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CONSTRUCTION AND VALIDATION OF A VIDEO CODING TOOL FOR AN INTERVENTION TO IMPROVE PARENTAL FEEDING

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CONSTRUCTION AND VALIDATION OF A VIDEO CODING TOOL FOR AN
INTERVENTION TO IMPROVE PARENTAL FEEDING

BY

MARGARET DOYLE SAMSON

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE

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MASTER OF SCIENCE THESIS
OF
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ABSTRACT

Objective: This study describes the development and initial validation of a video coding tool to assess feeding practices observed in video-recorded family meals in order to provide feedback to caregivers. **Methods:** The tool with operational definitions was developed based on the previous literature and other tools that capture caregiver feeding practices. To assess face validity, a sample of child feeding experts (n=6) completed an 8-item online survey about content and usability. The tool was modified based on expert feedback and used to code 10 video-recorded family meals. Intraclass correlation coefficients (ICC) were calculated to determine inter-rater and test re-test reliabilities. **Results:** Using a scale of 0-100, tool usability (81.8 ± 11.7) and content (87.7 ± 14.0) were rated acceptable. ICC was calculated as 0.86, indicating a good inter-rater reliability and ICC for test re-test reliability was 0.95, indicating excellent reliability. **Conclusions and Implications:** Future studies should focus on the expansion of operational definitions and training efforts to further improve inter-rater and test re-test reliabilities.

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PREFACE

This thesis was prepared in manuscript format following the author guidelines for *The Journal of Nutrition Education and Behavior*. After submitting this thesis, the manuscript may be submitted for publication.

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MANUSCRIPT

“Construction and Validation of a Video Coding Tool for an Intervention to Improve Parental Feeding”

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INTRODUCTION

In preschoolers, the development of healthy eating behaviors is important to encourage a well-balanced diet, which is associated with the prevention of obesity and chronic diseases later in life.¹⁻³ Despite this, diet quality in preschoolers in the United States is suboptimal, with low fruit, vegetable and whole grain consumption and high consumption of sugar-sweetened beverages and refined grains.⁴⁻⁶ Parents play a critical role in influencing child diet quality through the food they purchase, prepare and the feeding practices employed with their children.⁷

Parental feeding practices focus on the behaviors of parents while feeding their children at meals or snack-time.⁸ More specifically, they are the individual goal-oriented behaviors that parents use to influence what and how much a child consumes.⁹ The feeding practices that parents employ with their children have an effect on the immediate diet quality of their child during a specific meal,¹⁰⁻¹⁷ as well as more lasting predictors of diet quality through the development of diet habits,¹⁸⁻²¹ food preferences,¹⁷⁻²⁰ and the ability to self-regulate hunger and satiety cues.^{10,14,20-22} Over the past decade, there has been a significant amount of research examining how parental feeding practices can influence child diet,^{11,19,23,24} as well as health outcomes.^{18,25} However, this has contributed to a vast number of studies defining parental feeding practices differently.²⁶

In order to overcome some of the challenges of defining parental feeding practices, Vaughn et al. (2016) proposed a framework whereby feeding practices are organized into three general categories: coercive control, autonomy support and structural feeding practices.²⁶ Coercive controlling practices such as food restriction, pressure to

eat, threats, bribes and using food to control negative emotions have demonstrated a largely negative effect on child diet quality.²⁶ Autonomy supportive practices (i.e. encouragement, child involvement in meal preparation, praise, reasoning and nutrition education) on the other hand, empower the child to have control over his or her diet which has been associated with high intake of fruit and vegetables, and high overall diet quality.^{11,26-28} Structured feeding practices involve parental control of the food environment in order to influence child diet and includes: rules and limits, limited/guided choices, monitoring, establishment of meal and snack routines, modeling, accessibility and availability of food, as well as the unstructured practices of neglect and indulgence.²⁶ Many structured practices still have an unclear, or mixed effect on child diet quality.²⁶ Parental use of modeling has been a practice of interest, and can have a positive or negative effect on child diet quality depending on what kinds of behaviors, as well as what kinds of foods the parent is modeling for their child.^{26,27,29,30} The impact that caregiver feeding practices has on child diet quality makes this a logical target for intervention studies. It is important to use common definitions for feeding practices in order to make it easier to draw comparisons across the literature and apply to interventions.

