Spring 5-1-2020

The Value of Supportive Touch and Maternal Attention in Measures of Maternal Sensitivity

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Abstract

This project aimed to examine the mother-child dyad during the second year (toddlerhood) in regards to sensitive parenting, with valuable insight into the naturalistic setting of the home (as opposed to a laboratory). With a subset of participants from the National Institute of Health sponsored study, The Play and Learning Across a Year Project (The PLAY Project), I evaluated mother-child dyads and the contact between them, in regards to supportive vs. restrictive touch; as well as attention paid to the child by the mother. Hour-long videos taken in the home environment were analyzed with Datavyu coding software to catch instances of contact and code attention. Children in the available subject pool were either 12, 18, or 24 months old (n = 4 total). I hypothesized that supportive contact and maternal attention were both valid constructs to gauge maternal sensitivity; this contradicts the number of global rating scales of maternal sensitivity that exclude interpersonal touch and maternal attention.

The Value of Supportive Touch and Maternal Attention in Measures of Maternal Sensitivity

The way one is raised makes an indelible mark on the trajectory of one's life. Where one was born, what jobs their parents have, and how strict or permissive one's grandparents were, are all salient factors that shape who we are and how we experience the world. Parents are the first people to engage with their child and are responsible for their wellbeing for almost two decades (in the United States); this puts the mother and father in a unique position to guide the child's cognitive, motor, and emotional development and socialization (Hoghughi, 1998; Caughy, Hwang & Lima, 2009). The roles and responsibilities of the mother and father are arguably the most important before the child can remember, in the first few years of life. During this period, many milestones are met and surpassed, not to mention attachment is developed and sustained alongside these (CDC, 2020). How parents engage with their child, regarding affection, discipline, and attention, during these transformative years is a topic that many researchers and psychologists explore, study, and write about (Aunola & Nurmi, 2005; Wood, McLeod, Sigman, Hwang & Chu, 2002; Bornstein & Bornstein, 2007; Caughy, Hwang & Lima, 2009). Research has elucidated that certain parenting methods are associated with more positive life outcomes (and vice versa); however, real life is complex and dynamic. Sensitive parenting is the gold standard, though the concepts that mold this ideal are difficult to operationalize. In theory, sensitive parenting involves warmth, accessibility, and accurate perception of signals from the child (Ainsworth et al., 1978); nevertheless, sensitive parenting is hard to label in practice. It is unclear if behaviors such as supportive contact and paying primary attention are analogous to sensitive parenting.

Background

Mother-child dyads

Researchers of developmental psychology are partial to studying relationships between parent and child with mother-child dyads (Caughy, Hwang & Lima, 2009; Lavelli & Fogel, 2013, Feldman, 2010; Biringen, 1990) (to name a few). The mother-child dyad consists of the mother and child, who are two individuals with a sociologically significant relationship (Merriam-Webster, 2020). The scientific interest in examining this relationship specifically extends decades into the past, starting with psychologists who are landmarks in the field such as Bowlby (1969/1982, 1973, 1980) and Ainsworth (1978). Part of what fuels the interest in examining the mother-child dyad comes from what we know about infant development and caregiving. We know human children to be born ready, but not able (Knight, 2018). Their inability to care for themselves for several years post-birth means that caregivers are required to support infant needs and guide their development (Provenzi, Scotto di Minico, Giusti, Guida & Muller, 2018). Traditionally, the caregiving role is the mother's responsibility; how the mother behaves and treats her child partially determines the trajectory of their emotional, cognitive, and social development, as well as their ability to self-regulate (Provenzi, Scotto di Minico, Giusti, Guida & Muller, 2018). Not only is there an inherent bond between mother and child, but processes can occur between them that benefit the communicative competencies of the child. These processes are bi-directional and involve patterns of synchronized social behavior, such as eye gazes and body movements (Stern, 1971). The list of concepts that researchers have focused on using mother-child dyads includes attunement, reciprocity, synchrony, mirroring,

coordination, attachment, and sensitivity, just to name several (Kokkinaki et al., 2017; Lavelli & Fogel, 2013, Feldman, 2010; Harder et al., 2015). Each of these concepts have multiple studies detailing findings relevant to the mother-child relationship and infant development in general (Provenzi, Scotto di Minico, Giusti, Guida & Muller, 2018). For example, maternal sensitivity is a construct developed by Mary Ainsworth and colleagues in the late 1970s and was defined as the ability to respond to the infant's signals promptly, appropriately, and with a degree of warmth and empathy (Ainsworth, et al., 1978). Mother-child dyads have been used to examine maternal sensitivity alongside other concepts such as autonomy and proximity (Biringen, Robinson & Emde, 1994; Pianta, Roufe, & Egeland, 1989; Biringen, 1990). These studies have also extended the construct of maternal sensitivity beyond the mother-infant relationship to be relevant for toddlers as well (Biringen, Robinson & Emde, 1994). The field of developmental psychology has acknowledged mother-child dyads to be a valuable resource to observe what happens between mothers and their children, and this method provides insight into infant social and cognitive development, as well as characteristics of childrearing from the mother's perspective.

