



## Observational measures to evaluate parenting responsiveness: a systematic review

Amaia Halty\*, and Ana Berástegui

Universidad Pontificia Comillas, Madrid (Spain).

**Título:** Medidas observacionales para evaluar la responsividad parental: una revisión sistemática.

**Resumen:** *Objetivo:* Este estudio pretende identificar y analizar los instrumentos observacionales para evaluar el constructo de responsividad parental, con especial atención a los componentes que se evalúan, las características de aplicación y los criterios de uso. *Método:* Se llevó a cabo una revisión sistemática de los instrumentos publicados a través de las bases de datos de PsychINFO y Google Scholar. Dos investigadoras independientes evaluaron la elegibilidad de los instrumentos, extrajeron los datos y evaluaron sus características. *Resultados:* Se seleccionaron 33 instrumentos. Los componentes evaluados son diversos y más del 50% evalúan también otros constructos. El 45% son de foco medio y la mayoría tienen un enfoque positivo. Más de la mitad se codifican a través de vídeo, algo menos de la mitad solicita realizar tareas concretas, el tiempo destinado a la evaluación es muy variable y todos ellos requieren formación específica para su uso. *Discusión:* Existe una gran oferta de instrumentos para evaluar la responsividad parental. Esta revisión ofrece claves que facilitan la elección del instrumento más adecuado a cada necesidad profesional o de investigación.

**Palabras clave:** Responsividad. Comportamiento parental. Evaluación. Medidas observacionales. Revisión sistemática.

**Abstract:** *Objective:* This study aims to identify and analyze the observational instruments used to evaluate the parental responsiveness construct, with special attention to the components that are evaluated, the application characteristics, and the criteria for use. *Method:* A systematic review of the instruments published through the PsychINFO and Google Scholar databases was conducted. Two independent researchers assessed the eligibility of the instruments, extracted the data, and assessed their characteristics. *Results:* A total of 33 instruments were selected. The components evaluated are diverse and more than 50% also evaluate other constructs. Of these, 45% are medium focus and most have a positive focus. More than half are encoded through video, slightly less than half request to perform specific tasks, the time allocated to evaluation is highly variable, and all of them require specific training for their use. *Discussion:* There is a wide range of instruments to assess parental responsiveness. This review offers clues that facilitate the choice of the most appropriate instrument for each professional or research need.

**Keywords:** Responsiveness. Parental behavior. Evaluation. Observational measures. Systematic review.

### Introduction

Parental responsiveness is considered as one of the parenting components with the greatest influence on child development (Bornstein et al., 2008; De Wolff & van IJzendoorn, 1997), in areas as diverse as neurological (Bernier et al., 2018), socio-emotional (Van Huisstede et al., 2019), cognitive (Clackson, et al., 2019; Spruijt et al., 2019), or linguistic development (Prime et al., 2019).

The evaluation of parental responsiveness began with the first observational works by Ainsworth (1967, cited by Ainsworth et al., 1978). There, she described maternal behavior related to the development of the attachment bond in the child and, with this, she systematized the evaluation of parental behavior in the Maternal Care scales for the first time (Ainsworth, 1969). Ainsworth conceptualized these scales as polarized dimensions: sensitivity vs. insensitivity, cooperation vs. interference, physical and psychological availability vs. ignoring and neglecting, and acceptance vs. rejection of the baby's needs. Each of the subscales is scored from 1 (lowest score and worst value in the dimension) to 9. Ainsworth (1969) offered descriptions of the type of mother who would fit in the odd values of each dimension, both in her behavior and in the internal mental states.

Although Ainsworth's definitions were pioneering and revolutionary, some authors such as Pederson et al., (1990),

have stated that they are difficult to evaluate since "they require a considerable understanding of the mother's psychological process by the observer" (p.1975) when considering internal processing elements. These elements are difficult to measure through observation without operationalized and observable descriptions of each dimension.

Since then, multiple authors have described new components of the quality of parental responsiveness and there are also multiple measures that have been developed to evaluate its different aspects. Some measures have focused on specific aspects of the caregiver (such as the Maternal Behavior Q-Short; Pederson et al., 1990), others have focused on evaluating the caregiver-child interaction, taking into account both the caregiver's behaviors and the child's responses (for example, the CARE-INDEX; Crittenden, 2005), and others have tried to assess both the behaviors and the contextual elements surrounding the care relationship (such as Home Observation for Measurement of the Environment; Bradley & Caldwell, 1984). This article analyzes measures focused on the evaluation of the parental capacities of the caregiver; specifically, the quality of parental responsiveness. This is defined as the set of behaviors that a reference caregiver adopts towards a specific child, and that are significant for the formation of the attachment bond in the child (Halty, 2017).

The way of evaluating this construct is diverse and, at times, difficult to operationalize (Bohr et al., 2018), with both self-report and observational measures. The observational methodology is the most widely used for the evaluation of parental care behaviors (Trenado et al., 2014), since it has several advantages over self-report measures (Gardner, 2000; Lotzin et al., 2015). In the first place, the mechanisms involved in social interaction can be automatic and happen

**\* Correspondence address [Dirección para correspondencia]:**

Amaia Halty. University Institute of Family Studies. Universidad Pontificia Comillas. C/ Universidad de Comillas, 3-5. 28049, Madrid (Spain).

E-mail: [ahalty@comillas.edu](mailto:ahalty@comillas.edu)

(Article received: 14-2-2020, revised: 7-4-2020, accepted: 4-4-2021)

very quickly, which makes it very difficult for the caregiver to be aware of it and, in addition, to report how it occurs (Gardner, 2000). Observational measurement allows us to attend in detail, both to moments of rapid interaction, and to the chain of interactions that occur and are articulated in a complex way. Furthermore, they make it possible to avoid the bias of self-report measures such as social desirability, and the linguistic or introspection difficulties that the caregiver may present (Gardner, 2000).

Therefore, despite having disadvantages such as the large investment of time it requires (due to the training of the observers, the coding time, and the verification of inter-observer reliability), they seem to be the most accurate methods for evaluating behaviors between parents and children (Jones et al., 2015).

The objective of this review is to determine the observational measures that are currently used to evaluate the construct of parental responsiveness, or its central components, such as sensitivity, cooperation, etc., that have provided evidence of reliability and validity. This review aims to offer information that facilitates the choice of suitable instruments for evaluation; either to intervene or to investigate the quality of parental responsiveness.

## Method

The systematic review was carried out following the presentation format and the indications proposed by PRISMA

**Table 1.**  
Keywords.

A	B	C	D
(English)	(Spanish)	(English)	(Spanish)
Maternal/Parental sensitivity	Sensibilidad materna/parental	Assessment	Evaluación
Maternal/Parental responsiveness	Responsividad materna/parental	Instrument	Instrumento
Maternal/Parental responsivity	Responsividad materna/parental	Inventory	Inventario
Maternal/Parental Behavior	Comportamiento materno/parental	Scale	Escala
Maternal/Parental care	Cuidado materno/parental	Measure	Medida

Secondly, a search was added for articles published in the PsychINFO database, between January 1, 2013 and January 31, 2017, which contained any of the keywords from column A of the table mentioned above in the Test-Measures section (see Table 1). This search was carried out with the purpose of knowing possible evaluation measures created in recent years which had not been published as articles. Column C was excluded from the search criteria when searching in the test-measures section.

### Criteria for the selection of studies

The inclusion criteria were: (1) observational measures of parental responsiveness or of any of its components (2) measure of the construct in caregivers with children in their care. The exclusion criteria were: (1) non-observational construct evaluation measures, (2) observational evaluation measures focused on characteristics of parental care other

(Statement of Transparent Reporting of Systematic Reviews and Meta-Analyzes) (Urrútia & Bonfill, 2010). Both authors reviewed and approved the search strategy before proceeding with the data extraction, keeping clear the objective of knowing which are the observational measures that are currently used to evaluate the construct of parental responsiveness or its components.