In an effort to improve child diet quality, there have been a number of parent-focused interventions to modify feeding practices. Of these, interventions have used multi-component approaches, first providing parenting information at an individual^{23,31-33} or group level,^{34,35} together with other components, such as print materials^{23,33-35} and web engagement.³⁴ The multi-component approach has been used to reinforce educational materials in a variety of ways to adequately reach more parents.³⁶ Many studies have

used tailored materials in order to deliver education that is relevant to family, which has shown to be effective in changing behavior compared to non-tailored approaches.³⁷⁻³⁹ Interventions have been tailored to be relevant to the participant in different ways, including providing information specific to the common practices used by the caregiver, as well as individualized counseling sessions.^{24,31} Motivational interviewing is a counseling approach which has been used by many studies to support caregiver self-efficacy in making changes to parental feeding.^{40,41}

Previous multi-component interventions have been successful at improving the home food environment,³¹ parental knowledge,^{24,31,35} and in some cases, reducing coercive feeding practices.^{17,32,42} The majority of these interventions have focused on telling parents what feeding practices they should not be using, specifically encouraging reducing use of coercive practices.⁴³ Few studies, however, have used individualized and tailored approaches to engage parents around decreasing use of negative practices, while also increasing use of positive practices. One approach to filling this gap is to combine the use of video-recorded family meals, motivational interviewing and self-perception theory in order to provide tailored feedback that is specific to the caregiver and their child. Observational methods have yielded different results when compared with a caregiver's self-report of feeding practices, indicating that they may not be fully aware of the feeding practices they employ with their child.¹⁶ Using clips from the video-recorded meals would allow the caregiver to see their own behavior and provide individualized feedback. Therefore, the goal of this study is to address this gap by creating a tool that can be used to provide tailored feedback in interventions using video-recorded family meals in conjunction with motivational interviewing.

OBJECTIVE

While there are a variety of tools that have the ability to assess observed parental feeding practices, there are no existing tools to our knowledge that were created with the intention of providing feedback to parents on the positive and negative practices observed within the video. Providing parents video-tailored feedback concurrent with motivational interviewing could better improve parental feeding practices since it would be relevant to the family and could show parents practices that they may be unaware that they use. The development of the tool and intervention is guided by self-perception theory, which is the theory that individuals observing their own behavior leads to a drive to understand what attitudes caused that behavior.⁴⁴ This theory aligns with this tool and intervention, which assumes that caregivers watching videos of themselves feeding their child may lead to behavior change. The creation of a reliable, valid, easy-to-use instrument to both assess video-recorded meals and to provide parental feedback would expand on current existing measures, and aid in the success of future interventions. This paper describes the development and initial validation of such a tool.

METHODOLOGY

The tool developed for this study was created as part of an ongoing home-based intervention entitled "Strong Families Start At Home" (SFSH) being conducted at the University of Rhode Island.⁴⁵ The SFSH intervention is a pilot randomized control trial with 60 low-income families of preschool-aged children.⁴⁵ The aim of the SFSH study is to improve diet quality of preschool-aged children through a comprehensive intervention focused on changing the family home meal

environment.⁴⁵ Enrolled families are randomized into a 6-month "healthy eating" intervention group, or a 6-month "reading readiness" control group.⁴⁵ Both groups participate in three home-based visits from a community health worker (CHW) over a three-month period, and receive supporting mailed materials and text messages to improve child diet quality or reading readiness respectively.⁴⁵ Following the home visits from the CHW, there is a three-month component to the intervention that will occur over the phone.⁴⁵ One key component to the intervention is the use of video-recorded meals to assess observed parental feeding practices, as well as provide tailored feedback to the parents on what is observed.⁴⁵ Prior to the first and last home visit, families are asked to record a family meal using their cell phone and share the video with the research team.⁴⁵ The video is then coded by researchers and shared with the CHW to guide a conversation using motivational interviewing.⁴⁵ Parents randomized to the control group are asked to take videos of themselves reading to their child, and similarly, received tailored feedback on what is observed.⁴⁵ The present study only utilized the developed tool for the intervention group focused on healthy eating. The tool developed assesses what parental feeding practices are observed and provides feedback using clips from the resulting video-recorded home meals. This study was approved by the Institutional Review Board at the University of Rhode Island.