The Home Environment

The benefits and drawbacks of staging research in a laboratory environment versus in-field research are of valid concern when studying participants like mother-child dyads. Similar to the majority of psychology research projects and experiments, research focusing on mothers, children, and/or their interaction tends to take place in a lab environment (Coolican, 2017). A laboratory can provide integral equipment to evaluate participants and can ensure the validity and reliability of research conducted within, as opposed to in-field research (Cottrell &

MacKenzie, 2010). This control that experimenters have over a lab environment is certainly valuable in holding variables constant; however, it raises questions of generalizability to the home setting (Belsky, 1980). The "free play" setting that a laboratory can create cannot breed the exact same results that the naturalistic home environment would (Belsky, 1980). A paradox exists in psychological research: the more controlled the environment is, the higher the internal validity (our ability to judge research as real and non manipulated by outside variables); however, as we increase control and internal validity, we decrease external validity (our ability to generalize the data found to the real-world population) (Cottrell & MacKenzie, 2010). Valid data can be generated from research on mother-child dyads that takes place in either a home or laboratory setting, but home settings are as realistic a setting as possible, giving them an advantage over lab-based studies (Belsky, 1980).

Focus of the study: Sensitive Parenting

We know from decades of research that not all methods of parenting are equal, and certain styles of parenting breed more positive outcomes than others (Borstein & Borstein, 2007; Rinaldi & Howe, 2012; Baumrind, 1967). Methods of parenting branch off into two recognized arenas: parenting styles, which include authoritarian, authoritative, permissive, and neglectful parenting; as well as general qualities that make up sensitive parenting (versus insensitive parenting) (Baumrind, 1967; Ainsworth et al., 1978). For the purposes of this project, I will be primarily focusing on the concept developed by Mary Ainsworth and colleagues, dubbed "sensitive parenting", also referred to as (emotionally) supportive parenting (Newland, Crnic, Cox, Mills-Koonce & R, 2013; Belsky & Fearon, 2008). Ainsworth crafted four scales on which to categorize mothers under the umbrella of maternal sensitivity: Sensitivity vs. Insensitivity to

child's signals, Cooperation vs. Interference with child's ongoing behavior, Physical and Psychological Availability vs. Ignoring and Neglecting, and Acceptance vs. Rejection of child's needs (1969). All scales are relevant to sensitive parenting, but the first scale is congruent with the primary definition of sensitive parenting, which entails being aware of signals from the child and not just interpreting them correctly, but responding promptly and appropriately (Ainsworth et al., 1978). Characteristics of supportive parenting covered in the scales include, but are not limited to, warmth (positive affect), responsiveness, accessibility, and the use of inductive reasoning as opposed to punishment or other harsher methods. Plenty of studies use sensitive parenting as an independent variable that impacts child outcomes, but the global rating scales developed by Ainsworth in the 1970s are still the standard (Biringen, 1990; Pianta, Roufe, & Egeland, 1989; Tharner et al., 2012). This is not to say that other tools to observe characteristics of maternal sensitivity have not been developed; scales like The Child-Adult Relationship Experimental Index (CARE Index), Coding Interactive Behavior (CIB), Biringen's Emotional Availability scales, and the Maternal Behavior Q-Sort (MBQS) are all newer observational instruments to measure maternal sensitivity (Mesman & Emman, 2013). These scales vary from Ainsworth's primary scale of Sensitivity vs. Insensitivity in that some include positive affect in their scales, some extend to be used with toddlers and above, and some include behaviors such as facial/vocal expression and body position and contact (Mesman & Emman, 2013). These scales have primarily been used to explore attachment security, which was the main purpose of the original Ainsworth scales (Ainsworth et al., 1978; Mesman & Emman, 2013).

