NDBI-Fi Manual Table of Contents

NDBI-Fi: General Information

NDBI-Fi Development:

The NDBI-Fi is an observational rating scheme that evaluates caregiver implementation of common strategies from treatments classified as Naturalistic Developmental Behavioral Interventions (NDBI; Schreibman et al., 2015). The item definitions below describe intervention strategies that are common elements across NDBIs.

Items were developed in stages. First, intervention fidelity forms and manuals, when available, were reviewed to establish an initial set of items. These were sent to experts in NDBIs for open-ended review, and further edited. Stage two involved having 3 expert raters per included NDBI rate the extent to which each item was a component of their NDBI of expertise. The NDBI-Fi item set was refined based on the extent to which items emerge as common elements across raters. Scoring anchors, which further describe the frequency with which these strategies are meant to be used, were developed for this set of common elements.

The NDBI-Fi was then piloted on videos from 5 sites and multiple NDBI. These data show preliminary evidence for concurrent, convergent and discriminant validity, and adequate inter-rater reliability and internal consistency (Frost, Brian, Gengoux, Hardan, Rieth, Stahmer & Ingersoll, under review).

How to rate the NDBI-Fi:

The NDBI-Fi was developed for rating short videos of caregiver-child interactions (~10 min). Videos should be rated in two passes, with the rater taking notes on the Note Sheet throughout as needed. The video may be paused if needed to write notes, and rewinding/replaying is permitted to discern difficult-to-rate sequences. It is recommended that the first pass be rated at slower speed (i.e. 70% speed) for ease of taking notes. Videos should take no more than 40 minutes to rate; most 10-minute videos take no more than 30 minutes.

Recommended Shorthand:

It is recommended that notes are taken using shorthand that works for the rater. Examples are below, and include indicators of quality (e.g. + or – for good and poor quality respectively, or ~~strikeout~~ for missed opportunities). For direct teaching episodes, spaces are available in the Note Sheet for writing the nature of the opportunity (e.g. open ended question) and the target (e.g. verbal request), and marking the quality indicators present. The check boxes are meant to decrease the time needed to mark the quality indicators, as teaching episodes can occur very quickly.

Item:	Shorthand:	Examples:	
Face to face	F2F	F2F+	*Adult is face to face.*
		~~F2F~~	*Adult is not face to face.*
Following the child's lead	FL	FL choice +	*Adult provided a choice and followed.*
		~~FL~~	*Adult missed an opportunity to follow.*
Positive affect and animation	Aff	Aff +	*Nice positive affect*
		Aff-	*Poor adjustment of affect*
Modeling appropriate language	ML	ML+	*Modeled nicely*
		ML-	*Modeled, but above language level*
Responding to attempts to communicate	Re	Re+	*Adult responded appropriately*
		~~Re-~~	*Adult missed opportunity to respond.*
Using communicative temptations	CT	CT +	*Well-timed, clear CT*
		CT- unclear	*Possible CT but poor quality, unclear*

Who can rate the NDBI-Fi:

The NDBI-Fi can be rated by non-experts (i.e. those with no experience providing direct intervention) who have been well-trained in rating behavioral observations using this scheme. Non-experts should be trained by someone with familiarity with NDBIs. Raters within a site are expected to obtain inter-rater reliability. Reliability criteria are defined as:

- No items are *more than* 2 points apart
- At least 7 items are within a single point
- Average ratings are within half a point (i.e. +/- 0.25 points)

General Coding Conventions:

There are three general types of items:

1) ↻ "Consistency"

    These strategies are meant to be used for the majority of a session. It is **not** expected that these strategies are used exclusively, but that they are complementary to other strategies and interspersed throughout the interaction. For these items, a rating of 5 means that the adult frequently used the strategy throughout the session, whereas a rating of 1 would mean that they rarely or never used these strategies correctly (e.g., for modeling language, this might mean that all comments were far above a child's developmental level).

    i) **Face to face and on the child's level**
    ii) **Following the child's lead**
    iii) **Positive affect and animation**
    iv) **Modeling language**

2) ◎ "As needed"

    These items rate the relative frequency of parent behaviors on an "as needed" or proportional basis. They involve responding to some aspect of the environment or interaction, and so their frequency may vary widely across sessions.

    i) **Responsiveness to attempts to communicate:** This may not happen often for a child who is a low-rate communicator. The proportion of child utterances to adult responses should be considered when rating. An adult who responds appropriately to 2/2 child utterances receives a 5. An adult who responds to 2/10 child utterances appropriately receives a 2.
    ii) **Quality of direct teaching episodes:** Whenever direct teaching episodes occur, use of quality indicators should be noted. This quality item is *not* affected by the frequency of teaching episodes (unless there are no direct teaching episodes, in which case the item is rated "N/A").