Participants

The current study originally planned to utilize data from 30 families randomized into the "healthy eating" intervention group from the SFSH home-based intervention. Participants are low-income and ethnically diverse, and are being

recruited from the Women, Infants and Children (WIC) clinics in Providence and Woonsocket, Rhode Island, as well as several other low-income community sites. To be eligible for this study, parents must be 18 years or older, and have a preschool-aged child aged 2 to 5, at the start of the intervention and speak either English or Spanish. Additionally, parents must have access to a cell phone with video-recording capabilities and must be willing to share the video-recorded meals with researchers. Parents of children with a diagnosed feeding disorder were excluded.

Because SFSH is an ongoing study, at the time of this project, there was an insufficient number of English-speaking videos of participants placed in the healthy eating group at the time of tool validation. Therefore, it was decided to also utilize video-recorded meals obtained from the pilot intervention preceding the SFSH study.⁴⁶ Approximately half (n=5) of the videos used in the present study were from the pilot intervention. Eligibility criteria for the participants (n=15) in the pilot study were the same as the SFSH study, except mothers had to be English-speaking.⁴⁶ The videos from the pilot study differed in that the video camera was set up by the researcher inside the home.⁴⁶ The researcher set up the camera, and then left the home for the duration of the video.⁴⁶

Role of Instrument in SFSH Intervention

All participants are asked to record a typical family meal using a cell phone. Participants are instructed to set up the video recorder in a way that allows researchers to see the dinner table, the target child, and any family members present. Parents receive an instruction card detailing how the camera should be set up and emphasizing how the video should capture the duration of the entire meal. After the meal is

completed, the videos are sent to the team of trained researchers to be coded. The following visit, a CHW uses the instrument-guided feedback sheet provided by researchers to show the parent a video clip of one positive and one negative feeding practice observed in the video (see Table 1 and 2). The feedback sheet identifies the clip and provides talking points as to why that particular practice is considered positive or negative. The videos clips and feedback sheet aid the CHW in facilitating a conversation with parents to discuss observed successful feeding practices, and identify behaviors that may need improvement. All CHWs were trained to use motivational interviewing prior to the start of the study.

Initial Item Generation Procedure

Based on the prior literature, parental feeding practices were sorted into three general categories: coercive feeding practices, autonomy support and structural feeding practices. When selecting which feeding practices to include and exclude from the instrument, it was critical that the feeding practices would be able to be observed within a video-recorded family meal. For instance, the structural practice of routine meal and snack times could not be determined through a single video-recorded meal without greater context. Additionally, since the tool is meant to provide feedback to parents, the included practices had to be behaviors that the parents are capable of changing. Furthermore, while the availability of healthy foods in the household is considered an important parental feeding practice related to diet quality, it may not be the best to provide feedback on without knowing financial feasibility of food purchasing.

To facilitate consistency of coding, operational definitions were included for each of the practices for the coder to refer to when observing ambiguous parental feeding practices (see Appendix F). The operational definitions are based on definitions given in previous studies by Vaughn and Haycraft in order to establish continuity with previous research.^{47,48}

Assessing Face Validity

In order to assess the face validity of the tool, twelve experts in the field of parental feeding were asked to review the tool and provide feedback with regards to the content and usability of the tool. Twelve individuals who were considered experts in the field of parental feeding were contacted by email to participate. Their level of expertise was assessed by their published work regarding parental feeding. In addition, a nutrition educator from the Supplemental Nutrition Assistance Program- Education (SNAP-Ed) who develops and delivers parental feeding workshops was also invited to participate in the study.

Of the 12 experts contacted, 6 experts completed the survey. The questionnaire was anonymous to preserve the privacy of the respondents, so while twelve experts were contacted, it is unclear who participated in the study. A study description was provided with in the body of the email, as well as a link to the SurveyMonkey questionnaire, copies of the tool, operational definitions and the approved IRB consent form. The SurveyMonkey questionnaire contained eight questions, two of which asked about the usability and content of the tool on a scale. For the first two questions which asked the participants to respond on a scale of 1 to 5, the question was mis-formatted and allowed answers on a continuous scale of 1 to 100. The other questions asked if

there are other important feeding practices which would be important to provide feedback on, the appropriateness of the operational definitions, as well as any modifications suggested. After reviewing the responses from the six experts, it was determined that theme saturation had been reached, and no further experts were contacted.⁴⁹