### Sources of information

The search was carried out in two international databases frequently used to search for information in the field of psychology: PsychINFO and Google Scholar. This search is limited to publications made in English or Spanish.

### Search strategy

Articles that contained any combination of the keywords listed in column A and column C of Table 1 in their title, or that contained the words 'review' AND ('observational measures' OR 'tools') in their title were collected. This search was carried out in PsychINFO and Google Scholar, from the beginning until January 31, 2017. This same search was carried out in Spanish, using the terms in columns B and D, but the search did not yield results that contained observational instruments.

than responsiveness, (3) responsivity construct measures aimed only at a population with children older than 10 years, and (4) observational measures that did not provide data on the reliability and validity of the instrument. Specific searches on these last data were carried out indicating the name of the measure as keywords. Even though the Standards (American Educational Research Association, American Psychological Association, and the National Council for Measurement in Education; cited by Abad, Olea, Ponsada & García, 2011) have recommended that measurement instruments should offer data on five evidence criteria of validity since 1999, not all the selected instruments offer them. The indices that are most provided in the field of observational measures designed to measure parent-child interaction at an early age, are discriminant validity and inter-judge reliability, leaving aside the rest of the evidence of validity (Lotzin et al., 2015).

### Selected instruments

The selection of the instruments was carried out in three phases. First, all the instruments found in the different articles were grouped and duplicate instruments were eliminated. Second, instruments that did not evaluate the construct of parental responsiveness or parts of it according to the description were eliminated. Third, evidence of reliability and validity of the instruments was sought and those for which no evidence could be obtained were eliminated.

### Information analysis

The selected instruments were analyzed in terms of the following characteristics:

- *Components of the measure:* In the field of parental responsiveness the specific meaning and the amplitude of the construct may vary from one author to another (Mesman & Emmen, 2013). On many occasions, the understanding and degree of operationalization of the variables is not accessible and the manual that describes the instrument in detail has not been published or is only obtained when training on the instrument is carried out. In the present investigation, it has been considered appropriate to analyze the components or dimensions that the instrument contains instead of the general label that the author uses. Regarding this variable, we analyzed whether the instrument also assesses characteristics of the child (Yes/No) and/or of the interaction (Yes/No).
- *Focus of the measure:* Another important element within the observational measures is the level of detail with which the interaction is coded or addressed. Gardner (2000) describes micro-analytic observation as one that encodes parental behavior by dividing the evaluation sequences into very small segments, which can be one second long, and that offer a very detailed and meticulous description of the interaction, describing behaviors of the subjects that usually occur at the unconscious level. The macro-analytic assessment evaluates longer interaction sections that offer a broader view, where the content and context of the behavior are predominant and where, typically, the behaviors are more conscious or planned (Mesman, 2010). This classification is not usually offered in the description of the measures, so we have chosen to classify them in terms of narrow focus, medium focus, and broad focus. Measures whose evaluation attends to behavioral elements (not grouped in larger dimensions) have been considered as narrow focus. This also applies to measures that, being able to attend to dimensions of parental responsiveness, do so in a clearly partial way, focusing their evaluation on one or two specific aspects of parental responsiveness. Measures that offer a dimensional evaluation of parental responsiveness have been considered as medium focus, although information is collected through very specific items in terms of behavior in the description of such dimensions. Finally, wide-

focus measures have been considered as those that, in addition to collecting elements of parental responsiveness, collect information on other aspects of parenting.

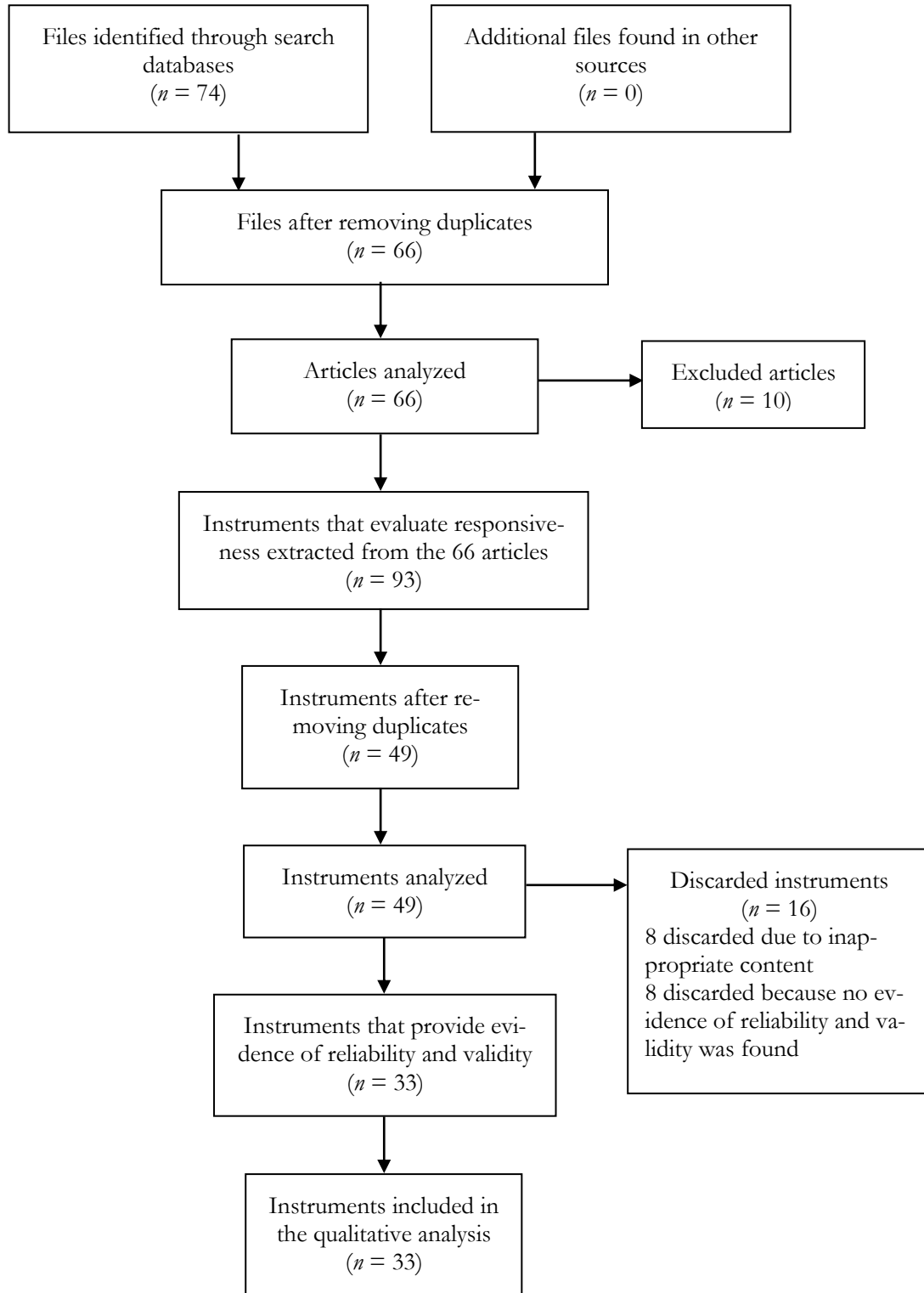
- *Measurement approach:* Not all instruments evaluate the same components of responsiveness. Some of them focus their evaluation on the inappropriate, negligent, and/or risky behaviors that the caregiver adopts and, therefore, it has been considered appropriate to analyze the instruments in terms of a negative approach, for those who evaluate the characteristics just described; or a positive approach for those who fundamentally evaluate adequate characteristics of parental care.
- *Observation space:* The place where the observation or recording of the dyad is carried out is variable. The analysis describes whether the assessment context is at home, in a laboratory, in a clinic or intervention center, or in community spaces.
- *Moment of coding:* This variable informs whether the coding of the observation is carried out at the same moment of the interaction, that is, live via video or it can be used in both modes.
- *Presence of a task in the instructions:* Some instruments are applied by asking the dyad to carry out a certain task. Therefore, the analysis specifies whether the instrument requires the dyad to perform tasks such as free play, directed play, feeding the child, changing diapers, teaching the child something, separating and meeting with him, staying face to face, or on the contrary, they are not asked for any specific task and they are instructed to relate to a natural functioning.
- *Time of observation:* The interaction time that is observed is described. The authors offer a single value or a range.
- *Training requirements:* We analyzed whether the instruments provide information on the need to receive specific training for their application or not.

