materials and methods

Sample

Mothers and early childhood educators were enrolled in two separate studies. That is, mothers were drawn from "Beginning Early: Singapore's Ongoing Study starting in Infancy of Twenty-first-century-skills, Individual differences, and Variance in the Environment" (BE POSITIVE). In contrast, early educators took part in "What is Ideal? Preschool Teachers' Beliefs about Parenting and Teaching." Mothers and early educators provided informed consent for both studies and studies received NTU Institutional Review Board (NTU-IRB) approval as follows: IRB-2020-08-043-–01; IRB-2022-931. Additionally, BE POSITIVE obtained approval from Singhealth Polyclinics: SHP CIRB Ref Number 2020/2099.

Participants

BE POSITIVE study

The BE POSITIVE (Rifkin-Graboi, Khng, et al., 2019) study is a mini-cross sequential study enrolling caregivers and their children aged 0–40 months. Children must be patients from the Punggol or Tampines Polyclinics; Singaporean Citizens or Permanent Resident; the results of a singleton pregnancy (e.g. not a twin); and have no history of neurological disorder, severe head injury resulting in hospitalization/concussion/loss of consciousness, psychiatric disorder or developmental disorder at the time of recruitment. Depending on the recruitment phase, children entered the study at either 4 months (M), 5–8 M, 16–18 M, 22–25 M, or 34–37 M, during one of three recruitment phases. This current study utilized data of participants recruited during Phase 1 and Phase 2 of BE POSITIVE from the Punggol polyclinic with a first visit at or before 5–8 months. Participants were reimbursed $50 for the 5–8 month visit and another $25 for completing the 5–8 month questionnaires. Small gifts were also prepared for the children.

Three hundred and twenty two mothers and infants were active and eligible at or before the 5–8 month visits across the two recruitment phases. Of these, 285 mothers provided observed mother–child data, 64 provided both observed mother-child data and self-reported MBQS data, and 85 only provided self-reported data.

Of the 322 mothers included in the current study, the majority also provided information with regards to maternal age ($n = 292$, 90.6%), ethnicity ($n = 291$, 90.4%), education qualifications ($n = 296$, 91.9%), and citizenship ($n = 298$, 92.5%). As a group, the average

age of mothers at the 5–8 M visit was 34.0 years (*SD* = 3.69). Similar to the local population (Singapore Department of Statistics, 2020), the majority of the sample was Chinese (74.6%), followed by Malay, Indian (18.6% and 3.8% respectively), while the remaining 3.1% were of other ethnic groups. In addition, mothers were generally highly educated (69.6% having attained at least a bachelor's degree), also in keeping with the percentage of Singaporean women of child-bearing age (i.e. 25–34 years) with university degrees (64% as of 2021; S. M. Lee, 2022). Unlike the requirements for child participants, there were no requirements for mothers to be citizens or permanent residents at the time of enrolment. Nevertheless, the substantial majority of mothers were Singaporean citizens (90.3%), while 9.1% were Singaporean Permanent Residents and the remaining 0.7% were neither. Additional demographic details according to data contributed per research question (i.e. observed and self-reported data, self-reported data, observed data) can be found in the supplement (see A).

What is ideal? study

To take part in "What is Ideal? Preschool Teachers' Beliefs about Parenting and Teaching," participants must have been between 21 and 65 years of age and either (a) currently an in-service educator (i.e. teaching at public or private kindergartens or childcare centres or pursuing a diploma/degree related to early childhood with a past/current attachment to a preschool/childcare centre); or (b) must have served in such roles within the last five years, and still be working in the early childhood sector (e.g. assumed leadership position). Sixty-four participants took part in *What is Ideal?* with 57 providing usable data (see below). Upon completing the survey battery, participants were offered SGD $10 via an online payment system in exchange for their time and effort.

As participant data was used to create the prototype of an ideal mother (hereinafter, the local ideal criterion referred to as the "$MBQS_{Criterion\_local}$," see also Table 1), it was beneficial to err on the side of caution with regards to data retention (Hong et al., 2020; Osborne & Overbay, 2004). Therefore, questionnaire data were screened for inattentive responding through the calculation of psychometric synonym scores (see supplement B), to aid in the identification of cases of suspected inattentive responding (Curran, 2016). This process, coupled with the removal of outliers, resulted in a final sample of *N*=57.