Inter-Rater and Test Re-Test Reliability

In order to assess inter-rater and test re-test reliability, three members from the research group coded a mix of video-recorded meals from both the SFSH and pilot interventions. Prior to beginning coding, each coder was provided with important literature on parental feeding practices and given a copy of the coding training manual and operational definitions (see Appendix F and Appendix I). After the coders had reviewed the literature and training manual, the coders were trained using two videos from the pilot study. Each coder met with the trainer and watched a video and filled out the video coding tool together. With each observed feeding practice, the trainer paused the video to explain the practice to the coder. Following this meeting, the coders coded an additional video independently and sent to the trainer for review. When 90% agreement with trainer was achieved, the coder was approved to code independently.

In order to adequately assess inter-rater reliability,^{16,50} ten videos total, five from the SFSH study and five from the pilot study were used. Five videos from the pilot study were randomly chosen via random number generator. The five videos from the SFSH were the only five English videos available at the time of validation. At the time of validation, there were only five videos available from the current study that

were both English-speaking and from the intervention group, so all available five videos were used. Each coder coded the same videos independently using the tool and operational definitions. After coding each video, the coded responses were collected and entered into an Excel Spreadsheet.

Practices were measured as either a categorical variable, or as an open-ended response such as reporting foods consumed during the meal or the number of times a specific feeding practice occurred. All responses were compared between coders. For each feeding practice, the number of times each coder indicated the practice occurring within the video was recorded. The average between coders was indicated, as well as the standard deviation to account for variation between responses. For each practice in the video, the responses between coders were compared. If all coders gave the same number of instances for the practice occurring, the practice was given 100% agreement. If two coders agreed, then the practice was given 67% agreement, and 0% if the responses were all different. This is similar to how interobserver agreement was calculated in an observational study by Hughes et al.⁵¹

In order to assess test-retest reliability, three of the already coded videos were randomly selected via random number generator. Two of the videos selected were from the pilot study and one was from the current intervention. The coders were instructed to not look at the previous coding sheet prior to coding the videos for the second time, which occurred about two months after coding for the first time. The coding sheets were input into an Excel sheet to compare the level of agreement for the number of practices observed. If the coder reported the same count for a specific practice in the video, the practice was given 100% agreement. If the coder reported

different counts between the timepoints, the practice was given 0% agreement. Percent agreement for each coder between timepoints were reported for each practice within each video, each video as a whole, and each practice overall. The average agreement per coder and agreement overall was also calculated and reported.

Statistical Analysis

To describe the face validity of the tool, descriptive statistics were calculated, and the frequency and percentages of the responses were reported. For the qualitative section of the questionnaire, any given responses were summarized and major themes were selected. Once all of the videos necessary for reliability testing had been coded, inter-rater reliability was calculated by comparing coding sheets by coder for each video. Intraclass correlation coefficient (ICC) was calculated to assess inter-rater and test re-test reliability. For ICC, a score of 1.0 indicates identical scoring, 0.99 to 0.90 denotes excellent reliability, and 0.80 to 0.89 is considered good reliability. The coding sheets were compared overall, as well as by individual practice to assess percent agreement. Percent agreement was compared for each practice within each video, each video as a whole, and each practice overall. Data analyses were performed using SPSS (Version 26).

Development of Feedback Sheet

In order to translate what is observed in the video into a conversation the community health worker can lead with the parent, an instrument-guided feedback sheet was developed. It was necessary for this sheet to be easy for the coder who is watching the videos to fill out, and also be targeted to the community health worker and parent. The resulting feedback sheet allows for the coder to provide the name of

the video clips chosen, as well as several reasons as to why that practice was selected as a “negative” or “positive”. Additionally, there is a space for the coder to briefly document the overall meal atmosphere to the CHW, as they may not be able to derive that from the video clips shown and it may be pertinent to the conversation they have with parents. As a component of the development of the feedback sheet, a document was compiled that gives the evidence-based explanation as to why a certain behavior may be considered positive or negative. For instance, if the negative practice observed in the video is pressure, the document provides an explanation for the CHW to use during the conversation with parents on why pressure is considered a negative behavior. This ensures that all CHWs received consistent guidance for the motivational interviewing session despite who is coding the videos.