3) ◔ "Frequency"

    These items are rated based on an explicit target frequency. These items are discrete events that occur within sessions, and can be counted.

    i) **Using communicative temptations**
    ii) **Frequency of direct teaching episodes**

Specific Item Coding Conventions:

Face-to-face and on the child's level

- A code of 1 is reserved for adults who are nearly always standing, seated behind, or seated above the child. Adults who are seated next to or kitty-corner to the child (i.e. not facing each other, but could turn to look) for the majority of the session should be rated a 2. A code of 3 or higher requires the parent to be face-to-face (i.e. facing each other, with the adult in the child's general line of sight) for half or more of the session.

Frequency of *Direct Teaching Episodes*:

- This item counts **completed** direct teaching episodes, which are defined as having an A-B-C structure (see glossary for detailed definition). An opportunity that is begun (i.e. has a clear cue) but is not completed (e.g. child moves to a different activity and adult does not continue, or the child responds but the adult does not react at all) is considered "dropped" and is **not** counted here.
- Clear rhetorical questions should not be considered antecedents/instructions/cues, and are instead an example of poor modeling language.
- Sometimes, it may be difficult to tell the difference between a rhetorical question and an antecedent. Questions that are repeated, that are followed by an expectant pause, or that are followed by other teaching strategies (e.g. prompt or scaffolding) indicate that the adult has begun teaching. Note that these instructions should **not** be considered "clear" in quality. If you couldn't tell, neither could the child!

Quality of Direct Teaching Episodes:

- Rate quality indicators only on **completed** direct teaching episodes.
- If the child responds independently to the first cue or instruction (i.e. does not require any kind of scaffolding or prompting), consider the quality indicator of "support child's response" as **present**.
- In rating the quality of reinforcement, keep in mind that mere presence of reinforcement is not enough (e.g. saying good job in a bored tone is insufficient). Reinforcement should be natural when possible (e.g. immediately handing the child the object they requested), and the tone/quality of social reinforcement should be considered.

NDBI-Fi: Common Item Definitions
Promoting Engagement

1) Face-to-face and On the Child's Level

The adult is **face-to-face with the child**. The child's and adult's bodies are oriented toward each other, and they are at a similar level (or the adult can be slightly below the child's eye level), such that the adult is **within the child's line of sight**. If playing, toys are between the adult and child when possible (this may be difficult in some activities, such as building a puzzle, or playing with a large dollhouse or on a jungle gym). If the adult is required to move away from the child, or if the child walks away, the adult returns to being face-to-face as soon as possible.

☑ *Both sitting on the floor with a toy in between them, or sitting across from each other at a table*
☑ *Adult gets up to put a toy away, but quickly returns to being face-to-face*

☒ *Adult is sitting on the couch, child is playing on the floor*
☒ *Adult is sitting with the child on her lap, such that the child's back is to her*

2) Following the Child's Lead

The adult provides several *developmentally appropriate* **activity options**, and **allows the child to choose** which toy or activity to play with**, how to play**, and **how long** to stay with an activity. The adult then **joins in the child's chosen activity** by playing with the child, helping the child with an activity, handing the child more pieces, or playing another "role" in the activity. **The adult and child are both active participants in the activity.** If the child does not choose an activity, or expresses disinterest in or dislike of an activity, the adult **notices and responds accordingly**. This may include using the situation to practice expressing refusal, offering a choice between two new materials, or moving new toys into the child's line of sight to encourage changing activities or entice the child's interest. The adult is **permitted to set limits** (e.g. limit their child's access to more snacks) and to **intervene if the child is engaging in harmful, disruptive, repetitive or inappropriate activities**. If using intervention strategies during an adult-directed activity (e.g., dressing, washing hands), the adult incorporates child choices when possible.

☑ *Child: Pushes toy cars away*
   Adult: Comments, "You don't want cars," and brings bins with blocks and animals into the play space
☑ *During dressing routine, the adult holds up two different shirts for the child to choose from*
☑ *Child: Opens the bin of blocks and starts to build a tower*
   Adult: Sets aside the previous activity, and hands the child more blocks

☒ *Child: Playing with trains functionally and appears content*
   Adult: Abruptly cleans up trains and brings out blocks instead
☒ *Child: Putting shape sorter pieces into a nesting box*
   Adult: Takes the nesting box away, and directs the child to put the pieces in the shape sorter instead

3) Displaying Positive Affect and Animation

The adult displays **rich positive affect** to promote child *engagement*. This may include adjusting vocal quality or tone, *gestures*, and facial expressions. Affect is **matched to the child's individual sensory needs**, such that the adult promotes engagement without over-arousing the child. On the other hand, some children may need higher levels of affect and animation due to their lack of responsiveness and low arousal level.