Of the 57 early educators included in this study, 89.5% were females while 10.5% were males. The majority were ethnic Chinese (64.9%), while 15.8% were Malay, 5.3% were

Table 1. Constructs and variable names.

Construct	Variable Name
Sensitivity Criterion (i.e. MBQS Developers' Sort of the MBQS Cards to depict the Prototypically Sensitive Mother)	$MBQS_{Criterion}$
Local Early Educator Ideal Criterion (i.e. Local Early Educators' Sort of the MBQS Cards to depict the Prototypically Ideal Mother)	$MBQS_{Criterion\_local}$
Self-Reported Sensitivity (i.e. maternal self-reported sorts evaluated against the Sensitivity Criterion)	$MBQS_{Self\text{-}Report}$
Observed Sensitivity (i.e. coders' sorts of observed maternal behavior evaluated against the Sensitivity Criterion)	$MBQS_{Observed}$
Self-Reported Ideal Behavior (i.e. maternal self-reported sorts evaluated against the Local Early Educator Ideal Mother Criterion)	$MBQS_{Self\text{-}Report\_local}$
Observed Ideal Behavior (i.e. coders' sorts of observed maternal behavior evaluated against the Local Early Educator Ideal Mother Criterion)	$MBQS_{Observed\_local}$

Indian, and 14% were of other ethnic groups. Early educators were generally highly educated, with 54.4% having attained at least a bachelor's degree. The majority of early educators were Singaporean citizens (84.2%), while 8.8% were Singaporean Permanent Residents and the remaining 7% were foreigners working in Singapore.

This table outlines the constructs assessed and the corresponding terms used to refer to them throughout the manuscript.

Measures

Observed sensitivity

Video records, obtained as part of the larger BE POSITIVE study, were assessed to determine maternal sensitivity via the mini-MBQS for video. As part of the BE POSITIVE study, mothers accompanied their 5–8-month-old infants for a roughly 1-hour long study visit including eye tracking and behavioral tasks.

Parent–child interaction sessions

The current study focuses on approximately 16 min of a parent–child interaction (PCI) session embedded into the aforementioned BE POSITIVE study visit. The PCI immediately followed 5 min of e-book (i.e. The Little Kangaroo; Genechten, 2005) viewing and was normally the final task of the visit. During the PCI's first 5 min of "free play," instructions were to either "talk" about the e-book or play or interact with their infant as they normally would. At this point, dyads were not given any additional objects or toys. In the next 3-min block, the experimenter passed the mothers a physical copy of "The Little Kangaroo" and told the mothers that they could use the book as they normally would. In the last 8 min, the experimenter brought in toys and again, told the mothers that they could use the toys or just play or interact as they normally would. Accordingly, the expected mean amount of time dyads spent under observation was 16 min (or 960 s). However, given the slight variations in implementation, the actual mean amount of time spent, based on the video recordings ($n = 301$), was approximately 17 min (or 1021 s), $SD = 1$ min 13.2 s.

MBQS scoring

Trained observers (i.e. the current study's first [author] and two secondary [reliability] coders) utilized the 25-item Mini-Maternal Behavior Q-Sort-V Revised (mini-MBQS-V; Moran, 2009) to score maternal behavior. The mini-MBQS-V contains a total of 25 items to measure the quality of mother–infant interactions. Items must be sorted into five piles of five items each, that range from being "most unlike" to "most like" the mother. The observed maternal sensitivity score (hereafter "$MBQS_{Observed}$") was obtained through assessing the correlation between the observer's card sort and the developers' sort of a prototypically sensitive mother (hereafter "$MBQS_{Criterion}$"). The score potentially ranged from roughly −1.00 (least like the prototypical mother) to +1.00 (prototypically sensitive). Items describing a prototypically sensitive mother include but are not limited to: "Interactions revolve around baby's current tempo and state" and "Respects the child as an individual" (Moran, 2009). Items describing a prototypically insensitive mother include but are not limited to: "Content and pace of interaction set by mother rather than according to baby's response" and "Actively opposes the child's wishes" (Moran, 2009).