## Results

### Identification and selection of instruments

The process of identification and selection of instruments is included in the PRISMA flow chart (see Figure 1). Once the search for articles had been carried out and those duplicates had been eliminated, the remaining 66 were analyzed. Out of these, 10 were excluded because the population under analysis was different from that described in the inclusion criteria. Subsequently, 93 instruments were extracted from these articles that seemed to evaluate the construct of parental responsiveness or parts of it. Duplicates were eliminated, and 49 potential instruments were analyzed. Of these instruments, 16 were discarded based on the inclusion/exclusion criteria, finally resulting in 33 instruments for analysis.

**Figure 1.**  
PRISMA-based flow chart (Urrútia & Bonfill, 2010).



### Analysis of instruments

An analysis of the instruments was carried out based on the previously described characteristics.

#### Components of the measure

Table 2 shows that the instruments are made up of different dimensions and levels of precision, despite aiming to measure similar constructs. The most prevalent constructs, in the global computation of the exposed measures, are sensitivity (33.3%), intrusiveness (27.3%), and verbal expression (18.2%).

Some of the instruments present, in turn, some dimensions designed to measure characteristics of the child (66.7%), or of interaction (33.3%). In those instruments that claim to measure interaction as a different from the child's and the caregiver's behavior, items such as synchrony, reci-

procuity or mutuality are mainly presented (Lotzin et al., 2015). However, these characteristics are also sometimes embedded in the caregiver dimensions of other instruments. That is, in some instruments such as the Massie-Campbell Scale of Mother–Infant Attachment Indicators During Stress (ADS; Massie & Campbell, 1992, cited by Lotzin et al., 2015) or the Parent – Infant Interaction Scale (PIIS; Clark & Seifer, 1985, cited by Lotzin et al., 2015), it is considered that synchrony is a caregiver's ability to adapt to the rhythm, tone, and need of the child in such a way that, although both are attended to parts of the dyad, the attribution of this ability rests with the caretaker. This is once again an example of the difficulty that exists in establishing clear limits between dimensions or constructs.

In addition to the information analyzed, Table 2 offers descriptive information on the age range of the child allowed for the use of the measure.

**Table 2.**

*Characteristics of the evaluated components of the caregiver, age of the child, focus and approach of the selected observational instruments.*

AUTHOR (YEAR)	NAME	COMPONENTS (ITEMS)	MED. INF.	MED. INT.	AGE	FOCO	APP.
Forehand & McMahon (1981)*	The Behavior Coding Scheme (BCS)	Command, Warning, Ask, Attend, Reinforce	Yes	No	---	Narr.	Pos.
Tronick et al. (1982)**	Monadic Phases	Avoidance (6) Social attention (neutral commitment) (3) Social elicitation (4) attention to the object (7) play (positive commitment) (5) play with objects (7) conversation (2)	Yes	No	0-6 months	Med.	Pos.
Walker y Thompson (1982)**	Mother–Infant Play Interaction Scale (MIPIS)	Maternal scale (10) (Support, expression of affection, expression of affection-quality of contingency to the child, style of care, visual interaction, style of play, style of vocalization-general, style of vocalization-quantity of contingency, Kinesthetic quality of the interaction)	Yes	Yes	12-18 months	Med.	Pos.
Price (1983)**	Assessment of Mother–Infant Sensitivity (AMIS)	Spatial distance (1) support (1) Predominant maternal mood / affect (1) Verbalization (tone) (1) Verbalization (content) (1) visual interaction (1) Modulation of stress episodes (1) Care style (1) Stimulation (1) Response to changes in the baby's activity levels (1) Child gas management (1) Feeding stimulation (1) Feeding stimulation mode (1) Feeding stimulation frequency (1) Response to satiety of the child (1)	Yes	Yes	0-3 months	Narr.	Pos.
Belsky et al. (1984)**	Belsky	Non-participation (2) Basic care (2)	No	Yes	0-9 months	Amp.	Pos.
Bradley & Caldwell (1984)	Home Observation for Measurement of the Environment (HOME)	Emotional and verbal responsiveness of the mother (11 items); Avoid restriction and sanction (8 items); Organization of the physical and temporal environment (6 items); Provision of appropriate materials (9 items); Maternal participation with the child (6 items); Opportunities for variety in daily stimulation (5 items).	No	No	0-15 years	Amp	Pos.
Erickson et al. (1985)***	Erickson scales	Presence of support, Hostility, Intrusiveness, Interests or behaviors of the child, Sensitivity, Trust.	No	No	1-3 years	Med.	Pos.
Clark (1985)***	Parent–Child Early Relational Assessment (PCERA)	Positive affect and verbalization (11) Negative affect and behavior (5) Intrusiveness, Insensitivity, Inconsistency (8)	Yes	Yes	0-60 months	Med.	Pos.
Clark & Seifer (1985)**	Parent–Infant Interaction Scale (PIIS)	Recognition (1) Imitation (1) Expansion / Elaboration (1) Direction of the caregiver's gaze (1) Caregiver affection (1) Over-demanding (1)	Yes	Yes	0-18 months	Narr.	Pos.

AUTHOR (YEAR)	NAME	COMPONENTS (ITEMS)	MED. INF.	MED. INT.	AGE	FOCO	APP.
Greenspan & Lieberman (1989)**	Greenspan – Lieberman Observational Scale-Revised (GLOS-R)	Somatic patterns / homeostasis (7) Comforing, calm attachment (7) Somato-psychological differentiation (18: contingent response; 6 subitems, non-contingent behavior; 6 subitems, counter-contingent behavior; 6 subitems) Initiative and organization (15: chains of contingent exchanges; 6 sub-items; chains of counter-contingent exchanges; 6 sub-items; and developmental facilitating behavior; 1 item, facilitation of participation; 1 item, interference or undervaluation; 1 item)	Yes	No	0-48 months	Med.	Pos.
Raack (1989)**	Mother–Infant Communication Screening (MICS)	Distress (3) Eating (5) Neutral / playful state (4) Rest (4)	No	Yes	0-12 months	Amp.	Pos.
Baird et al. (1992)**	Infant–Parent Social Interaction Code (IPSIC)	Contingent response (1) Directivity (1) Intrusiveness (1) Facilitation (1)	Si	Yes	0-36 months	Med.	Pos.
Massie & Campbell (1992)**	Massie-Campbell Infant Attachment Indicators During Stress (ADS)	Looking (1) Vocalizing (1) Touching (1) Touch Response (1) Holding (1) Affection (1) Proximity (1)	Yes	No	0-18 months	Narr.	Pos.
Bernstein et al. (1992)**	Parent–Infant Observation Guide (PIOG)	Actions to meet the child's needs and wants (5) Respond to the child's activity and interests (5) Positive feelings shown to the child (5) Help the child learn new skills and language (5, for 4-12 months only)	Yes	No	0-8 years	Med.	Pos.
Sumner & Spietz (1994)**	Nursing Child Assessment Feeding Scales (NCAFS)	Sensitivity to signals (16) Response to child's distress (11) Development of socio-emotional growth (14) Cognitive growth (9)	Yes	No	0-12 months	Amp.	Pos.
Eyberg et al. (1994)*	The Dyadic Parent-Child Interaction Scale II (DPICS-II)	Acknowledgment, Information Description, Behavior Description, Reflective Statement, Descriptive / Reflective Question, Information Question, Unlabeled Praise, Tagged Praise, Contingent Praise, Indirect Order, Direct Order, Criticism, Sophisticated Talk, Conversation, Laughter, Whining, Screaming, physically positive, Destructive, physically negative, Compliance, non-compliance, No opportunity for compliance, Response, No response, No opportunity for response.	Yes	No	---	Narr.	Pos.
Pederson & Moran (1995)**	Maternal Behavior Q-sort (MBQS)	90 items graded in terms of sensitivity (1-9). 10 items for each value.	No	No	6 months -5 years	Med.	Pos.
Kumar & Hipwell (1996)**	Bethlem Mother–Infant Interaction Scale (BMIS)	Eye contact (1) Physical contact (1) Vocal contact (1) Mother's mood (1) General routine (1) Risk to the baby (1)	Yes	No	0-12 months	Narr.	Pos.
Fiori-Cowley et al. (2000)**	Global Rating Scales of Mother–Infant Interaction (GRS)	Good-poor (5) Intrusive-remote (4) Signs of depression (4) Additional items for children 4-5 months (3)	Yes	Yes	2-5 months	Med.	Pos.
Feldman (1998)**	Coding Interactive Behavior (CIB)	Sensitivity, intrusiveness, limits (22 items in total)	Yes	Yes	0-13 years	Med..	Pos.
AUTHOR (YEAR)	NAME	COMPONENTS (ITEMS)	MED. INF.	MED. INT.	AGE	FOCO	APP.
Mahoney et al. (1998)	Maternal Behavior Rating Scale (MBRS)	Responsiveness, (3); affect-animation (5); achievement orientation (2); direction (2)	No	No	---	Med.	Pos.