RESULTS

Ten videos were included for the validation and reliability testing of this tool. Five videos were selected via random number generator from the pilot study. Due to the limited availability of English-speaking intervention videos, the five videos from the SFSH study were the five available at the time of validation and reliability testing. Furthermore, two participants from the SFSH study provided two videos, so while there were ten videos total, this study only reflects eight caregivers (see Table 3). Caregivers were mostly female (87.5%), non-Hispanic (75.0%), spoke English at home (75.0%), and were on average 37.5 years of age (± 6.07). Children were mostly male (75.0%) and were on average 3.3 years of age (± 1.00). Videos from the SFSH study ($n=5$) were about 12 minutes on average, whereas videos from the pilot study ($n=5$) were notably longer at 27 minutes on average.

Face Validity

Of the twelve experts who were emailed, six agreed to participate and answered the SurveyMonkey questionnaire. Experts rated the usability of the tool as 81.8 ± 11.7 , and tool content as 87.7 ± 14.0 (see Table 4).

Most participants (n=5) indicated that there was a need to include other important feeding practices which were not initially in the tool. The following practices were additional suggestions to include: physical pressure to eat, disciplining the child at the table, a measure to indicate positive or negative mealtime experience, a measure of meal healthfulness, whether the meal was consumed at a table, and practices seen prior to the start of the meal. Half of the experts (n=3) indicated that the operational definitions for the selected feeding practices were appropriate, while the other three reported a need for expansion of the operational definitions. All three experts indicated that there was a need for a clear differentiation between the practices of encouragement and pressure. As stated by one expert:

“The definition of pressure to eat above does not include any mention of consequence for not adhering to “one more bite”, so I am unsure based on the definition how ‘encouragement’ is different. Perhaps including example of phrases such as “Your peas look so good!” or “why don’t you try some carrots?”. To me, it is the lack of force or a specific direction towards amount that needs to be eaten that distinguishes ‘encouragement’ from ‘pressure’. – Are these variables intended to be mutually exclusive?”

Other recommendations included merging the practices of “clean plate” and pressure, as well as reasoning and nutrition education. One expert recommended

differentiating between positive and negative role modeling. Another expert suggested defining the structure practices to give more clarity. The last question asked if there were any modifications or changes that should be made to improve the tool. One expert noted that the tool should include an option to indicate that the parent served the food yet allowed the child to direct the amount of food given. One expert recommended coding the interactions between the target child and siblings, as well as between the siblings and parents. Another comment suggested that in two-parent households, parents should be coded separately, stating:

“It is important to code the food parenting practices used by each parent separately to understand the full context and complexity of the family meal environment. Mothers and fathers differ in the food parenting practices they use and so the feedback provided to parents may differ.”

Given that experts reported the tool as highly usable and acceptable, the tool was deemed acceptable to use with the suggested modifications. Following expert feedback, pressure and “clean plate” practices were merged as a singular practice. Additionally, nutrition education and reasoning were merged. Furthermore, the concept of role modeling was split to differentiate positive versus negative role modeling. The corresponding operational definitions were expanded to elicit greater clarity, including examples of how the practice may be observed in a meal setting. Additionally, child involvement in the kitchen was added. While initially it was thought that child involvement would not be seen during the meal and should be left off, it was later considered that discussion about child involvement in the kitchen prior to the video may still arise.

Feeding Practices and Meal Environment

The most common feeding practices observed in the examined videos included: encouragement (2.9 times per meal on average), pressure (1.9 times per meal on average), reasoning/ nutrition education (1.2 times per meal on average), positive role modeling (0.97 times per meal on average), praise (0.93 times per meal on average) and threats/bribes (0.80 times per meal on average) (see Table 6). The less common feeding practices observed included: negative role modeling (0.60 times per meal on average), restriction (0.37 times per meal on average), child involvement in the kitchen (0.33 times per meal on average), limited/ guided choices (0.20 times per meal on average) and using food to control negative emotions (0.03 times per meal on average) (see Table 6).

All examined videos were filmed at a dining or kitchen table. In 80% of the videos the mother was present, and in 60% of the videos the father was present. In 50% of the videos, there was at least one sibling present, and in 20% of the videos there was at least one adult who was not a parent to the target child. Only one video (10%) had a television on for the duration of the meal; however, it was muted. Cell phones or tablets were not used in any of the videos observed. For the majority of the meals (80%), the parents were consuming the same meal as the child. Only 10% of the videos showed the child eating alone, and the other 10% showed the parent consuming a different meal than the child.