The mini-MBQS-V was chosen within the current research as it was specifically developed to assess relatively brief video interactions. It is based upon the mini-MBQS-R (Moran, 2009). Short versions of the MBQS are purposefully adapted for usage with brief (e.g. 10 minute) interactions (Tarabulsy et al., 2009). The mini-MBQS-V omits three items from the mini-MBQS-R and replaces them with items that are more suitable for video recordings that do not involve home visitors (Moran, 2009). The mini-MBQS-V is associated with individual differences in attachment relationships (Booth et al., 2023).

MBQS inter-coder reliability

Prior to scoring the BE POSITIVE data, all three coders were deemed reliable on a set of 26 training tapes external to the current study as well as on a set of nine BE POSITIVE tapes already scored by the primary coder. Then, relevant to the final data set used in the current analyses, 17.6% of recordings were double or triple coded across Phase 1 ($n = 200$) and Phase 2 ($n = 101$) data. Reliability was assessed via intraclass correlation (ICC) two-way mixed, single measures, and absolute agreement. Phase 1 data reliability estimates across tapes coded by either two ($n = 17$) or three ($n = 8$) coders averaged to .87 ($.92 \times 17/25 + .75 \times 8/25$), indicative of good reliability, whereas Phase 2 data reliability estimates across tapes coded by all three coders ($n = 27$) was .74, indicative of satisfactory reliability (see supplement C for more details, [Koo & Li, 2016]).

Reliability assessed via ICC two-way mixed, single measures, absolute agreement, between coder pairs across both Phase 1 and Phase 2 tapes, is as follows: TS (First Author) and CT ICC = .86 ($n = 52$); TS and AL ICC = .71 ($n = 36$); AL and CT ICC = .71 ($n = 35$).

Self-reported sensitivity

As part of a larger online questionnaire battery, BE POSITIVE mothers were asked to perform a self-reported mini-MBQS-V sort hosted on Qualtrics. Mothers were asked to sort the cards according to how "characteristic they think the cards are of their own parenting and interactions with their child" (see Figure 1 for a visualization of the sorting

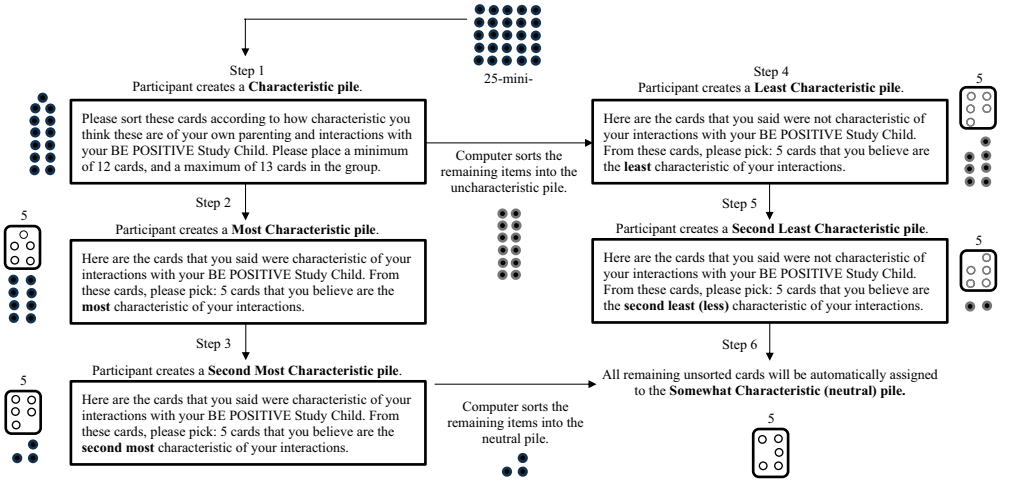

Figure 1. Visualization of the digitized 25-item mini-MBQS sorting process. In step 1, participants could choose a minimum of 12 or maximum of 13 cards that they thought described their parenting. The dots in the figure illustrate an example of selecting 13 cards for the characteristic pile in step 1.

process). Once the cards were sorted, mothers were shown a screen that displayed the entirety of the sort. Mothers could review and make changes to their sorts. After which, mothers proceeded to confirm the sort, ending the procedure. The self-reported maternal sensitivity score (hereafter "$MBQS_{SelfReport}$") was obtained through assessing the correlation between the mother's card sort and the developer's sort of a prototypically sensitive mother. The score potentially ranged from roughly −1.00 (least like the prototypical mother) to +1.00 (prototypically sensitive).