Micro vs. Macro-level Coding

Global rating scales operate using a macro-level coding scheme, where researchers observe 5 to 15 minute time segments and grant scores for behavior based on the total observation (Mesman, 2010). This contrasts with micro-level coding, where behaviors are actively coded as they occur, with codes lasting milliseconds, seconds, or minutes. Micro-level coding of maternal behavior has been used to ascertain maternal contingency, or the synchronization of behavior between mother and child (Mesman, 2010; Harrist & Waugh, 2002); however, micro-level coding exists past this format. Micro-level coding has been used to code constructs such as object exploration, language, and maternal warmth in mother-child interaction as well (Tamis-LeMonda, Kuchirko & Tafaro, 2013; Volker, Keller, Lohaus, Cappenberg, & Chasiotis, 1999). As technology progresses, our ability to translate video data into coded events has transformed, with coding softwares like INTERACT software and Datavyu being employed in recent publications (Tamis-LeMonda, Kuchirko & Tafaro, 2013; Karasik, Tamis-LeMonda & Adolph, 2013).

Outstanding Questions and the Present Study

Sensitive parenting has been established as a construct to which parents can subscribe, and aligning behavior with the concepts presented (warmth, accessibility, etc.) can breed positive outcomes for children. Taking maternal sensitivity out of theory and into practice, however, is neither simple nor straightforward. Researchers and validated instruments have included various behaviors in their measures of parental sensitivity, such as gaze, positive affect, and facial expressions (Mesman, 2010), but additional behaviors that could also be relevant to the construct seem to have been overlooked. For example, the third scale that Ainsworth created (Physical and Psychological Availability vs. Ignoring and Neglecting) has a heavy emphasis on being physically present with and psychologically aware of the child, with perceived maternal

accessibility (from the child) being paramount (Ainsworth, 1969). Accessibility is clearly relevant under the umbrella of sensitive, responsive parenting; nevertheless, coding maternal attention to capture maternal accessibility has not been integrated into mainstream sensitive parenting behaviors, nor instruments or measurements of sensitivity. In a similar vein, touch between mother and child does not receive as much attention as other modes of communication within the dyad (infant touch has adequate research, but not in the context of mother-child communication) (Hertenstein, 2002). According to Ferber, Feldman, & Makhoul (2008), maternal touch is related to sensitivity and the degree of reciprocity and synchrony between mother and child; however there is not adequate research on the benefit of including maternal touch as a characteristic of supportive parenting.

Delving further into the third construct of Ainsworth's Maternal Sensitivity scales, "Physical and Psychological Availability vs. Ignoring and Neglecting", illustrates the value of maternal attention and its quality and direction. To receive the highest rating (of 9, meaning "Highly accessible"), Ainsworth notes that this mother arranges things so she can be accessible to the child and vice versa; she is very alert to their whereabouts and activity, and is rarely so preoccupied that she becomes unresponsive or unaware (1969). In contrast, the lowest rating mother tends to be too preoccupied to properly attend to her child, and paying attention to the child is an active choice, as opposed to a frequent and common behavior (Ainsworth, 1969). It is clear that paying consistent and rich attention to the child is a pertinent segment of sensitive parenting. Subsequently, when we acknowledge the demonstrated benefits of joint attention, we must recognize that the mother who spends most of her time paying primary attention to her child is more likely to engage in joint attention as well (Saxon & Reilly, 1998; Goldsmith &

Rogoff, 1997). Interpersonal contact between mother and child also influences their dyadic relationship in regards to reciprocity and synchrony, alongside communicating warmth, security, and/or support (depending on how the mother touches the child, because restrictive/harsh and overstimulating touch still exist and are not beneficial) (Ferber, Feldman, & Makhoul, 2008). A mother rating high in sensitivity would also engage in patterns of touch that perpetuate sensitivity, however, research on supportive touch being a factor of sensitive parenting is lacking.

The present study contributes to the existing literature by introducing the possibility of including relevant maternal behaviors (i.e., maternal attention and supportive contact) into the agreed characteristics of observable maternal sensitivity.

Methods

For this thesis, I was granted access to a dataset called the PLAY Project, also known as the Play and Learning Across a Year Project. This major research study has been headed by New York University researchers such as Dr. Karen Adolph, and funded in part by the National Institute of Health (NYU, 2018). The PLAY project seeks to create a large-scale representation of what play and social interaction looks like for mothers and young children in the home setting. Sixty-five researchers from forty-five universities across the country are contributing their expertise to collect and code the wealth of video data from over nine hundred families (NYU, 2018). My thesis advisor, Dr. Adam Sheya, is one of the sixty-five researchers tasked with coding and collecting data in our region; underneath him, my fellow undergraduate research assistants and I worked on coding object exploration with the four initial sample videos that we had been

provided from NYU. Due to logistics, planning, timing, and the unexpected global Covid-19 pandemic, we did not receive additional data past the four sample videos; subsequently, my project (which was initially set up to compare multiple participants) has transformed. With the four participants that I was able to study, it was possible to glean valuable information regarding the mother-child dyad and sensitive parenting during toddlerhood. This was done by examining patterns of supportive vs. restrictive contact, as well as surveying maternal attention.