☑ *Adult pushes the child on the swing, and says "swiiiiing!" while smiling*
☑ *Adult laughs with the child as he pops bubbles*
☑ *Adult speaks in a whisper while the child quietly puts the baby doll to sleep*

☒ *Child: Becomes dysregulated when his block tower falls down*

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Adult: Says, "the blocks CRASHED!" loudly with an excited tone

☒ Adult has flat affect and appears bored during play

Modeling Skills

4) Modeling Appropriate Language

The adult **adjusts his language to the child's** *developmental level*; most utterances match the child's current abilities, while others are slightly above a child's current ability level. The adult avoids asking questions or giving commands (outside of *direct teaching episodes*), and **primarily comments** around the child's attentional focus and actions. Utterances are somewhat repetitive, but not overly so, and the adult models language for different objects and actions.

☑ *Adult narrates, "Drive the trains… Train… Push… Go," while she and her child (who primarily uses single words) drive trains together*

☑ *Adult narrates, "Building a tower. More pieces on top. Build with blocks," while she and her child (who speaks in short phrases) build with blocks*

☒ *Adult narrates, "Block… Block… Block… Block… Block" to her child (who speaks in phrases)*

☒ *Adult says, "Wow, are we building a huge block tower?" to her child (who is preverbal)*

☒ *Adult repeatedly asks, "What color?" for each block the child puts on a tower*

Encouraging Communication

5) Responding to Attempts to Communicate

The adult **verbally responds** to the child's attempts to communicate, including vocalizations, eye contact, word approximations, *gestures*, joint attention, etc. This includes repeating, clarifying and/or expanding on the child's communication, and also responding to the child's communication as meaningful. If the child uses a joint attention skill (e.g. pointing, showing, or giving), the adult responds by incorporating a joint attention skill into a natural response.

☑ *Child: Says, "block"*
Adult: Says, "build with blocks," and hands the child a block

☑ *Child: Points to the train*
Adult: Gives the child the train and says "train!"

☒ *Child: Says, "block"*
Adult: Does not respond

☒ *Child: Points to the train*
Adult: Says, "I found some animals over here"

6) Using Communicative Temptations

The adult deliberately creates situations meant to **elicit communication from the child**. These "communicative temptations" may involve blocking the child's play, putting toys in sight but out of reach, limiting or withholding access to toys, using toys or containers for which the child needs assistance, or modeling a silly or unusual play act. In most cases, the adult will have shared control over the materials, such that s/he can limit access as needed. These strategies are followed by a brief period of **expectant waiting** to give the child an opportunity to respond. The adult may also use this as an opportunity to introduce a *direct teaching opportunity*.

☑ *Adult hands the child's crackers to her in a container with the lid on, and waits to see how she responds*

☑ *Adult uses his finger to stop the marble from running down the track, and looks expectantly at the child*

☒ *Adult sets up the child's snack so that she has unobstructed access to two snacks and milk*

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☒ *Adult dumps out a whole bin of blocks for the child to play with*

Direct Teaching

What skills or *targets* are taught using *direct teaching episodes*? Check all that apply.

☐ Eye contact

☐ Joint attention skills & gestures

☐ Expressive language

☐ Receptive language

☐ Play acts

☐ Participating in routines

☐ Increased attention or engagement

☐ Other: _____

_____

_____

7) Pace and Frequency of Direct teaching episodes

The adult **directs the child to demonstrate new or emerging skills** by giving some kind of instruction or cue. There is at least a brief period of time between direct teaching episodes in which the child receives access to a reinforcer, and the adult leaves space for child initiations. The adult can introduce more frequent direct teaching episodes for children who are highly motivated than for children who are not *engaged*.

☑ *Adult directs the child to ask for a block when he is engaged in the activity, then helps the child build before directing the child to ask for another block*

☒ *Adult instructs the child to ask for blocks five times in a row, without giving the child access to blocks between teaching opportunities*

8) Quality Indicators of Direct teaching episodes:

Using Clear Teaching Opportunities

When giving an instruction or *prompt*, the adult uses **communication that is clear and *developmentally-appropriate*,** such that it is clear how the child is expected to respond. Instructions and prompts are simple and direct, and the target skill remains consistent within each direct teaching opportunity.

☑ *(Child who speaks in short phrases) Adult: Says, "Jimmy, give me the ball."*

☑ *(Child who has some single words) Adult: Says, "Ball, or car?"*

☒ *(Child who speaks in short phrases) Adult: Says, "Hey sweetie, do you want some more of those crackers, or would you rather have some juice to wash it down?"*

☒ *(Child who has some single words) Adult: Says, "Hey, Jimmy, could you grab the ball for me?"*

Developmentally Appropriate Teaching Targets

Direct teaching episodes *target* **behaviors that are at or just above the child's current skill level**.