This figure shows the step-by-step digitized 25-item mini-MBQS sorting process that participants completed, illustrating the sequence they followed during the digital card sort.

Early educators' ideal mother beliefs

After completing an online Demographics Questionnaire (see below), *What is Ideal?* participants advanced to a digitized version of the mini-MBQS-V. Procedurally, this card sort was the same as described in the section above (self-reported maternal sensitivity). However, *What is Ideal?* participants were asked to sort the cards according to according to how "characteristic they think the cards are of an ideal mother," rather than what describes their own parenting. The early educator-reported ideal mother's sensitivity score was obtained through assessing the correlation between each educator's card sort and the developers' sort of a prototypically sensitive mother. The score potentially ranged from roughly −1.00 (least like the prototypical mother) to + 1.00 (prototypically sensitive) and was indicative of early educators' sensitivity beliefs regarding the ideal mother. A higher score reflects a larger overlap between early educators' beliefs about the ideal mother and MBQS sensitivity.

Demographics

Separate online questionnaires were used to determine relevant demographic and work-related data for the BE POSITIVE mothers and the *What is Ideal?* early educators.

BE POSITIVE. Upon completing the 5–8 month study visit, BE POSITIVE mothers were asked to complete several questionnaires relevant to the larger study including one focused on demographics. Mothers could complete this either at the clinic or later outside of the clinic but still roughly within the 5–8 month time-window.

What is ideal. Prior to completing the ideal mother sort, *What is Ideal?* participants accessed an online demographic questionnaire including questions concerning years of experience in the early childhood sector, whether they have children, and other basic demographic information such as age, gender, and education qualifications.

Data analytic plan

As noted above, there was a minor deviation with regards to the amount of time dyads were observed. Therefore, prior to the main analyses, preliminary analyses were performed to examine whether the time spent in observation was significantly related to the overall observed sensitivity. In addition, preliminary analyses were conducted to check whether BE POSITIVE participants who provided data and those who had missing

data differed with regards to basic characteristics. Data were screened for normality, outliers, and inattentive responding when applicable. After which, the main analyses were conducted to address the research questions.

Early educators' ideal mother beliefs

Early educators' beliefs about the ideal mother were assessed using the mini-MBQS. First, the correlation coefficients between each educators' sort and the $MBQS_{Criterion}$ sort were computed to derive the sensitivity score of each early educators' ideal mother. These scores were collectively averaged to derive a mean early educator ideal mother sensitivity score. Then, the early educators' sorts were aggregated to form a local criterion sort that represented the early educators' ideal mother (hereafter "$MBQS_{Criterion\_local}$").

To form the $MBQS_{Criterion\_local}$, the scores for each descriptor card were examined with regards to the mean, mode, and frequency. This was done to determine which five cards should be assigned a "5" in the aggregate sort, a "4," a "3" and so on. Essentially, the early educators' sorts were aggregated by arranging the 25 mini-MBQS-V items in descending order according to the mean, from the most characteristic pile to the least characteristic pile (i.e. cards with the top five highest means were sorted into the most characteristic pile, and so on so forth [resulting in five piles of five cards each]). In the event of a tie, the mode and if necessary, frequency distributions were considered in determining item placement. This methodology is similar to that used in Mesman et al. (2016).

Mothers' observed and self-reported sensitivity

Observers' and mothers' sorts were evaluated against the $MBQS_{Criterion}$ sort to derive observers' ratings of mothers' sensitivity ($MBQS_{Observed}$) and mothers' ratings of their own sensitivity ($MBQS_{Self\text{-}report}$). Following which, the association between $MBQS_{Observed}$ and $MBQS_{Self\text{-}Report}$ was examined using Pearson's correlation coefficient test, and mean differences were assessed using a paired-samples t-test.