AUTHOR (YEAR)	NAME	COMPONENTS (ITEMS)	MED. INF.	MED. INT.	AGE	FOCO	APP.
Bronfman, et al. (1999) <sup>ℓ</sup>	Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE)	Negative-intrusive behavior; Role confusion; Withdrawal; Affective communicative errors; Disorientation	No	No	12 months - 6 years	Narr.	Neg.
NICHD-SECCYD (1999) <sup>***</sup>	NICHD-SECCYD sensitivity scales	Sensitivity in distress and non-distress situation	No	No	0-24 months	Med.	Pos.
Greenspan et al. (2001) <sup>**</sup>	Functional Emotional Assessment Scale (FEAS)	Self-regulation (6; 5 clinical version) Attachment (5; clinical version 3-4) Two-way communication (6; 5 clinical version) Behavioral organization (7; 3 clinical version; only 10-12 months)	Yes	No	7-48 months	Amp.	Pos.
Crittenden (2006) <sup>**</sup>	Child-Adult Relationship Experimental Index (CARE-Index)	Sensitivity; Control; Lack of response (7 items that are distributed among the scales)	Yes	Yes	0-30 months	Med.	Pos.
Hesse & Main (2006) <sup>ℓℓ</sup>	Frightened/Frightening (FR)	Dissociative state; Threatening behavior inexplicable in origin and/or anomalous in form; Frightened behavior patterns, inexplicable in origin, and/or anomalous in form; Shy or submissive behavior; Sexualized behavior towards the child; Disoriented behaviors.	No	No	8-18 months	Narr.	Neg.
Biringen (2008) <sup>ℓℓℓ</sup>	Emotional Availability Scales (EAS)	Sensitivity (7) Structure (7) Intrusiveness (7) Non-hostility (7)	Yes	No	0-14 years	Med.	Pos.
Out et al. (2009)	Disconnected and extremely insensitive Parenting (DIP)	Disconnected behavior (15) Extreme insensitivity [Parental withdrawal and neglect (6) Intrusive, negative, aggressive, or otherwise harsh parental behaviors (4)]	No	No	8-16 months	Narr.	Neg.
Pederson et al. (2009) <sup>¥</sup>	Maternal Behavior Q-sort MINI (MBQS-MINI)	25 items (20 from the extremes; values 1,2,8, and 9; plus 5 other items)	No	No	10 months	Med.	Pos.
Jaekel et al., (2012) <sup>¥¥</sup>	Assessment of Mother-Child Interaction with the Etch-a-Sketch (AMCIES)	Verbal control, non-verbal control, critical	Yes	No	---	Narr.	Neg.
Oxford & Findlay (2012) <sup>**</sup>	Nursing Child Assessment Teaching Scales (NCATS)	Sensitivity to signals (11) Response to child's distress (11) Development of socio-emotional growth (11) Cognitive growth (17)	Yes	No	0-36 months	Amp.	Pos.

MED INF= child's measurements; MED INT= measures of interaction; ENFO= focus; Estr=narrow; Med.=Medium; Amp=broad; Pos=positive; Neg=negative

\* Obtained from Aspland and Gardner (2003). \*\* Obtained from Lotzin et al. (2015).\*\*\* Obtained from Mesman and Emmen (2013). ℓ Obtained from Tryphonopoulos, Letourneau and Ditommaso (2014). ℓℓ Obtained from Hazen, Allen, Christopher, Umemura and Jacobvitz (2014). ℓℓℓ Obtained from Biringen et al. (2014).¥ Obtained from Ramsauer et al. (2014). ¥¥ Obtained from Jaekel et al. (2015).

#### Focus of the measure

In total, 36.4% of the measures have a narrow focus. An example of these measures is the Assessment of Mother-Child Interaction with the Etch-a-Sketch (AMCIES, Jaekel et al., 2012; cited by Jaekel et al., 2015) which, of all the aspects that make up parental responsiveness, focuses on the verbal aspect of the interaction. That is, it focuses solely on measuring whether the caregiver accompanies or not verbally, and to what extent the verbalization is critical or not towards the child.

At the opposite pole, there are wide-focus instruments (18.2%), that is, those designed to measure aspects of parental responsiveness and, in addition, other elements present in care tasks such as, for example, environmental disposition of the home, or the type of materials available to stimulate the child. An example of a measurement that has this broad focus is the Home Observation for Measurement of the Environment instrument (Bradley & Caldwell, 1984).

In addition to these extremes, other instruments (45%) appear in Table 2 whose focus is considered medium, that is, they address various relevant aspects of parental responsiveness in dimensional terms. However, the type of elements

that are addressed in each of them varies in terms of content and articulation.

#### Measure approach

In total, 12.1% of the instruments have been classified as a negative approach because they focus the gaze on those elements that damage or harm the child's relationship with the caregiver (for example: "disconnected behavior"). On the other hand, the remaining 87.9% are considered positive in focus because they focus on detecting interactions that favor

bonding (for example, eye contact). These measures may include some negative behavior but are not focused on them.

#### Observation space

In total, 15.1% of the measures are designed to be applied in the family home, another 15.1% are designed to be applied in a laboratory context, and the rest of the measures that offer information on their application context (63.6%) are designed for community contexts, such as hospitals or centers, or to be used interchangeably in various contexts (Table 3).

**Table 3.**

*Characteristics of space, type of observation, task, observation time, and training of the selected observational instruments.*