The PLAY Project

The larger study that provided my project with video data is still in progress, but it is pertinent to include the nature of the data that they are obtaining. All statements in this section are informed by a site dedicated to the PLAY Project, created by NYU and integrated with their online library (NYU, 2017). Participant involvement began with calling families to confirm that their child fulfilled the study requirements and to gain consent to share recorded data on their online library (Databrary). A home visit would be scheduled, and on the day of, questionnaires were completed by the mother; however, this study was not given access to these questionnaires. The primary motivation behind the PLAY Project is to create a database of videos that are a snapshot of mother-child dyads during a typical day, to then examine and code for various concepts and behaviors including object exploration, locomotion, gestures, emotion, and communication. This was done by obtaining a 1 hour video of natural play. Mothers were instructed to go about their normal day while ignoring the experimenters and their cameras; they were not restricted to any room, and were told that they could play or not. The videos depict mothers participating in activities such as reading or playing with their child, doing housework, and breastfeeding (amongst other things), with children playing and exploring.

Inclusion criteria for the children in the PLAY dataset subject pool included being the firstborn child (with no siblings), being born at or around their due date, and possessing no disabilities (infants with auditory, visual, cognitive, and motor disabilities, as well as preterm infants, were disqualified from participation). Other requirements detailed by the PLAY dataset included speaking solely English, Spanish, or both, in the home, as well as the mother being the only parent or person present with the child during the home visit. Children could be from two parent or single parent households and needed to be within a week of twelve, eighteen, or twenty-four months of age to be considered. The four children that I had the opportunity to code included a 24-month-old boy, an 18-month-old boy, and two 12-month-olds; one was female and could walk, and the other was male and was primarily crawling. For the purposes of this paper, I will refer to each of the children by their demographic: 12C, 12W, 18M, and 24M (for 12 month Crawler, 12 month Walker, 18 Months and 24 Months).

Procedure

For the purposes of this study and in congruence with the PLAY Project, I chose to use Datavyu software for microgenic coding of video data, specifically the dyadic interaction between mother and child (Datavyu, 2020). This software allows multiple codes and columns to parse out the various (and occasionally minute) actions, behaviors, or emotions that subjects may exhibit while being taped. My primary research interest centered on emphasizing supportive maternal contact and accessibility as factors of sensitive parenting. Due to this, I chose to code contact between mother and child, and maternal attention towards the child.

Contact coding

To code contact, I began with an initial pass, which entailed coding every instance that the mother and child came into physical contact. Examples include the mother picking up the child, swiping hair from their face, poking them to gain their attention, breastfeeding, and so on. When examples of contact were as obvious and undeniable as possible, "C" was coded; starting with the onset of contact and ending when obvious contact had ceased for over two seconds. When examples of contact were questionable or uncertain (such as the mother and child standing very close together, but given the limited perspective of someone watching a video, one cannot determine if touch is occuring), "OFS" was coded. The code of "OFS" was also used for instances where both the mother and child were off-camera, and there was no evidence to claim that they were touching or not. If the mother and child were obviously not in contact, there was no code, indicating that there was no contact.

After completing the first pass, we further specified the code to complete a second pass centered on the nature of the touch exhibited. To execute this, I reviewed every previously coded instance of "C" to classify the contact displayed as supportive, restrictive, or neutral, from the perspective of the mother. Every instance of "C" included either the mother initiating physical contact with the child, or the mother responding to physical contact that the child initiated. I did not include coded periods of "OFS" in the analysis of the second pass due to the inherently dubious nature of the code. Categorization into supportive, neutral, or restrictive touch was mutually exclusive; if a longer single instance of contact transitioned from one category to another, it was coded as such. Supportive contact, like supportive parenting, is characterized by sensitivity, warmth, empathy, and inductive discipline; e.g. a mother effectively neutralizing her child from coloring on the walls, and transitioning them to an alternate activity, while respecting their autonomy and

avoiding excessive harshness (Ferber, Feldman, & Makhoul, 2008; Paulusson-Hoogeboom, Stams, Hermanns, & Peetsma, 2007). Restrictive contact, like restrictive parenting, is typically intrusive and/or overcontrolling, can be tinged with irritation or anger directed towards the child, and includes corporeal punishment (Paulusson-Hoogeboom, Stams, Hermanns, & Peetsma, 2007). Restrictive parenting is generally inconsiderate towards the child's free will, with the parents' wants or needs taking precedence; this can take place in many forms and is not necessarily violent, nor intentional (Paulusson-Hoogeboom, Stams, Hermanns, & Peetsma, 2007). Contact that was not convincingly supportive, nor restrictive, was categorized as neutral. For example, basic instrumental touch, such as wiping a child's nose with tissue, would be deemed neutral, unless there was an element within the contact that suggested this action was especially restrictive or supportive.