Similarly, observers' and mothers' sorts were evaluated against the $MBQS_{Criterion\_local}$ sort to derive observers' ratings of mothers' locally ideal parenting ($MBQS_{Observed\_local}$) and mothers' ratings of their own locally ideal parenting ($MBQS_{Self\text{-}report\_local}$). Pearson's correlation coefficient test was then used to understand the association between $MBQS_{Observed\_local}$ and $MBQS_{Self\text{-}report\_local}$, and mean differences were assessed using a paired-samples t-test.

Unfortunately, of the 301 mothers who provided video data, there were 16 cases that did not have conferenced experimenter-observed scores per item. Therefore, the $MBQS_{Observed\_local}$ scores were not able to be calculated in accordance with the stipulated protocol, which precluded the examination of the association between $MBQS_{Observed\_local}$ and $MBQS_{Self\text{-}report\_local}$. As such, these cases were not included in this analysis (see supplement C* for more details).

Results

Preliminary analyses

The results section reports a condensed version of the preliminary analyses that are central to the study's questions (see supplements A, B, and D for more details). In brief,

$MBQS_{Observed}$ and $MBQS_{Observed\_local}$ were normally distributed. As for $MBQS_{Self\text{-}report}$ and $MBQS_{Self\text{-}report\_local}$, data were not normally distributed, prompting the screening of data. Two outliers were identified and removed, rather than winsorized as per-item ratings were required for the formation of the aggregate sorts.

With regards to the early educators' sorts, five cases were identified as likely the product of inattentive responding and were removed from analyses. Following this, two outliers were detected, and were excluded from subsequent analyses. This decision was made on the basis that outliers can significantly compromise the accuracy of the data in representing the target population, which could implicate the formation of the $MBQS_{Criterion\_local}$ (Osborne & Overbay, 2004; see supplement B).

BE POSITIVE

Demographics. As described in supplement A, the characteristics of the 322 mothers who contributed any relevant BE POSITIVE data (i.e. self-reported data regardless of observed data [$n = 85$]; observed data regardless of self-reported data [$n = 285$]; both observed and self-reported data [$n = 64$]) to the present study were compared to the remainder of the participants who had not contributed relevant data but had provided demographic data.

In brief, no differences were found with regards to participants' age and citizenship. In contrast, mothers who provided self-reported data versus those who did not, were significantly more likely to be of Chinese ethnicity and to attain higher educational qualifications.

Early educators' ideal mother beliefs

Early educators' ideal mother sensitivity scores ranged from .28 to .90, with the average being .67 ($SD = 0.15$). In other words, the local early educators' average prototypical ideal mother would have a sensitivity score of roughly 0.67, which closely aligns with the scores reported in Mesman et al. (2016) study. Information regarding the ordering of items for local early educators' ideal mother criterion sort is reported in Table 2.

This table shows the local educators' ideal criterion sort, with the 25 mini-MBQS items arranged in descending order by their mean ratings. Descriptives (SD, median, mode, min, max, frequency) and MBQS sensitivity criterion ratings for each item are presented alongside.

Mothers' observed and self-reported sensitivity

The $MBQS_{Observed}$ scores ranged from −.66 to .73, with the average being .15 ($SD = 0.30$) for the full sample of mothers ($N = 301$). Similarly, the $MBQS_{Observed\_local}$ scores ($n = 285$) ranged from −.66 to .80, with the average score being .23 ($SD = 0.28$). These scores represent the degree to which each mother's observed parenting matches that of early educators' beliefs regarding an ideal mother, with higher scores representing more observed "locally ideal parenting."

The results of Pearson's correlation coefficient test indicated that maternal $MBQS_{Observed}$ and $MBQS_{Self\text{-}report}$ scores ($n = 64$) were not significantly correlated

Table 2. Local educators' ideal criterion sort ($N = 57$).