☑ *(Child with simple functional play skills) Adult targets driving a car*

☑ *(Child who has some single words) Adult targets one-word request*

☒ *(Child with simple functional play skills) Adult targets two-step pretend play sequence*

☒ *(Child who has some single words) Adult targets three-word phrase*

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Providing Motivating and Relevant Teaching Opportunities

The adult teaches skills when the child is **motivated, interested, and *engaged* in the activity.** The child's interest may be indicated by reaching for materials, approaching the adult, making eye contact with the adult, looking at the materials, etc. The *target* **behavior is logically related to the ongoing activity**, and the adult embeds the teaching opportunity in the context of the ongoing activity.

☑ *Child: Building a tower with blocks, and reaching for more pieces*
  Target skill: Two-word requests
  Adult: Withholds the next block, and directs him to say "block please"

☑ *Child: Eating crackers*
  Target skill: One-word request
  Adult: Asks, "Crackers, or juice?"

☒ *Child: Building a tower with blocks*
  Target skill: Motor imitation
  Adult: Directs him to clap his hands

☒ *Child: Playing with cars*
  Target skill: Functional play act
  Adult: Directs him to put a piece in the puzzle

Supporting a Correct Response

After initiating a direct teaching opportunity, if the child does not respond independently (but remains interested), the adult **attempts to help the child respond correctly**. This includes repeating the instruction, giving the child additional cues to respond, scaffolding the child's learning, or physically helping the child follow through. Over time (across several teaching episodes), the adult decreases support as a child learns a new skill.

☑ *Adult: Asks, "What do you want?"*
  Child: Does not respond
  Adult: "Juice, or crackers?"
  Child: Reaches toward juice
  Adult: Says "Juice" and points to the juice
  Child: Continues reaching for juice
  Adult: Shapes the child's hand into a point, and gives her the juice.

☒ *Adult: Asks, "What do you want, do you want some more blocks?"*
  Child: Does not respond
  Adult: Asks, "What do you want?
  Child: Looks at adult
  Adult: Asks, "Do you want some more blocks?"

Providing Contingent Natural and Social Reinforcement

Once a child responds correctly to a direct teaching opportunity (including when supported by the adult), the adult provides an **immediate** (i.e. within a few seconds) **natural reward that is directly related to the child's response**, and/or positive **social reinforcement** such as touching, verbal praise, or positive affect. Reasonable attempts to respond correctly, such as word approximations, are rewarded when *developmentally-appropriate*. Children are not allowed access to reinforcement without providing some type of response.

☑ *Adult: Asks, "What should we do?*
  Child: Says, "Crash tower"
  Adult: Playfully knocks down the blocks and smiles

☑ *Adult: Asks, "What do you want?"*
  Child: Says, "Ju"
  Adult: Says, "Nice asking me!" and hands her a cup of juice

☒ *Adult: Asks, "Play ball, or play cars?"*
  Child: Says, "Play cars"
  Adult: Says, "Ok, first let's go to the bathroom" OR "Here's a sticker for telling me!"

☒ *Adult: Asks, "iPad or marbles?"*
  Child: Grabs iPad without communicating
  Adult: Allows the child to play with the iPad

Glossary of Terms

Developmental level and Developmental appropriateness

      Developmental level refers to a child's current repertoire of skills, and often focuses on language level or play skills. These skills tend to develop in a similar trajectory across children. When teaching or modeling skills, developmentally appropriate skills are those that are at or just above a child's current ability level. For example, a teaching target (targeting language) for a child who speaks in some single words may be a two-word request, or a new one-word request that the child has not yet mastered. A teaching target (targeting play) for a child who has mastered functional and combination play might be symbolic play, such as feeding a baby doll or putting farm animals to sleep.

Language level	Play level
➜ Pre-verbal	➜ Sensory play
➜ Single words	➜ Functional play
➜ Short phrases/word combinations	➜ Combination play
➜ Complex language/sentences	➜ Symbolic play
	➜ Dramatic play

Direct Teaching Episode

      This refers to adult-led teaching episodes, in which the adult teaches the child a skill using a clear cue. In a completed direct teaching episode, the adult uses an "A-B-C" (antecedent-behavior-consequence) approach. First the adult provides a cue or instruction (antecedent), then the child attempts to respond either with or without the adult's support (behavior), and then responding, rewarding or *reinforcing* the child's response appropriately (consequence). Each step may have high or low quality, but all three steps must be present in some form to be considered a complete episode. Various individual NDBIs may refer to these as teaching episodes, milieu episodes, teaching trials, etc.

      Direct Teaching Target

          A direct teaching target is a specific skill or response that the adult wants the child to perform in response to a direct teaching opportunity. For instance, if the adult withholds the ball to initiate a direct teaching opportunity, the target might be for the child to make a one-word request by saying "ball."