Attention coding

To code attention, I created a single, comprehensive coding scheme to gauge when the mother was paying attention to the child, and determine the nature of the attention. We cannot ascertain what a person is paying attention to just by looking at them, but with prior research, we know that if Person A is talking to, and looking at Person B, Person A is more than likely giving their full attention to Person B as they engage in conversation; this is also called focal attention (APA, 2020). Again, we cannot determine whether someone is fully paying attention to another person just because they are in conversation; however, if Person A is engaged with an activity, as well as engaged in a conversation with Person B, research informs us that they cannot be paying full attention to neither the activity, nor the conversation; this is called divided attention (APA, 2020). If someone is multitasking (meaning, pursuing the completion of two separate tasks at

once) (APA, 2006), it is assumed that they are paying divided attention: partial attention to one task and partial attention to the other. For the scope of this project, I created two codes regarding attention: "F" for full attention and "D" for divided attention. If the mother was visible on screen and was actively paying attention to the child, meaning her behavior indicated that the child and their needs were of primary concern, then "F" was coded. This code was bolstered by the mother looking at the child while speaking to them, as well as participating in activity centered around the child, such as reading a book to them, or simply supervising them as they play independently. If the mother was visible on screen and was dividing her attention between the child and another activity, "D" was coded. This code would be used if the mother was talking to the child, but completing another activity simultaneously, or holding the child as they took care of other tasks (though this is not an exhaustive list). The defining characteristic of coding "D" is the mother acknowledging the child, but not behaving as if the child is her primary concern at the moment. Besides the two major codes of full vs. divided attention, an "OFS" code was included to catch the instances where the mother was off camera, but still indicated that she was paying at least partial attention to the child. An "OFS" code would be used if the cameraperson followed the child to another room in the house, but the viewer could hear the mother communicating with the child despite her physical absence. Similar to the contact coding scheme, if the mother did not exhibit behavior that indicated she was paying attention, partial or otherwise, to the child, then there would be nothing coded; a lack of a code indicates a lack of attention being paid. No code does not mean that the mother is not paying attention to her child, because an outside viewer cannot determine that; however, this code was used when the child was not treated as a primary or secondary priority for a period of time. For example, if the mother turned away from the child

to take a phone call, or if she was using her cellphone while the child played independently, an ongoing attention code would be terminated or no code would be started during that period.

Results

To analyze the data that was collected from the contact and attentional codes, I used basic statistical methods to organize and translate the data into proportions and frequencies for appropriate comparison.

Contact

Supportive vs. restrictive contact data consisted of frequencies (i.e. number of instances of contact) and proportions (e.g. percentage of the video that the dyad spent in contact with each other). Frequencies calculated included how many instances of contact and how many of the instances were categorized as supportive, neutral, or restrictive (e.g. 50 instances of touch, twenty were categorized as supportive, etc.). Frequencies were counted manually, meaning each coded event was added together through the length of the video. Proportions calculated included percent of time the dyad spent in contact total, the percent of time spent in supportive vs. neutral vs. restrictive contact, and the percent of time spent not in contact. These were found using the actual amount of time spent in each coded (or uncoded) event. For example, the percent of time spent *not* touching was found by adding up all of the seconds that made up every coded instance of "C" or "OFS", and then subtracting this number from the total amount of seconds in the video.

Attention

Full vs. divided attention data consisted of solely proportions, e.g. the percent of the video that the mother spent paying full attention to the child. Proportions calculated included the percent of

time (out of the total video) that the mother spent paying either full, divided, or no attention to the child (as well as the slight percentages of time attributed to periods of attentional "OFS"). As final data points for comparison, I found the longest amounts of time that elapsed between coded instances of contact and coded bouts of attention, noted as "LTNC" and "LTNA" (Longest Time No Contact and Longest Time No Attention, respectively). Refer to Table 1 for a breakdown of the frequencies and proportions found amongst the four subjects of this multiple case study.