NAME	OBS. SP.	MOMENT	TASK	OBS. TIME	FORM.
BCS	house / clinic	---	Free play	(30sec)10-40min	Yes
Monadic Phases	Lab.	video	face to face	3-10 min	Yes
MIPIS	house	direct	free play	5 min	Yes
AMIS	house / lab.	video	feed / play	15-30 min	---
Belsky	house /lab.	direct	natural context	45min	---
HOME	casa	direct	natural functioning	necessary to collect the information	Yes
Erickson scales	Lab.	video	Teaching (e.g. puzzle)	5-10 min	---
PCERA	house /center	video	feeding, free or directed play, separation meeting	20 min	Yes
PIIS	center	video	free play	6-8min	---
GLOS-R	Lab.	video	free play	8-12 min	Yes
MICS	house / center/ hospital	direct/video	interview / feeding / rest / free play	---	Yes
IPSIC	house / lab.	video	free play	10min	Yes
ADS	house / lab.	video	feeding / free play / diapering	15-30 min	---
PIOG	house / lab.	direct	feeding, free or directed play, moments of care	10min	---
NCAFS	house / lab.	direct/video	feeding	mealtime	Yes
DPICS-II	house / clinic	---	free play / pickup	5 min	---
MBQ-S	casa	direct	natural functioning	1-2hours	Yes
BMIS	hospital	direct/video	routine hospital / feeding	---	---
GRS	house /lab.	video	face to face	5min (x3)	Yes
CIB	house/ lab.	video	free play, feeding, solving problems, homework, reading a book	---	Yes
MBRS		video	free play	10 min	---
AMBIANCE	house / lab./ community spaces	video	free play	5min-hours	Yes
NICHD-SECCYD sensitivity scales	---	---	free play	---	Yes
FEAS	house / hospital	video/direct	play with toys	15 min	Yes
RPC	house / clinic	video	---	(15sec) ---	---
DMC	lab.	direct/video	face-to-face interaction	5min-hours	Yes
CARE-Index	house / lab./ center/ hospital	video	free play	3-5min (x2 minimum)	Yes
FR	house / lab./ community spaces	video	free play	15min-hours	---
EAS	house / lab.	video	Any task, stress is recommended for short observations	20-30 min	Yes
DIP	lab.	video	Free play, unstructured time, and competition homework	45min approx.	Yes
MBQS-MINI	house	video	Free play	10 min	---
AMCIES	house	direct	drawing with sketch	12min	---
NCATS	house /lab.	direct/video	teaching task	1-5 min	Yes

ESP. OBS= Observation space; TIEMPO OBS= Time of observation; FORM.= Training. Lab.= laboratory.



### *Coding moment*

There are instruments that are designed to evaluate at the time of the interaction itself, that is, live (18.2%). There are instruments designed to be used in the observation of the interaction through video (54.5%), and there are instruments that can be used in both modalities (18.2%) (see Table 6). If one looks at the dimensions that are evaluated, the task, and the observation time, it can be seen that, in general terms, the measures that make live evaluation are those that evaluate more globally and focus on specific moments such as the feeding and/or investing longer observation times.

### *Presence of a task in the instructions*

The task or the type of interaction requested of the dyad also varies depending on the measuring instrument. In the instruments shown in Table 3, collaboration tasks, teaching, feeding, free play, face-to-face interaction, tasks in stress situations, rest, separation / meeting, collection, etc. are observed. We determined that 54.5% of the measures evaluate the quality of parental responsiveness through free play or face-to-face interaction, while 42.4% request various tasks, such as those mentioned above, or the combination of free play and chores. The remaining 3% do not report on the specific characteristics of the task.

### *Observation time*

The observation time is also variable in the computation of instruments that are presented in Table 3. Instruments can be found that spend more than one hour in observation, such as the MBQ-S (Pederson et al., 1990) or the HOME (Bradley & Caldwell 1984), and others that take between 1 and 5 minutes such as Monadic Phases (Tronick et al., 1982; cited by Lotzin et al., 2015). These observation times seem to be adjusted to the design of the instrument (it is different to evaluate the moment of feeding than the resolution of a task), and to the quantity and quality of elements that are evaluated; 24.2% of the instruments presented spend less than 10 minutes in observation, 51.5% spend more than 10 minutes in observation, and 9.1% offer a range of time whose minimum is below the 10 minutes, and its maximum above. The remaining 15.1% do not offer information on the observation time.

### *Training requirements*

It is interesting to note that all the instruments that report on their use and application state that specific training is required. The type of training varies from one to another, in terms of number of hours and accessibility to it. For example, some instruments require prior knowledge of the subject and require classroom training, while training in other instruments can be acquired remotely.

## **Discussion and conclusion**

Despite the difficulties in unifying the parental responsiveness construct, the existing measures that usually include the dimensions of sensitivity, intrusiveness, and verbal expression. The diversity of components found could be because the instruments have been created based on specific investigations or interventions, with differentiated objectives such as discriminating problems, evaluating the adequacy of treatments, or investigating the relationship between variables (Lotzin et al., 2015). Therefore, although the instruments are designed to measure parent-child interaction, or parental "sensitivity", their content is different. It is striking that none of the evaluated instruments discriminate the response in terms of the child's need for attachment or the need for exploration. However, the attachment theory from its origin (Bowlby, 1988), and more recent authors dedicated to the intervention with parents from this perspective (Hoffman et al., 2006), differentiates these two types of needs in the child and, therefore, the capacity of the caregiver to respond to them.

The measurement focus used by the instruments analyzed is mostly medium and the focus of the measurements tends to be, for the most part, positive. The existence of different levels of detail or focus, far from generating conflict, provides the field of evaluation and understanding of parent-child relationships with a very complete perspective of the content. Mesman (2010) even suggests that the presence of a measure that could contain a double focus would be very useful for understanding the dyadic relationship and the predictive capacity of the interaction on the child's attachment style.

It can also be considered that it is most common to evaluate in community contexts or that the measures can be used interchangeably in various settings. The choice of one environment or another depends largely on what you want to observe, and the context of research or intervention in which it is framed. For example, Jones et al. (2015) state that recordings in the family environment more easily collect the daily experiences of the dyad, and offer savings to families in terms of time and money. However, there are times when one of the objectives of the recording is to know how the dyad works in stressful situations, so unfamiliar scenarios such as laboratories, intervention centers, or hospitals are more indicated because they are prone to generating alert or distress situations. Therefore, the choice of space does not depend so much on whether it is better or worse in terms of validity, since there are authors who have shown that they do not find differences between both contexts when measuring maternal sensitivity (Keren & Seifer, 1996), but in the adaptation to the objective that is sought.

In general, the instruments analyzed use video recordings for the analysis of parental abilities. The advantage offered by filming the interaction is the possibility of being reproduced as many times as necessary to be able to address those elements that are significant of the interaction and to evalu-

ate them carefully (Kempainen et al., 2005). In addition, having a recording can provide the evaluator with greater peace of mind since, if he neglects some aspect or something is confusing at the first moment of observation, he can return to it. Likewise, the recording of the interaction allows several evaluators to code the same interaction and the degree of inter-rater reliability can be easily found (Biringen et al., 2014). In the case of measurements that are coded live, inter-judge reliability is more difficult to obtain, since it requires that at the moment of interaction there are several observers at the same time, and this, in addition to sometimes involving an organizational difficulty, may be more uncomfortable for the person being evaluated.

However, having an evaluation that can be conducted live is also an advantage in families where there is a rejection or fear of being recorded (Biringen et al., 2014). For example, families that are involved in legal proceedings, or families in which it is difficult to obtain the authorization of one of the guardian parents to carry out the recording. Biringen et al. (2014) affirm that, provided that adequate training and reliability of the instrument have been achieved, there is no reason to doubt the suitability of the measures that evaluate live.

Regarding the observation time, although there are brief measures, it seems that the majority use a time greater than 10 minutes. Some authors have tried to compare whether evaluations carried out with short observation times offer similar results to those carried out with longer observation periods. Wolff & Van Ijzendoorn (1997) conducted a meta-analysis and found that the magnitude of the relationship between sensitivity and the child's attachment style was statistically the same in both short-term and long-term observations. Kempainen et al., (2005) compared the reliability of the PCERA instrument (Clark, 1985; cited by Lotzin et al., 2015) in observations of 5 minutes of interaction in the room and observations of one hour of interaction in their homes. They found that in most of the items there was an agreement between the observers of the different methods, with negative items being those on which they found agreement the most difficult. They considered that this difference was due to the fact that more negative behaviors occurred in the natural and longer observation context than in the room recording context. The authors concluded that rapid evaluations through interaction videos can be very useful for research and intervention, but that, in part, the reality of what happens (especially with the negative elements of the interaction) is not shown in the same way in the short recording videos. This, far from devaluing rapid observational measures, can be interpreted as a warning about behaviors or negative aspects that appear associated with the interaction. In other words, if it is assumed that in the recording interval the presence of negative behaviors tends to be less than in a natural context, the appearance of these behaviors must be considered during the recording. This is not only because of what they mean during the interaction that is observed, but

because of the value they can have in representing the daily reality of that dyad.