									Frequency				
Pile	Item Description	Mean	MBQS Sensitivity Criterion	SD	Median	Mode	Min	Max	1	2	3	4	5
Most Characteristic	Respond to Child's signals	4.33	4.5	.873	5	5	1	5	1	-	9	16	31
	Praises Child	4.21	4	.901	4	5	2	5	-	3	9	18	27
	Monitors Child's activities	3.93	4.5	1.02	4	5	2	5	-	5	16	14	22
	Builds on the focus of the Child's attention	3.93	5	.979	4	5	2	5	-	5	14	18	20
	Plays social games with Child	3.93	3	.884	4	4	1	5	1	-	18	21	17
Characteristic	Responds to Child's distress and non-distress signals even when engaged in some other activity such as having a conversation with visitor	3.91	5	1.14	4	5	1	5	1	6	15	10	25
	Uses varied expressions of affect, and am enthusiastic with Child	3.91	3	1.01	4	4	2	5	-	7	10	21	19
	Notices when Child smiles and vocalizes	3.81	4.5	.743	4	4	2	5	-	2	16	30	9
	Interactions revolve around Child's tempo and current state	3.79	5	1.19	4	5	1	5	1	10	11	13	22
	Realistic expectations regarding Child's self-control of affect	3.77	4.5	1.17	4	5	1	5	2	6	16	12	21
Neutral	Able to accept Child's behavior even if it is not consistent with my wishes	3.72	4.5	1.11	4	4	1	5	3	4	15	19	16
	Points to and identifies interesting things	3.68	3	.783	4	3	2	5	-	1	26	20	10
	Repeat words carefully and slowly to Child as if teaching meaning or labelling an activity or object	3.67	2	1.06	4	3	1	5	1	6	20	14	16
	Speaks to Child directly	3.58	3	1.07	4	3	1	5	3	4	19	19	12
	Arranges location to perceive Child's signals	3.44	4	.824	3	3	2	5	-	7	23	22	5
Un-characteristic	Interactions with Child are object-oriented	2.70	2	1.12	2	2	1	5	6	23	15	8	5

(*Continued*)

Table 2. (Continued).

Pile	Item Description	Mean	MBQS Sensitivity Criterion	SD	Median	Mode	Min	Max	Frequency 1	2	3	4	5
	Interactions with Child are characterized by active physical manipulations	2.26	3	1.16	2	2	1	5	14	27	8	3	5
	Content and pace of interaction are set by mother rather than according to Child's responses	1.98	1	.813	2	2	1	4	15	32	6	4	-
	Provides Child with little opportunity to contribute to the interactions	1.79	1.5	.901	2	2	1	5	23	28	3	1	2
	Interactions with Child are non-synchronous (i.e. the timing of behavior is out of phase with his/her behavior)	1.65	1	.744	2	1	1	4	28	22	6	1	-
Most Un-characteristic	Distressed by Child's demands	1.44	1	.682	1	1	1	5	35	21	-	-	1
	Appear to tune out and not notice bids for attention (tied with next item)	1.40	1	.563	1	1	1	3	36	19	2	-	-
	Displays of affect do not match Child's display of affect (e.g. smiling when Child is distressed) (tied with prev. item)	1.40	2	.563	1	1	1	3	36	19	2	-	-
	Scold or criticizes Child	1.39	1.5	.648	1	1	1	4	39	15	2	1	-
	Actively opposes Child's wishes	1.37	1.5	.616	1	1	1	3	40	13	4	-	-

Note. Items in the MBQS Sensitivity Criterion sort (9-point scale) that did not have directly convertible scores had their two possible scores summed and halved, i.e. As a score of 8 could be assigned to either the characteristic (4) or most characteristic (5) pile, its two possible ratings were summed and halved (4 + 5)/2 = 4.5 to quantify the opinions of the developers of the MBQS into a 5-point scale for ease of reference in this table. Numbers listed under the header "proportion" correspond to the piles the cards were sorted into; 1 = least characteristic to 5 = most characteristic.

($r = -0.13$, $p = .317$). On average, the $MBQS_{Observed}$ scores ($M = 0.21$, $SD = 0.31$) were lower than the $MBQS_{Self\text{-}Report}$ scores ($M = 0.59$, $SD = 0.17$), $t(63) = -8.05$, $p < .001$.

As with the findings regarding $MBQS_{Observed}$ and $MBQS_{Self\text{-}report}$, $MBQS_{Observed\_local}$ and $MBQS_{Self\text{-}report\_local}$ scores ($n = 58$) were not significantly correlated ($r = -0.10$, $p = .441$). Similarly, $MBQS_{Observed\_local}$ scores ($M = 0.27$, $SD = 0.29$) were lower than $MBQS_{Self\text{-}Report\_local}$ scores ($M = 0.62$, $SD = 0.17$), $t(57) = -7.77$, $p < .001$.