Table 1

	12C	12W	18M	24M
Total time	1:03:08 (3,788 s)	1:10:22 (4,222 s)	1:04:39 (3,879 s)	1:01:08 (3,668 s)
Instances of contact	81	76	87	54
S/N/R	40/33/8	17/34/25	31/40/16	18/29/7
% C	30.1%	17.9%	30.55%	18.9%
% No contact	59.4% (2,250 s)	71.86% (3,034 s)	63% (2,444 s)	78.9% (2,894 s)
% Supportive	83.7% S (954 s)	12.7% S (96 s)	39.7% S (470 s)	53.7% S (358 s)
% Neutral	13.9% N (159 s)	70.8% N (536 s)	47.4% N (562 s)	41.2% N (275 s)
% Restrictive	2.4% R (27 s)	16.5% R (125 s)	12.9% R (153 s)	5.1% R (34 s)
% No attention	6.26% (237 s)	44.72% (1,888 s)	13.4% (519 s)	10.85% (398 s)
% Divided	4.62% (175 s)	7.03% (297 s)	9.1% (353 s)	9.40% (345 s)
% Full	86% (3,258 s)	42.4% (1,790 s)	74.3% (2,884 s)	79.53% (2,917 s)
% OFS	3.12% (118 s)	5.85% (247 s)	3.2% (123 s)	0.22% (8 s)

(attention)				
LTNC	3:18	8:58	5:10	4:01
LTNA	1:29	1:30	1:04	1:32

Note: The percentages of "C" added to the percentages of "No contact" will not equal 100% because the percentages of "OFS" for contact have been excluded.

Findings

As seen in the table, the mothers observed in the four videos varied in their distribution of maternal touch and attention. The mother of 12C spent the most time engaged in full attention with her child (86% of the recorded observation), followed closely by 24M (74.3%) and 18M (79.53%), but the mother of 12W spent less than half the video paying full attention (42.4%). The mother of 12W was almost as likely to be paying full attention (42.4%) as she was to be paying no attention (44.72%). The mothers of 18M and 24M were slightly more likely to employ divided attention than the mothers of 12C and 12W. The proportion of the video spent paying no attention to the child was below 15% for all mothers besides 12W (44.72%).

All mothers spent at least 50% of the video not in contact with their child, but the time spent in contact varies from almost a third of the video (30.55% for 18M) to slightly less than a fifth of the video (17.9% for 12W). Comprising the time spent in contact, the mother of 12C engaged primarily in supportive touch (83.7% of all contact) and the lowest levels of restrictive touch (2.4% of all contact). The mother of 12W was most likely to engage in neutral touch (70.8%), and her observed restrictive touch (16.5%) surpassed observed supportive touch (12.7%). The mother of 18M was also most likely to engage in neutral touch (47.4% of all contact), but her

supportive contact (39.7%) outweighed her restrictive contact (12.9%). The mother of 24M was more likely to engage in supportive touch (53.7%) than neutral touch (41.2%), but this may be explained by the activities that she took part in. The mothers of both 12C and 24M took part in breastfeeding sessions that likely contributed to their higher levels of supportive touch.

Discussion

The purpose of examining and coding these four participants was not to rate them on a scale of sensitivity to insensitivity, but instead, to parse apart their observed behavior alongside what I've coded to discern whether they are in line with the literature on sensitive/supportive parenting. It must be noted that due to the nature of my study and limited sample size, I cannot extrapolate to the general population of mothers and toddler-age children. Rather, this multiple case study exists primarily to suggest that maternal attention and interpersonal touch are valid constructs to include in measures of sensitive parenting. The following discussion is supported by observational notes taken during the multiple viewings of each video.

12C

To bolster the coded data, it must be noted that the mother of 12C was engaged with her son for the vast majority of the video. She fed him from her meal, encouraged him to draw with chalk, asked him which milk he preferred, and played with him in his playroom. She was consistently talking with her son: asking for opinions, fulfilling requests, and sharing information. She was warm throughout, providing positive encouragement often, and also asked for consent (e.g. holding him as she looked through the refrigerator for milk, showed him a certain bottle and asked if this is the one he preferred). She engaged in inductive discipline; for example, the child stood up on his chair and she responded, "You want to sit in the chair, or in my lap? Because we

can't stand!" Inductive discipline involves reasoning and discussion in regards to behavior that is appropriate or inappropriate, and helps children to instill morals in cognition (Kerr, 2004). Given the same scenario, this mother could have admonished him or physically placed him in his seat; these responses would have been illustrative of restrictive parenting. The mother of 12C also breastfed her son; while she was hesitant, she did not refuse his request. During this, she again invoked inductive reasoning; her son was kicking about as he breastfed and she said, "If we're gonna nurse we gotta lay down and be calm, we can't do crazy nursey!" She then entertained him with a puppet until he finished feeding. Given how she spent her videotaped hour of natural play, alongside the proportion of full attention that was coded for 12C, it is likely that a validated global rating scale would consider this mother to be highly sensitive.