      Prompt

          "Prompting, also referred to as scaffolding or cuing, involves inserting a cue (verbal, visual, or physical) between the instruction […] and the target behavior in order to elicit a desired response and thereby create the context for delivering the reinforcer" (Schreibman et al., 2015). Prompts vary in their level of support. Some prompts may be highly supportive (e.g. physically moving the child's hands or body to help them respond), while others may be minimally supportive (e.g. asking an open-ended question, or making a leading comment).

Engagement

      Engagement refers to the extent to which the child is actively involved in an interactive activity with the adult. A child who is engaged with the adult may check in with eye contact, offer a turn, communicate for the purpose of sharing or commenting, request for a collaborative activity to continue, etc. A child who is not engaged may be fixated on a toy without attending to the adult, wander without choosing an activity, ignore the adult's social bids, etc. Although researchers have defined various more specific engagement states (Bakeman & Adamson, 1984), for the purpose of this assessment, these distinctions are not made. Engagement here would include Bakeman and Adamson's categories of 'coordinated joint engagement,' 'person engagement,' and 'passive joint engagement.' The categories of 'unengaged,' 'onlooking,' and 'object-engaged' would not be considered engagement.

Gesture

      Gestures are *communicative* body and hand movements. Common gestures include pointing in order to request or direct someone's attention, nodding or shaking one's head to answer a question, clapping to indicate

success or excitement, or holding one's hands up to indicate surprise. Descriptive gestures (e.g. holding one's hands apart to indicate size), emphatic gestures (e.g. conversational "beats"), and conventional gestures (e.g. waving goodbye, moving hand towards the body to say "come here"), are all considered here.

Routines

Play routine

Play routines are collaborative, toy-play activities where both the adult and child have an active role (which may be the same or different, depending on the activity). Play routines involve distinct play actions that are repeatable. Playing differently but in close proximity (i.e. parallel play) is NOT considered involvement in a play routine. Play routines can vary in complexity based on the child's developmental level and attention, ranging from very simple (e.g. putting shapes in a shape sorter and dumping them out), to very complex (e.g. giving the baby doll a bottle, burping the baby, giving the baby a bath, and then dressing the baby).

Home routine

Home routines are activities that occur in daily routines in natural contexts. Some examples include dressing, bath time routines, hand washing routines, snack time or meal routines, etc.

Social routine

Social routines are joint activities which focus on the dyadic interaction between adult and child, rather than a play interaction involving toys. Common social routines include (but are not limited to) singing songs, playing a chasing or hide-and-seek game, jumping on the bed, rough-and-tumble play, peekaboo, playing a tickle game, etc.

Reinforcement

Reinforcement occurs at the end of a direct teaching episode, once the child has completed the desired response, and serves to encourage the child to respond similarly in the future. Reinforcement can take several forms, such as giving the child the item or activity they requested, praising them, and showing positive affect. Repeating a child's verbal response is considered reinforcement, but is low quality if it is not accompanied by other natural or clear social reinforcement.

Natural reinforcement

"Natural reinforcement is reinforcement that is intrinsic to the child's goal rather than unrelated to the child's goal (external or extrinsic to the theme or content of the activity or interaction)" (Schreibman et al., 2015). For example, natural reinforcement for the request "car" might be handing the child a car and allowing him to play with it as he wishes. This can be contrasted with 'artificial reinforcement,' which is extrinsic or unrelated to the child's goal. For example, artificial reinforcement for the request "car" might be giving the child a sticker, or giving the child a goldfish cracker.

Social reinforcement

Social reinforcement includes praise, physical touching such as tickles or hugs, and positive affect such as smiling or a happy and excited vocal tone.

Shared Control

An adult has shared control when they have at least partial control of the activity or materials (e.g., toy, game) that the child is motivated by. Shared control can be demonstrated by the adult holding or touching all or part of the materials, or blocking the play. If the child demonstrates consistent responding to language opportunities, it may be appropriate for the adult to elicit communication without obtaining shared control in advance, however the adult should be in close proximity to the child/activity such that they would be able to regain shared control if needed.

References and Acknowledgements

Bakeman, R., & Adamson, L. B. (1984). Coordinating attention to people and objects in mother-infant and peer-infant interaction. Child development, 1278-1289.

Schreibman, L., Dawson, G., Stahmer, A. C., Landa, R., Rogers, S. J., McGee, G. G., ... & McNerney, E. (2015). Naturalistic developmental behavioral interventions: Empirically validated treatments for autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *45*(8), 2411-2428.