Taken together, the findings suggest that mothers' parenting behaviors do not align with sensitivity and local parenting ideals. However, mothers perceive their own parenting as being in line with these ideals, despite their observed behaviors indicating otherwise. For detailed comparisons between $MBQS_{Observed}$, $MBQS_{Self\text{-}report}$, $MBQS_{Criterion\_local}$, and $MBQS_{Criterion}$ sorts, refer to supplement E.

Discussion

The current work examined local early educators' beliefs about the ideal mother, and observed and self-reported sensitive maternal behavior within Singapore.

Consistent with previous work, Singaporean early educators find the ideal mother to also engage in substantial sensitive behavior. Here, the mean sensitivity level of the locally reported ideal mother averaged +0.67, strikingly similar to that of the internationally reported +0.68 across a variety of countries (Mesman et al., 2016). The strong convergence between the early educators' ideal mother and the notion of sensitive responsiveness is consistent with literature suggesting the universality of this core tenet of attachment theory. Considering early educators' role as "envoys of knowledge" (Cheatham & Ostrosky, 2011; Cummings, 2016; Karuppiah, 2022), their endorsement of sensitivity highlights their potential as valuable partners in efforts to promote sensitive caregiving among parents.

Mothers of Singaporean children's observed parenting behaviors resulted in a sensitivity score of +0.15 (full sample), clearly lower than that of the prototypical MBQS mother's score of +1, though certainly higher than the least-prototypical score of −1. Consistent with previous research (Cheung, 2021), there was no relation between Singaporean mothers' observed sensitivity and self-reported sensitivity, where the mean score was +0.59. Mothers' observed MBQS scores were, on average, lower than their self-reported MBQS scores regardless of whether they were evaluated against the MBQS criterion ($M = 0.21$ versus $M = 0.59$) or the local criterion ($M = 0.27$ versus $M = 0.62$), which is not surprising given the concordance between the MBQS sensitivity and local criteria. Again, there was no relation between Singaporean mothers' observed and self-reported MBQS scores evaluated against the local ideal criterion.

The lack of association between observed and self-reported parenting, regardless of the criterion sort used, is important when considering how to measure maternal behavior, and more specifically maternal sensitivity. That is, self-reports might not reflect the entire truth of respondents' parenting practices (Bornstein et al., 2015), emphasizing the need for careful evaluation of self-reports of parenting. This echoes sentiments by van Ijzendoorn and Bakermans-Kranenburg (2024), who foregrounded the concerns regarding the validity of parental self-reports. In a similar vein, findings from the Dunedin study highlighted the limitations of self-reports in capturing the true relationships between variables and actual life outcomes (Reuben et al., 2016). It is thereby important that self-reports are not relied upon as proxies for evaluating parenting behavior. Instead, greater emphasis should be placed on integrating observational measures into the study of parenting phenomena (Mesman, 2021). This notion is further underscored by van Ijzendoorn et al. (2004), whose meta-analyses demonstrated better convergent, discriminant, and predictive validity of the observer Attachment Q-Sort (AQS) relative to the self-reported version of the AQS. Given the existing research highlighting the limitations of

self-reports, coupled with the present study's findings, which suggest similar biases in self-reported maternal sensitivity data, the importance of employing rigorous observational methods in parenting research is further underscored.

Bearing in mind that mothers' observed MBQS scores were substantially lower than their self-reported MBQS scores, it is implied that some mothers are not practising the sensitive or "ideal" parenting behaviors they claim to practice, be it in relation to the MBQS or the local criterion. This is reminiscent of the tendency to over-report behaviors one believes to be socially desirable and to under-report behaviors they believe are not (Bornstein et al., 2015). Consequently, although mothers were asked to report their actual behaviors, their responses may reflect an idealized version of their parenting rather than their true practices. Additionally, some parents may not fully understand what the MBQS cards are intended to convey. It could be that a sub-sample of the BE POSITIVE mothers might not be well-read in sensitive parenting practices and how sensitivity might influence children's developmental trajectories. That is, perhaps their self-reports partially reflect a said "naïve" view of one's parenting abilities (Hess et al., 2004). This notion is supported by Hess et al. (2004), who found that mothers who were the least sensitive in their interactions with their child tended to report themselves to be competent parents provided that they possessed little knowledge about caregiving practices and child development.