In relation to the task, a more equitable distribution is observed between requesting a specific task or opting for free play in the interaction. Gardner, (2000) affirms that the introduction of a restricted task tends to increase the reliability of the findings, because the range of possible situational influences on behavior is reduced. However, the approach to a specific task in the evaluation brings with it the possibility of reducing its naturalness. In other words, although the task is carried out daily, performing it in a different context may be unnatural for the participant. Therefore, the perceived lack of naturalness may depend on the task requested, how it is requested, and the context in which it is requested (Gardner, 2000).

Although the target population has not been the object has not been a category of analysis in this study, it is important to bear in mind that the populations for which the instruments are designed are also different and are adapted to the intervention or research objective. Some instruments were designed to be applied in high-risk populations; such as AMBIANCE (Bronfman et al., 1999, cited by Tryphonopoulos et al., 2014), others in medium or low risk populations; such as the CARE-INDEX (Crittenden, 2006, cited by Lotzin et al., 2015), and others, were created to be applied in children with specific characteristics such as the Maternal Behavior Rating Scale (MBRS; Mahoney et al., 1998), which was designed to assess maternal behavior in children with intellectual disabilities. This characteristic of the measure is difficult to obtain since it is usually offered in its manuals and many of these are either not published or can only be accessed through training in them. (Lotzin et al., 2015).

Finally, regarding the variables analyzed, it seems clear that the application of observational instruments for measuring interaction requires specific training in their use and application.

This study has some methodological limitations. Although the number of instruments evaluated is large, the collection of information was carried out in the two most used databases; however, it is possible that there are other validated instruments that evaluate the construct of parental responsiveness and that have not been analyzed in the study. For future reviews, it would be interesting to deepen the search by reducing the inclusion criteria and increasing the sources of information in databases, such as Dialnet Plus, WOS, or ERIC.

Furthermore, in relation to the instruments obtained, it is important to indicate that the parental responsiveness construct is approached from a psychological perspective. This construct is also studied from other disciplines such as education, pedagogy, or psychopedagogy (Bulotsky-Shearer et al., 2020; Frohn et al., 2019; Mortensen & Barnett, 2019), and there are various instruments to evaluate the sensitivity of teachers in the classroom such as the Classroom Assessment Scoring System Pre-K (Pianta et al., 2008 cited in Bulotsky-Shearer et al., 2020), TC-SPT (Whittaker et al.,

2018) or Caregiver Interaction Scale (CIS; Arnett, 1989, cited in Hindman et al., 2016). Therefore, it would also be enriching to broaden the approach of this collection and analysis of evaluation measures in future research.

In this study, we also omitted a detailed analysis of the types of validity that each instrument presents and only the presence of evidence has been considered as an inclusion criterion. It would be very valuable, for future research, to be able to evaluate the levels of reliability and validity presented by commonly used instruments so that the analysis allows them to be ordered based on their methodological robustness.

The choice is almost always difficult because not all the measures are comparable (Bohr et al., 2018), which requires the research team to know the characteristics in detail, which

are not always easy to find. The intention of this article has been to facilitate this search and analysis of the existing instruments for the evaluation of parental responsiveness for the work teams, with the ultimate goal of improving (in terms of adequacy and validity) the study and work processes with the families. Family intervention programs that work on the improvement of parental responsiveness are becoming more and more frequent (Mihelic et al., 2017; Pitillas et al., 2016; Tryphonopoulos & Letourneau, 2020) and to select the appropriate measures for the evaluation of their effectiveness becomes more necessary. However, intervention professionals must not forget that no single instrument provides a definitive measure of parental capacities in isolation and they must always draw broad conclusions from them (Bohr et al., 2018).

## References

- Abad, F. J., Olea, J., Ponsada, V., & García, C. (2011). *Medición en ciencias sociales y de la salud* [Measurement in health and social sciences]. Síntesis.
- Ainsworth, M. D. S. (1967). *Infancy in Uganda: Infant care and the growth of love*. Johns Hopkins University Press
- Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. N. (1978). *Patterns of attachment: A psychological study of the strange situation*. Psychology Press.
- Ainsworth, M. D. S. (1969). Maternal sensitivity scales. *Power*, 6, 1379-1388.
- Arnett, J. (1989). Caregivers in day-care centers: does training matter? *Journal of Applied Developmental Psychology*, 10(4), 541-552. [http://dx.doi.org/10.1016/0193-3973\(89\)90026-9](http://dx.doi.org/10.1016/0193-3973(89)90026-9)
- \*Aspland, H. & Gardner, F. (2003). Observational Measures of Parent-Child Interaction: An Introductory Review. *Child and Adolescent Mental Health Volume 8*(3), 136-143. <https://doi.org/10.1111/1475-3588.00061>
- Baird, S. M., Haas, L., McCormick, K., Carruth, C., & Turner, K. D. (1992). Approaching an objective system for observation and measurement: Infant-Parent Social Interaction Code. *Topics in Early Childhood Special Education*, 12(4), 544-571. <https://doi.org/10.1177/027112149201200410>
- Belsky, J., Taylor, D. G., & Rovine, M. (1984). The Pennsylvania Infant and Family Development Project, II: The development of reciprocal interaction in the mother-infant dyad. *Child Development*, 55(3), 706-717. <https://doi.org/10.1111/1467-8624.ep12422849>
- Bernier, A., Dégeilh, F., Leblanc, É., Daneault, V., Bailey, H. N., & Beauchamp, M. H. (2018). Mother-Infant Interaction and Child Brain Morphology: A Multidimensional Approach to Maternal Sensitivity. *Infancy*, 24(2), 120-138. <https://doi.org/10.1111/inf.12270>
- Bernstein, V. J., Hans, S. L., & Percansky, C. (1992). *Parent-Infant Observation Guide for program planning around feeding and other daily routines*. Unpublished manual, Department of Psychiatry, University of Chicago, Chicago, IL.
- Biringen, Z. (2008). *The emotional availability (EA) scales and the emotional attachment & emotional availability (EA2) clinical screener: Infancy/early childhood version; middle childhood/youth versions; therapist/interventionist manual; couple relationship manual (4th ed.)*, Boulder. <http://emotionalavailability.com>.
- \*Biringen, Z., Derscheid, D., Vliegen, N., Closson, L. & Easterbrooks, M. A. (2014). Emotional availability (EA): Theoretical background, empirical research using the EA Scales, and clinical applications. *Developmental Review*, 34, 114-167. <https://doi.org/10.1016/j.dr.2014.01.002>
- Bohr, Y., Putnick, D. L., Lee, Y., & Bornstein, M. H. (2018). Evaluating Caregiver Sensitivity to Infants: Measures Matter. *Infancy*, 23(5), 730-747. <https://doi.org/10.1111/inf.12248>
- Bornstein, M., Tamis-LeMonda, C., Hahn, C. & Haynes, O. (2008). Maternal Responsiveness to Young Children at Three Ages: Longitudinal Analysis of a Multidimensional, Modular, and Specific Parenting Construct. *Developmental Psychology*, 44, 867-74. <https://doi.org/10.1037/0012-1649.44.3.867>
- Bowlby, J. (1988). *A secure base: Clinical applications of attachment theory*. Routledge.
- \*Bradley, R. H., & Caldwell, B. M. (1984). The HOME Inventory and family demographics. *Developmental Psychology*, 20(2), 315-320. <https://doi.org/10.1037/0012-1649.20.2.315>
- Bronfman, E., Parsons, E., & Lyons-Ruth, K. (1999). *Atypical maternal behavior instrument for assessment and classification (AMBLANCE): Manual for coding disrupted affective communication*. Harvard Medical School, Cambridge, MA, Unpublished manuscript.
- Bulotsky-Shearer, R. J., Fernandez, V. A., Bichay-Awadalla, K., Bailey, J., Futterer, J., & Qi, C. H. (2020). Teacher-child interaction quality moderates social risks associated with problem behavior in preschool classroom contexts. *Journal of Applied Developmental Psychology*, 67, 1-12. <https://doi.org/10.1016/j.appdev.2019.101103>
- Censullo, M. (2004). *Dyadic Mutuality Code manual*. Unpublished manual, School of Nursing and Health studies, Georgetown University, Washington, DC.
- Clackson, K., Wass, S., Georgieva, S., Brightman, L., Nutbrown, R., Almond, H., Bieluczyk, J., Carro, G., Rigby, B. & Leong, V. (2019). Do helpful mothers help? Effects of maternal scaffolding and infant motivation on cognitive performance. *Frontiers in Psychology*, 10, 1-10. <https://doi.org/10.3389/fpsyg.2019.02661>
- Clark, G., & Seifer, R. (1985). Assessment of parent's interactions with their developmentally delayed infants. *Infant Mental Health Journal*, 6(4), 214-225. [https://doi.org/10.1002/1097-0355\(198524\)6:4<214::AID-IMHJ2280060406\[3.0.CO;2-3](https://doi.org/10.1002/1097-0355(198524)6:4<214::AID-IMHJ2280060406[3.0.CO;2-3)
- Clark, R. (1985). *The Parent-Child Early Relational Assessment. Instrument and manual*. Unpublished manual, Department of Psychiatry, University of Wisconsin Medical School, Madison, WI.
- Crittenden, P. M. (2005). Der CARE-Index als Hilfsmittelfür Früherkennung, Intervention und Forschung [Using the CARE Index for screening, intervention, and research]. *Frühförderung Interdisziplinär*, 24(3), 99-106. [https://www.patcrittenden.com/include/docs/care\\_index.pdf](https://www.patcrittenden.com/include/docs/care_index.pdf)
- Crittenden, P. M. (2006). *CARE-Index Infants (birth-15 months). Coding manual*. Coding manual of the Child-Adult Relationship Experimental Index (CARE-Index). Unpublished manual, Family Relations Institute, Miami, FL.
- De Wolff, M., & van IJzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development*, 68(4), 571-591. <https://doi.org/10.2307/1132107>
- Dishion, T. J., Rivera, E. K., Jones, L., Verberkmoes, S., & Patras, J. (2002). *Relationship Process Code*. Unpublished coding manual. (Available from Child and Family Center, University of Oregon, 195 West 12th Avenue, Eugene, OR 97401-3408, USA).
- Erickson, M. F., Sroufe, L. A., & Egeland, B. (1985). The relationship between quality of attachment and behavior problems in preschool in a high-risk sample. In I. Bretherton & E. Waters (Eds.), *Growing points of attachment: Theory and research. Monographs of the Society for Research in Child Development*, 50, 147-166.