12W

Given the identical age of the children, it may be easy to contrast the mother of 12W with the mother of 12C; nonetheless, the description of 12W is independent of the other three mothers and their behavior. The mother of 12W was very active around her home, taking part in activities such as dishwashing, folding clothes, making a smoothie, and other kitchen-centric tasks. The mother and her daughter were almost always in the same room, yet the mother was usually attending to a task as opposed to paying attention to the child. The mother of 12W exemplified divided attention: to start the video, she placed the child in a high chair with food, water, and toys, she then engaged in a number of tasks that did not involve the child, but would look at and speak to her daughter regularly. The child, when not in the high chair, spent much of the video wandering around her home, enthralled by the lid of a tupperware container. Of the contact that this mother engaged in, 16.5% was categorized as restrictive. Actions that were deemed

restrictive that were performed by this mother included guiding the child in and out of rooms and constantly swiping her daughter's hair from her forehead; she would also grab her in ways that did not imply empathy for her daughter's autonomy. There was no overtly negative or harsh discipline in any of the videos, but restrictive contact extends past physical punishment; restrictive parenting is characterized by high power assertion and overcontrolling, intrusive, and over-involved behavior (Paulusson-Hoogeboom, Stams, Hermanns, & Peetsma, 2007). It is interesting to note that while 12W's mother spent the least amount of time (comparatively) paying full attention, she was also the mother with the highest proportion of restrictive touch. One could speculate that she was attempting to make up for her lack of attention by engaging in interpersonal touch; however, she may not recognize that her patterns of touch could be intrusive or overcontrolling. It is unlikely that the mother of 12W would be classified as sensitive.

18M

The mother of 18M spent most of her time paying full attention to her son (74.3%); although the code of "full attention" was accurate according to the scheme, her displayed full attention differed from the mother of 12C's full attention. Compared to 12C's mother, the mother of 18M's brand of "full attention" was usually more supervisory and hands-off (which is to be expected, given the ages of their children) (Bowlby, 1955). At times, her son would engage in independent play with his toys, and his mother would supervise him as this occurred. She often provided new toys that were outside of their playing area to entertain her child, as well as occasionally participating (showing him how to draw with crayon, reading a book together). This was the only video where one of the mothers utilized their television; her child was enraptured for a short period of time, but she turned it off after a few minutes. The mother of 18M engaged

in primarily neutral touch (47.4%) but also had relatively high levels of restrictive touch (12.9%); this is likely because of her strategy towards discipline. Her son would often explore the objects in the rooms that they cycled through; however, some items were not to be touched, such as a bicycle in an office or an open suitcase. When attempting to stop him, 18M's mother usually grabbed his hands so that he could not continue and said "No no no!" in a child-appropriate tone. While she likely did not intend to be restrictive, there are more considerate ways to redirect behavior, which she did indeed engage in at other points in the video. For example, her son was drawing on the couch, and she encouraged him to draw on a notepad instead and gave him a demonstration; this was an example of redirection. This child exhibited the highest levels of negative affect (among the participants). This was discernible due to the fact that none of the other children cried in their videos, while his mother's interventions were likely to end in his tantrums. The mother of 18M could have responded to her son's crying with irritation, anger, or neglect, but she tried to comfort and distract him every time; she was sensitive to her son's negative emotion and responded promptly with warmth (even though her strategies did not always work). The mother of 18M is not as easy to categorize as the mothers of 12C and 12W; she tended to exhibit high levels of some concepts of sensitive parenting, like accessibility and warmth, but lower levels of other concepts, such as inductive discipline.

24M

The mother of 24M spent most of her time paying full attention to her child (79.53%); her brand of "full attention" was more in line with the mother of 18M than the mother of 12C. She spent her hour of natural play occasionally playing alongside her son, but mainly supervising, as well as reading books with him and engaging in two breastfeeding sessions. Of the contact that she

engaged in, 53.7% was supportive; this may be relatively high due to periods of time where she breastfed her son. The mother of 24M participated in casual labelling of objects her son would come across, often providing names for toys in Spanish as well as English (e.g. calling a wooden dog toy "perro", the child responded with "woof"). The mother of 24M tended to set her son up with toys and then watch him from a distance, instead of remaining at his shoulder and remaining involved; she was not always distanced, however. At one point, mother and child were reading and playing together in his bedroom; the son was being rambunctious and repeatedly tried to tackle his mother. She may have been in pain, because he knocked her glasses off and pulled her hair out of its bun, but she responded with patience and affection (did not scold him or engage in restrictive contact during this). The mother of 24M had the highest proportion of divided attention within her hour of natural play (9.4%). These instances were mostly towards the end of the video, where the child was playing independently but she would occasionally speak to him and participate as she used her phone. Due to the age of her child, it would be inappropriate to compare her behavior with the behavior of the mother of, say, 12C; we have to consider her behavior alongside relevant context. As infants grow into toddlers and beyond, they begin a period of separation and individuation that changes the previous status quo of complete reliance on the mother (independence grows both in self-transportation and recognition of personal autonomy) (Mahler, Pine, & Bergman, 1967). The mother's role as the child's mindset and abilities transform is to provide support and emotional availability, to ensure the ideal development of the child's individual identity (Mahler, Pine, & Bergman, 1967). Given the mother of 24M's observed behavior and her coded patterns of attention and supportive contact, she would likely be categorized as sensitive.