Implications for practice

First, it is important to note that the local educators' views reflected the importance of sensitive caregiving, despite past research documenting high rates of physical punishment and some variation in the expectable relation between authoritarian parenting and child outcomes (Cho et al., 2022; Sudo et al., 2023). Given the role of early educators as important conveyers of knowledge, it is therefore reasonable to consider this as preliminary evidence that Singaporean society values sensitive caregiving and may be open to programs supporting it. That said, similar larger scale research with parents is also needed.

Second, it is also notable that mothers' self-reported parenting was found to be largely discrepant from what was observed, regardless of whether the assessment was based on the MBQS sensitivity or the local ideal criterion. If mothers generally believe they are engaging in "sensitive" and "ideal" parenting, it may be challenging to communicate information about effective parenting practices, as such efforts could be perceived as implying inadequacies in their current approach to parenting. This could potentially strain relations between parents and support providers and lead to decreased attempts to engage collaboratively to the detriment of children's wellbeing and development (Walker, 2019). One potential way to promote efficacious communication could entail the framing of messages. This involves considering the perspective of the other party in communication, fostering the maintenance of relationships that are characterised by empathy and understanding, and promoting receptivity (Bernhard et al., 1998).

To this end, it may be important to understand which behaviors parents believe they are already practising. Supplementary Table SE1 provides information concerning the ratings for each of the 25 mini-MBQS items. For example, as depicted in Table SE1, trained observers reported that mothers were not practising MBQS-sensitive behaviors, such as,

"Able to accept child's behavior even if it is not consistent with my wishes" and "Builds on the focus of child's attention" as frequently as they reported themselves to, regardless of these behaviors being important to both the sensitivity and local criteria.

Overall, this study contributes by providing insight into mothers' parenting behaviors and self-perceptions. Such insight may assist practitioners, and policymakers better anticipate resistance to intervention stemming from the limitations of self-evaluation and inform how outreach efforts are framed to encourage participation in parenting programs. Additionally, given past research as well as current findings, future work on parenting interventions should prioritize incorporating observational methods, rather than self-reports, to better assess post-intervention efficacy.

Limitations and conclusions

Mothers who provided self-reported data were largely ethnic Chinese and university graduates, whereby the remainder of the sample were more ethnically diverse and of varying education levels. This may imply that there might be an underrepresentation of ethnic groups and education backgrounds in the current findings, which could implicate the generalizability of the study. That said, past research conducted in Singapore (GUSTO) found no effect of ethnicity on maternal sensitivity after accounting for socioeconomic status (SES), though it did find an effect of SES on maternal sensitivity (Heng et al., 2018). Heng et al. (2018) operationalized SES as a composite of maternal education and household income. As these factors have been shown to influence parenting, particularly observed sensitivity (Bakermans-Kranenburg et al., 2004; Heng et al., 2018), future work could benefit from including participants from diverse SES backgrounds, in addition to considering the potential deconstruction of observed sorts (Bakermans-Kranenburg et al., 2004), to better inform the development of targeted interventions.

In addition, despite the overall similarities between the current research and that of Mesman et al. (2016), it is important to note that, given the short video clips used for assessment, the current research utilized the mini-MBQS-V rather than the 90-item MBQS. Furthermore, unlike Mesman and colleagues (2016) the current research did not ask mothers about their own parenting ideals and rather focused on ideals from early childhood educators.

Nevertheless, the present study is an important step towards understanding the sensitivity construct across different groups (e.g. mothers, academics, lay experts) and within Southeast Asian culture. This work highlights that parents may not necessarily possess similar views about their parenting practices as compared to trained observers, underscoring concerns regarding parental self-reports. It would be in the interest of children's development to promote communication from early educators to parents that is respectful and mindful of their perspectives, which can be facilitated by efforts to help educators better understand parents' mindsets, allowing them to tailor their communication accordingly.

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Data availability statement

The data that support the findings of this study are available from the corresponding author, A R-G, upon reasonable request.

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