- Eyberg, S., Bessmer, J., Newcomb, K., Edwards, D., & Robinson, E. (1994). *Dyadic Parent-Child Interaction Coding Scheme II: A manual*. www.hp.ufl.edu/~seyberg/measures.htm.
- Feldman, R. (1998). *Coding Interactive Behavior (CIB)*. Unpublished manual, Department of Psychology, Bar-Ilan University, Ramat-Gan, Israel.
- Fiori-Cowley, A., Murray, L., & Gunning, M. (2000). *Global ratings of mother-infant interaction at 2 and 4 months* (2nd ed.). Unpublished manual, Winnicott Research Unit, Department of Psychology, University of Reading, Reading, England.
- Forehand, R. L., & McMahon, R. J. (1981). *Helping the non compliant child. A clinician's guide to parent training*. Guilford Press.
- Frohn, S. R., Acar, I. H., Rudasill, K. M., Buhs, E. S., & Pérez-González, S. (2019). Temperament and social adjustment in first grade: the moderating role of teacher sensitivity. *Early Child Development and Care*, 1-22. <https://doi.org/10.1080/03004430.2019.1656618>
- Gardner, F. (2000). Methodological issues in the direct observation of parent-child interaction: Do observational findings reflect the natural behavior of participants?. *Clinical Child and Family Psychology Review*, 3(3), 185-198. <http://dx.doi.org/10.1023/A:1009503409699>
- Greenspan, S. I., & Lieberman, A. F. (1989). Infants, mothers, and their interaction: A quantitative clinical approach to developmental assessment. In S. I. Greenspan & G. H. Pollock (Eds.), *The course of life. Vol. 1: Infancy* (pp. 503-560). International Universities Press.
- Greenspan, S. I., DeGangi, G., & Wieder, S. (2001). *The Functional Emotional Assessment Scale (FEAS) for infancy and early childhood: Clinical and research applications*. Interdisciplinary Council on Developmental & Learning Disorders.
- Halty, A. (2017). *La calidad de la responsividad parental: creación y validación de un instrumento observacional* (Doctoral dissertation, Universidad Pontificia Comillas).
- Hindman, A. H., Pendergast, L. L., & Gooze, R. A. (2016). Using bifactor models to measure teacher-child interaction quality in early childhood: Evidence from the Caregiver Interaction Scale. *Early Childhood Research Quarterly*, 36, 366-378. <https://doi.org/10.1016/j.ecresq.2016.01.012>
- \*Hazen, N. L., Allen, S. D., Christopher, C. H., Umemura, T., & Jacobvitz, D. B. (2014). Very extensive nonmaternal care predicts mother-infant attachment disorganization: Convergent evidence from two samples. *Development and Psychopathology*, 27(3), 649-661. <https://doi.org/10.1017/S0954579414000893>
- Hesse, E. & Main, M. (2006). Frightened, threatening, and dissociative parental behavior in low-risk samples: Description, discussion, and interpretations. *Development and psychopathology*, 18, 309-43. <https://doi.org/10.1017/S0954579406060172>
- Hoffman, K. T., Marvin, R. S., Cooper, G., & Powell, B. (2006). Changing toddlers' and preschoolers' attachment classifications: The circle of security intervention. *Journal of Consulting and Clinical Psychology*, 74(6), 1017-1026. <https://doi.org/10.1037/0022-006X.74.6.1017>
- Jaekel, J., Wolke, D., & Chernova, J. (2012). Mother and child behaviour in very preterm and term dyads at 6 and 8 years. *Developmental medicine and child neurology*, 54, 716-23. <https://doi.org/10.1111/j.1469-8749.2012.04323.x>
- \*Jaekel, J., Pluess, M., Belsky, J., & Wolke, D. (2015). Effects of maternal sensitivity on low birth weight children's academic achievement: A test of differential susceptibility versus diathesis stress. *Journal of Child Psychology and Psychiatry*, 56(6), 693-701. <https://doi.org/10.1111/jcpp.12331>
- Jones, C., Hutchings, J., Erjavec, M., & Viktor, S. (2015). The Parent Infant Play Observation code (PIPPOc): development and testing of a new positive parenting measure. *Journal of Reproductive and Infant Psychology*, 33, 54-68. <https://doi.org/10.1080/02646838.2014.970151>
- Kempinen, K., Kumpulainen, K., Räsänen, E., Moilanen I., Ebeling H., Hiltunen, P., & Kunelius, A. (2005). Mother-child interaction on video compared with infant observation: Is five minutes enough time for assessment?. *Infant Mental Health Journal*, 26, 69-81. <https://doi.org/10.1002/imhj.20031>
- \*Keren, M. y Seifer, R. (1996). Naturalistic vs laboratory assessment of temperament and maternal sensitivity. *Infant Behavior and Development*, 19, 538. <https://doi.org/10.1111/cdev.12895>
- Kumar, R., & Hipwell, A. E. (1996). Development of a clinical rating scale to assess mother-infant interaction in a psychiatric mother and baby unit. *British Journal of Psychiatry*, 169(1), 18-26. <https://doi.org/10.1192/bjp.169.1.18>
- \*Lotzin, A., Lu, X., Kriston, L., Schiborr, J., Musal, T., Romer, G., & Ramsauer, B. (2015). Observational tools for measuring parent-infant interaction: A systematic review. *Clinical Child and Family Psychology Review*, 18(2), 99-132. <https://doi.org/10.1007/s10567-015-0180-z>
- \*Mahoney, G., Boyce, G., Fewell, R. R., Spiker, D., & Wheeden, C. A. (1998). The relationship of parent-child interaction to the effectiveness of early intervention services for at-risk children and children with disabilities. *Topics In Early Childhood Special Education*, 18(1), 5-17. <https://doi.org/10.1177/027112149801800104>
- Massie, H., & Campbell, B. K. (1992). *The Massie-Campbell Scale of Mother-Infant Attachment Indicators during Stress: For use during the pediatric examination and other childcare situations*. Child Development Media.
- \*Mesman, J. (2010). Maternal responsiveness to infants: Comparing micro- and macro-level measures. *Attachment & Human Development*, 12(1-2), 143-9. <https://doi.org/10.1080/14616730903484763>
- \*Mesman, J., & Emmen, R. A. (2013). Mary Ainsworth's legacy: a systematic review of observational instruments measuring parental sensitivity. *Attachment Human Development*, 15(5-6), 485-506. <https://doi.org/10.1080/14616734.2013.820900>
- Mihelic, M., Morawska, A., & Filus, A. (2017). Effects of Early Parenting Interventions on Parents and Infants: A Meta-Analytic Review. *Journal of Child and Family Studies*, 26(6), 1507-1526. <https://doi.org/10.1007/s10826-017-0675-y>
- Mortensen, J. A., & Barnett, M. A. (2015). Teacher-child interactions in infant/toddler child care and socioemotional development. *Early Education and Development*, 26(2), 209-229. <https://doi.org/10.1080/10409289.2015.985878>
- NICHD Early Child Care Research Network (1999). *NICHD Study of Early Child Care. Phase I Instrument Document* (CD-Rom, NICHD; see also <http://public.rti.org/secc/>).
- \*Out, D., Bakermans-Kranenburg, M. J., & Van IJzendoorn, M. H. (2009). The role of disconnected and extremely insensitive parenting in the development of disorganized attachment: Validation of a new measure. *Attachment & Human Development*, 11(5), 419-443. <https://doi.org/10.1080/14616730903132289>
- Oxford, M. L., & Findlay, D. M. (2012). *NCAST Caregiver/Parent-Child Interaction teaching manual*. NCAST Publication.
- Pederson, D. R., & Moran, G. (1995). Appendix B: Maternal behavior Q-set. *Monographs of the Society for Research in Child Development*, 60(2-3), 247-254.
- Pederson, D. R., Moran, G. S., Bento, S. (2009). *Assessing maternal sensitivity and the quality of mother-infant interactions using The Maternal Behaviour Q-Sort (MBQS)*. (Unpublished doctoral dissertation). University Western Ontario.
- Pederson, D. R., Moran, G., Sitko, C., Campbell, K., Ghesquire, K., & Acton, H. (1990). Maternal sensitivity and the security of infant-mother attachment: A Q-sort study. *Child Development*, 61(6), 1974-1983. <https://doi.org/10.2307/1130851>
- Pianta, R. C., La Paro, K. M., & Hamre, B. K. (2008). *Classroom assessment scoring system (CLASS) manual: Pre-K*. Brookes.
- Pitillas, C., Halty, A. & Berástegui, A. (2016). Mejorar las relaciones de apego tempranas en familias vulnerables: el programa Primera Alianza [Improving early attachment relationships in vulnerable families: the First Alliance program]. *Clínica Contemporánea*, 7(2), 137. <https://doi.org/10.5093/cc2016a11>
- Price, G. M. (1983). Sensitivity in mother-infant interactions: The AMIS scale. *Infant Behavior and Development*, 6(3), 353-360. <https://doi.org/10.1016/S0163-6383%2883%2980043-5>
- Prime, H., Wade, M., & Gonzalez, A. (2019). The link between maternal and child verbal abilities: An indirect effect through maternal responsiveness. *Developmental Science*, 23(4), 1-14. <https://doi.org/10.1111/desc.12907>
- Raack, C. B. (1989). *Mother/Infant Communication Screening (MICS)*. Community Therapy Services.
- \*Ramsauer, B., Lotzin, A., Mühlhan, C., Romer, G., Nolte, T., Fonagy, P., & Powell, B. (2014). A randomized controlled trial comparing Circle of Security Intervention and treatment as usual as interventions to increase attachment security in infants of mentally ill mothers: Study Pro-