Limitations, Implications, and Conclusion

The purpose of this study was to examine maternal attention and different types of contact between mother and child during the years of toddlerhood, and to consider the value of including these constructs in measures of sensitive/supportive parenting. Given the lack of a dependent variable for comparison, I cannot suggest that the mothers who had higher proportions of supportive touch or of primary attention will have children that perform better or worse in any realm in the future. However, I have established that both maternal touch and maternal accessibility are relevant constructs that are related to maternal sensitivity; being high in levels of supportive touch and primary attention should serve as a valid approximation of maternal sensitivity in the absence of other measures. This should be considered in future research involving parenting styles and sensitivity.

Maternal sensitivity was originally developed to explain differences in attachment classifications (from the Strange Situation procedure, also developed by Ainsworth in the 1960s) (Mesman & Emman, 2013; Van Rosmalen, Van Der Veer & Van Der Horst, 2015). Attachment theory (developed by John Bowlby) provides an evolutionary explanation for the distress behaviors that infants often express when separated from their primary caregiver. The caregiver-infant relationship is of utmost importance during the child's first few years of life; this is when attachment security is molded into one of four recognized types: secure, or insecure-anxious, insecure-avoidant, or insecure-disorganized (Fraley, 2018). Parental sensitivity and attachment security become integrated when we acknowledge the behaviors that contribute to achieving secure attachment. If the attachment figure is present, attentive, and accessible (i.e., through sensitive parenting), the child feels secure in their environment and is motivated to explore their

physical and social environment (Fraley, 2018). If the child does not perceive this, however, they are likely to be classified as insecure, and experience feelings such as anxiety and/or despair (Fraley, 2018). Securely attached children go on to enjoy a wealth of beneficial outcomes, such as better psychological adjustment, physical health, coping mechanisms, more fulfilling social ties, and they are less likely to be depressed than insecurely attached individuals (Peterson & Park, 2007). These documented consequences of one's attachment style help emphasize the importance of sensitivity in parenting.

Several limitations of this study should be noted. First, I would have preferred to categorize the mothers as high or low in sensitivity based on validated global rating scales of maternal sensitivity, like the CARE Index, the Emotional Availability scales, or the original scales developed by Ainsworth. This would have provided much valued validity to my descriptions of observed behavior, and I could compare the levels of coded attention and supportive touch alongside valid and justified ratings of maternal sensitivity. Unfortunately, the CARE Index and the Emotional Availability scales are not freely available, plus each scale requires training to administer; this would not have been feasible for a number of reasons (training can take several days, can cost hundreds of dollars, and is intended for professionals, not students). Second, it must be recognized that a concept like focal or divided attention is nearly impossible to code with complete or near accuracy. The operationalization of attention has and likely will vary as the field continues to elucidate the internal functions of the brain. It is also less difficult to code attention when your participants are in a controlled environment (such as a lab) doing a specific task, using equipment such as eye-trackers. Instead, the present study needed to acknowledge the naturalistic and dynamic environment of the home setting, and operationalize attention as

analogous to what one is observing and interacting with. The codifying of attention in a naturalistic environment should be explored and refined in future research and publications. Third, studying a larger number of mother-child dyads, with more children in each age group, would have benefitted the present study in two ways. Most importantly, a larger sample size would have allowed me to make justifiable extrapolations to the general population of mothers and children in toddlerhood. Additionally, in the present study, each mother stood independent from the rest despite variation of attention and type of touch because there was no valid basis for comparison. However, with a larger sample size at each age group, it would be possible to also compare maternal behavior within an age group (say, mothers of 18 month old children), which could be used to distinguish mothers high in sensitivity from less sensitive mothers. Lastly, I had the intention to compare the independent variables of maternal attention and contact with child object exploration as a dependent variable. Studying this in the future would allow levels of maternal attention and supportive/restrictive contact to potentially be associated with certain child outcomes or capabilities. While my study supports the idea that supportive touch and primary attention are characteristics of sensitive parenting, further research (with more coders, funds, and participants) is required to justify the widespread implementation of coding maternal attention and interpersonal contact into studies exploring or measuring maternal sensitivity. Research centering on sensitive parenting is vital to informing the public on how best to conduct the caregiver-child relationship, to ensure advantageous outcomes.

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