Frost & Ingersoll (2019)

Appendix 1: Rating Anchors, Score Sheet, & Note Taking Sheet

Promoting Engagement

Face-to-face and on the child's level ↻

*The adult is **face-to-face with the child**. The child's and adult's bodies are oriented toward each other, and they are at a similar level (or the adult can be slightly below the child's eye level), such that the adult is **within the child's line of sight**. If playing, toys are between the adult and child when possible (this may be difficult in some activities, such as building a puzzle, or playing with a large dollhouse or on a jungle gym). If the adult is required to move away from the child, or if the child walks away, the adult returns to being face-to-face as soon as possible.*

1	2	3	4	5	N/A
The adult is rarely or never face-to-face and on the child's level. The adult is almost always standing, seated above the child, or behind the child.	The adult is occasionally face-to-face and on the child's level, however, most of the time, the adult may be standing, or seated above, behind; **OR** the adult is next to the child/kitty-corner for most of the session.	The adult is face-to-face and on the child's level for about half the session. Half the time, the adult may be standing, or seated above, behind, or next to the child.	The adult is usually face-to-face and on the child's level. When the child moves, the adult adjusts somewhat slowly, but eventually returns to a face-to-face position.	The adult is face-to-face and on the child's level throughout the session. When the child moves, the adult quickly adjusts position to return to a face-to-face position.	

Following the child's lead ↻

*The adult provides several **developmentally appropriate activity options**, and **allows the child to choose** which toy or activity to play with**, how to play**, and **how long** to stay with an activity. The adult then **joins in the child's chosen activity** by playing with the child, helping the child with an activity, handing the child more pieces, or playing another "role" in the activity. **The adult and child are both active participants in the activity.** If the child does not choose an activity, or expresses disinterest in or dislike of an activity, the adult **notices and responds accordingly**. This may include using the situation to practice expressing refusal, offering a choice between two new materials, or moving new toys into the child's line of sight to encourage changing activities or entice the child's interest. The adult is **permitted to set limits** (e.g. limit their child's access to more snacks) and to **intervene if the child is engaging in harmful, disruptive, repetitive or inappropriate activities**. If using intervention strategies during an adult-directed activity (e.g., dressing, washing hands), the adult incorporates child choices when possible.*

1	2	3	4	5	N/A
The adult rarely or never joins the child in a child-led activity; **OR** signs of child interest or disinterest are largely ignored. Within home routines, the adult does not build in opportunities for the child to make choices. An adult who merely watches the child should be rated a 1.	The adult sometimes joins the child in a child-led activity, but most opportunities are missed; **OR** most signs of child's interest or disinterest are ignored. Within home routines, the adult usually does not build in opportunities for the child to make choices.	The adult joins in a child-led or child-chosen activity about half the time, but frequently directs the child to a certain activity, toy, or play action. Within home routines, opportunities for the child to choose are present but infrequent.	The adult joins in a child-led or child-chosen activity for the majority of the session, outside of direct teaching episodes. Most signs of child interest or disinterest are acknowledged. The adult may occasionally choose for the child or direct the child to play in new ways.	The adult almost always joins the child in a child-led activity, outside of direct teaching episodes. Signs of child interest or disinterest are acknowledged. In home routines, the adult creates several opportunities for child choice.	

Positive affect and animation ↻

*The adult displays **rich positive affect** to promote child **engagement**. This may include adjusting vocal quality or tone, **gestures**, and facial expressions. Affect is **matched to the child's individual sensory needs**, such that the adult promotes engagement without over-arousing the child. On the other hand, some children may need higher levels of affect and animation due to their lack of responsiveness and low arousal level.*

1	2	3	4	5	N/A
The adult's affect appears flat or uninterested throughout the session. The adult does not laugh, smile, or use exaggerated tone.	The adult occasionally displays exaggerated positive affect, but does not exaggerate vocal tone, gesture, and/or facial expression for the majority of the session; OR animation is poorly adjusted to the situation and child's sensory needs.	The adult uses a combination of vocal tone, gesture, and/or facial expression to display exaggerated positive affect for about half of the session, OR uses only one method for the majority of the session; OR animation is occasionally adjusted to the situation or child's sensory needs.	The adult usually uses a combination of vocal tone, gesture, and/or facial expression to display exaggerated positive affect, but misses several opportunities; OR the adult uses only one method of displaying positive affect throughout the session. The adult usually adjusts animation as needed.	The adult uses a combination of vocal tone, gesture, and/or facial expression to display exaggerated positive affect consistently throughout the session. The adult usually adjusts animation as needed.	

Modeling appropriate language ↻

*The adult **adjusts his language to the child's developmental level**; most utterances match the child's current abilities, while others are slightly above a child's current ability level. The adult avoids asking rhetorical questions or giving commands (<u>outside of direct teaching episodes</u>), and **primarily comments** around the child's attentional focus and actions. Utterances are somewhat repetitive, but not overly so, and the adult models language for different objects and actions.*

1	2	3	4	5	N/A
The adult rarely or never models developmentally appropriate comments. All of the adult's comments may be far above or below the child's level, or the adult may exclusively ask rhetorical questions or give commands.	The adult occasionally models developmentally appropriate comments, but the majority of adult utterances are too far above or below the child's level, or most of the adult's utterances are questions or commands.	The adult models developmentally appropriate comments about half the time, but about half of utterances are too far above or below the child's level, or are questions or commands.	The adult models developmentally appropriate comments for most of the interaction, but some utterances are too far above or below the child's level, or the adult sometimes asks questions or gives commands.	The adult models developmentally appropriate comments throughout the interaction. No more than a few adult utterances are too far above or below the child's level, and there are no more than a few questions or commands.	