- tol. *BMC Psychiatry* 14(24), 1-11. <https://doi.org/10.1186/1471-244X-14-24>
- Sumner, G., & Spietz, A. (1994). *NCAST Caregiver/Parent-Infant Interaction feeding manual*. NCAST Publications.
- Spruijt, A. M., Dekker, M. C., Ziermans, T. B., & Swaab, H. (2019). Educating parents to improve parent-child interactions: Fostering the development of attentional control and executive functioning. *British Journal of Educational Psychology*, 1-18. <https://doi.org/10.1111/bjep.12312>
- Trenado, R. M., Pons-Salvador, G., & Cerezo, M. Á. (2014). Interacción Temprana: Evaluación de la Fiabilidad del Sistema Observacional CITMI-R, Versión Inglesa [Early Interaction: Assessment of the Reliability of the CITMI-R Observational System, English Version]. *REMA Revista electrónica de metodología aplicada*, 19(1), 29-42.
- Tronick, E., Krafchuk, E., Ricks, M., & Winn, S. (1982). *Monadic Phase manual*. Unpublished manual, Child Development Unit, University of Massachusetts, Amherst, MA.
- Tronick, E., Krafchuk, E., Ricks, M., & Winn, S. (1982). *Monadic Phase manual*. Unpublished manual, Child Development Unit, University of Massachusetts, Amherst, MA.
- Tryphonopoulos, P. D., & Letourneau, N. (2020). Promising Results From a Video-Feedback Interaction Guidance Intervention for Improving Maternal-Infant Interaction Quality of Depressed Mothers: A Feasibility Pilot Study. *Canadian Journal of Nursing Research*, 0, 1-14. <https://doi.org/10.1177/0844562119892769>
- \*Tryphonopoulos, P. D., Letourneau, N., & Ditommaso, E. (2014). Attachment and caregiver-infant interaction: A review of observational-assessment tools. *Infant Mental Health Journal*, 35(6), 642-656. <https://doi.org/10.1002/imhj.21461>
- Urrútia, G., & Bonfill, X. (2010). Declaración PRISMA: una propuesta para mejorar la publicación de revisiones sistemáticas y metaanálisis [PRISMA statement: a proposal to improve the publication of systematic reviews and meta-analyses]. *Medicina clínica*, 135(11), 507-511. <https://doi.org/10.1016/J.MEDCLI.2010.01.015>
- Van Huisstede, L., Winstone, L. K., Ross, E. K., & Crnic, K. A. (2019). Developmental Trajectories of Maternal Sensitivity across the First Year of Life: Relations among Emotion Competence and Dyadic Reciprocity. *Parenting*, 19(3), 217-243. <https://doi.org/10.1080/15295192.2019.1615798>
- Walker, L. O., & Thompson, E. T. (1982). Mother-Infant Play Interaction Scale. In S. S. Humenick (Ed.), *Analysis of current assessment strategies in the health care of young children and childbearing families* (pp. 191-201). Appleton-Century-Crofts.
- Whittaker, J. E. V., Williford, A. P., Carter, L. M., Vitiello, V. E., & Hatfield, B. E. (2018). Using a standardized task to assess the quality of teacher-child dyadic interactions in preschool. *Early Education and Development*, 29, 266-287. <https://doi.org/10.1080/10409289.2017.1387960>
- Wolff, M.S. & Van Ijzendoorn, M. H. (1997). Sensitivity and Attachment: A Meta-Analysis on Parental Antecedents of Infant Attachment. *Child Development*, 68(4), 571-591. <https://doi.org/10.1111/j.1467-8624.1997.tb04218.x>