Encouraging Communication

Responding to attempts to communicate ◎

*The adult **verbally responds** to the child's attempts to communicate, including vocalizations, eye contact, word approximations, **gestures**, joint attention, etc. This includes repeating, clarifying and/or expanding on the child's communication, and also responding to the child's communication as meaningful. If the child uses a joint attention skill (e.g. pointing, showing, or giving), the adult responds by incorporating a joint attention skill into a natural response.*

1	2	3	4	5	N/A
The adult rarely or never responds to the child's vocalizations and nonverbal attempts to communicate. The adult may make unrelated comments, or perform unrelated play acts in response. If the adult provides a few verbal responses but does not treat the child's communication as meaningful, rate a 1.	The adult occasionally provides meaningful responses to child's vocalizations and nonverbal attempts to communicate, but usually fails to respond, or usually responds un unrelated ways (i.e. low quality responses).	The adult sometimes responds to child's vocalizations and nonverbal attempts to communicate by clarifying or expanding on the child's utterances. About half the time, the adult fails to respond, or responds in unrelated ways. If the adult always repeats the child's utterances, but never expands on the child's communication, rate a 3.	The adult usually provides responses to the child's vocalizations and nonverbal attempts to communicate and treats them as meaningful, but occasionally fails to respond or misses some opportunities to clarify and expand the child's communication.	The adult nearly always responds to child's vocalizations and nonverbal attempts to communicate. This includes expanding or clarifying child utterances, and responding to the child's actions as meaningful. The adult misses no more than a few opportunities to respond.	N/A: The child does not vocalize or initiate communication with the adult.

Using communicative temptations ⏱

*The adult deliberately creates situations meant to **elicit communication from the child**. These "communicative temptations" may involve blocking the child's play, putting toys in sight but out of reach, limiting or withholding access to toys, using toys or containers for which the child needs assistance, or modeling a silly or unusual play act. In most cases, the adult will have shared control over the materials, such that s/he can limit access as needed. These strategies are followed by a brief period of **expectant waiting** to give the child an opportunity to respond. The adult may also use this as an opportunity to introduce a **direct teaching opportunity**.*

1	2	3	4	5	N/A
The adult never creates clear opportunities for the child to initiate.	The adult creates clear opportunities for the child to communicate 1-2 times.	The adult creates clear opportunities for the child to communicate 3-4 times.	The adult creates clear opportunities for the child to communicate 5-10 times.	The adult creates clear opportunities for the child to communicate more than 10 times.	

Direct Teaching

Frequency of direct teaching episodes ⏲

*The adult **directs the child to demonstrate new or emerging skills** by giving some kind of instruction or cue. There is at least a brief period of time between direct teaching episodes in which the child receives access to a reinforcer, and the adult leaves space for child initiations. The adult can introduce more frequent direct teaching episodes for children who are highly motivated than for children who are not engaged.*
- ***Only count complete direct teaching episodes here** (i.e. those with all of the following: A) Instruction, B) Child response/behavior, C) Adult response or reinforcement). These do not have to be of good quality (rated in subsequent item).*

1	2	3	4	5	N/A
The adult does not complete any direct teaching episodes to teach skills.	The adult completes direct teaching episodes 1-2 times in 10 minutes.	The adult completes direct teaching episodes 3-4 times in 10 minutes.	The adult completes direct teaching episodes 5-10 times in 10 minutes.	The adult completes direct teaching episodes more than 10 times in 10 minutes.	

Quality of direct teaching episodes ◎

The adult uses high quality teaching strategies throughout direct teaching episodes. Quality indicators include:
- *Clear: When giving an instruction or prompt, the adult uses **communication that is clear and developmentally-appropriate,** such that it is clear how the child is expected to respond. Instructions and prompts are simple and direct, and the target skill remains consistent within each direct teaching opportunity.*
- *Developmentally appropriate target: DTOs **target behaviors that are at or just above the child's current skill level**.*
- *Motivating and relevant: The adult teaches skills when the child is **motivated, interested, and engaged in the activity.** The child's interest may be indicated by reaching for materials, approaching the adult, making eye contact with the adult, looking at the materials, etc. The **target behavior is logically related to the ongoing activity**, and the adult embeds the teaching opportunity in the context of the ongoing activity.*
- *Supporting a Correct Response: After initiating a direct teaching opportunity, if the child does not respond independently (but remains interested), the adult attempts to help the child respond correctly. This includes repeating the instruction, giving the child additional cues to respond, scaffolding the child's learning, or physically helping the child follow through. Over time (across several teaching episodes), the adult decreases support as a child learns a new skill.*
- *Providing contingent natural and social reinforcement: Once a provides a correct response (including when supported by the adult), the adult provides an **immediate** (i.e. within a few seconds) **natural reward that is directly related to the child's response**, and/or positive **social reinforcement** such as touching, verbal praise, or positive affect. Reasonable attempts to respond correctly, such as word approximations, are rewarded when **developmentally-appropriate**. Children are not allowed access to reinforcement without providing some type of response.*

1	2	3	4	5	N/A
All direct teaching episodes are of low quality (2 or fewer indicators). There are no high quality episodes.	2 quality indicators are consistently used across direct teaching episodes. At least one high quality episode is present.	3 quality indicators are consistently used across direct teaching episodes OR about half of episodes are poor quality (2 or fewer indicators).	4 quality indicators are present within most direct teaching episodes. Few (if any) episodes are poor quality (2 or fewer indicators).	5 quality indicators are present within nearly all direct teaching episodes. There are no poor quality episodes (2 or fewer indicators).	Adult received a score of 1 on item 15: Pace and Frequency of Direct Teaching

Frost & Ingersoll. Version 11/24/17

NDBI-Fi Score Sheet

Tallies/notes:		First Pass	Item	Final Scores
Good	*Poor/missed*			
		_____	Face-to-face and on the child's level ↻	_____ / 5
		_____	Following the child's lead ↻	_____ / 5
		_____	Positive affect and animation ↻	_____ / 5
		_____	Modeling appropriate language ↻	_____ / 5
		_____	Responding to attempts to communicate ◎	_____ / 5 or NA
		_____	Using communicative temptations ☉	_____ / 5
		_____	Pace and frequency of direct teaching opportunities ☉	_____ / 5
		_____	Quality of direct teaching opportunities ◎	_____ / 5 or NA

Video Name:

Video Duration: _____

Alert/Quality Note: _____

_____

Audio Quality (circle one):

1   2   3   4   5

Visual Quality (circle one):

1   2   3   4   5

1 = Quality *significantly impaired* rater's ability to score items

3 = Quality *somewhat impaired* rater's ability to score items

5 = Quality *did not at all impair* rater's ability to score items

Sum above: | _____ _____ |
| (points earned) (points possible) |

Average Rating:

$$\frac{points\ earned}{points\ possible} = \frac{}{\rule{2cm}{0.4pt}} \times 5 =$$

NDBI-Fi Note Taking Form

Child ID: Rater Name:

Video: Date:

Time:	Notes:

DTO:

Target:

□ A   □ B   □ C

- □ Clear?
- □ Devel. appropriate?
- □ Motivating and relevant?
- □ Support correct response?
- □ Quality reinforcement?

DTO:

Target:

□ A   □ B   □ C

- □ Clear?
- □ Devel. appropriate?
- □ Motivating and relevant?
- □ Support correct response?
- □ Quality reinforcement?

DTO:

Target:

□ A   □ B   □ C

- □ Clear?
- □ Devel. appropriate?
- □ Motivating and relevant?
- □ Support correct response?
- □ Quality reinforcement?

DTO:

Target:

□ A   □ B   □ C

- □ Clear?
- □ Devel. appropriate?
- □ Motivating and relevant?
- □ Support correct response?
- □ Quality reinforcement?

DTO:

Target:

□ A   □ B   □ C

- □ Clear?
- □ Devel. appropriate?
- □ Motivating and relevant?
- □ Support correct response?
- □ Quality reinforcement?

DTO:

Target:

□ A   □ B   □ C

- □ Clear?
- □ Devel. appropriate?
- □ Motivating and relevant?
- □ Support correct response?
- □ Quality reinforcement?

DTO:

Target:

□ A   □ B   □ C

- □ Clear?
- □ Devel. appropriate?
- □ Motivating and relevant?
- □ Support correct response?
- □ Quality reinforcement?

DTO:

Target:

□ A   □ B   □ C

- □ Clear?
- □ Devel. appropriate?
- □ Motivating and relevant?
- □ Support correct response?
- □ Quality reinforcement?

DTO:

Target:

□ A   □ B   □ C

- □ Clear?
- □ Devel. appropriate?
- □ Motivating and relevant?
- □ Support correct response?
- □ Quality reinforcement?

DTO:

Target:

□ A   □ B   □ C

- □ Clear?
- □ Devel. appropriate?
- □ Motivating and relevant?
- □ Support correct response?
- □ Quality reinforcement?