Inter-Rater Reliability

Between the coders, there were no differences in how meal location, individuals present during meal and foods consumed were coded. Similarly, the coders

identically coded whether the TV was on, if cell phones or tablets were present, and whether the child ate the same meal as other family members. Conversely, there was some variability between how the feeding practices measured on a continuous scale were coded (see Table 5). Total percent agreement was calculated to be 86.4%. All videos exceeded 80% agreement overall, except for one video from the pilot study (63.7%). The practices with the highest rates of agreement were limited/guided choices (100% agreement), restriction (95.9%), threats/bribes (95.9%), child involvement in the kitchen (95.9%), negative role modeling (95.9%), followed by praise (91.8%), positive role modeling (91.8%) and using food to control negative emotions (83.4%). The practices with less than 80% agreement were as follows: reasoning (79.3%), pressure (75.1%) and encouragement (66.9%). Given the differences in how the videos were set up in the pilot versus the SFSH study, percent agreement was averaged between the five pilot videos (86.7%) and five SFSH videos (86.1%). The intraclass correlation coefficient for all ten videos was 0.86, indicating good reliability.¹⁸ ICC was calculated as 0.85 for the pilot videos and 0.87 for the SFSH study.

Test Re-test Reliability

Similarly to the inter-rater reliability, the coders coded meal location, meal composition and meal attendance consistently from the first and second time coding the same video. The coders also coded television use, cell phone use, and whether the child ate the same meal as the family consistently. Again, similar to the measure of inter-rater reliability, practices measured on a continuous scale demonstrated greater discrepancies. The average total agreement between timepoints was calculated to be

80%. One coder had 94% agreement, while the other two coders averaged at 73%. The practices with highest rates of agreement were as follows: using food to control negative emotions (100%), negative role modeling (100%), limited/guided choices (100%), restriction (89%) and threats/bribes (89%). Practices with lower than 80% agreement were as follows: praise (78%), child involvement in the kitchen (78%), pressure (78%), reasoning (67%), positive role modeling (67%) and encouragement (33%). The intraclass correlation coefficient was calculated as 0.95, indicating good reliability.

DISCUSSION:

The goal of this study was to create a tool for assessing and providing tailored feedback on caregiver feeding practices observed in video-recorded family meals. The tool developed as a part of this project demonstrated good face validity from experts, and acceptable inter-rater and test re-test reliability. Future interventions should assess the impact the tailored tool has on creating changes to parental feeding practices.

Face validity is an important component for tool development to ensure that the intended audience for the tool interprets the content as intended.⁴⁹ Feedback received from experts was helpful and informed necessary changes to the tool and corresponding operational definitions. The content and usability of the tool exceeded 80% prior to revisions, and thus, with majority of the feedback utilized, the tool content and usability likely improved. Most of the feedback received was related to the need to expand operational definitions to more clearly define practices. The feedback from experts prompted the merging of some of the practices, such as “pressure to eat” and “clean plate”. Receiving feedback from experts prior to coding

videos from the SFSH study and beginning validation was critical for the success of this tool. However, because some of the feedback was beyond the scope of this tool, not all of it was integrated into the final tool. For example, some experts suggested coding feeding practices seen with other children in the family, as well as having separate coding sheets for mothers and fathers. While these suggestions were important and merit further study, it was not an aim of the tool to understand differences in feeding practices used between children in the family, or differences in maternal or paternal uses of feeding practices. The changes made to the tool following feedback received by experts aided in improving the content and usability of the tool.

One additional change made to the operational definitions that was not associated with expert feedback was the expansion of the operational definition for encouragement to include encouraging child to express food likes and dislikes. One of the more frequent questions heard in the video-recorded meals was the parent asking the child whether they like their meal, or a specific component of the meal. In future studies, it would be beneficial to keep this as a separate construct independent from encouragement, since encouragement involves suggesting the child to consume food, rather than the expression of food preferences.

Inter-rater reliability examined how consistently the tool measured feeding practices between different raters. This was completed with three researchers, using ten videos total. The inter-rater reliability had an average percent agreement of 86.4% and intraclass correlation coefficient of 0.86, indicating good reliability. However, for practices that weren't commonly observed, such as child involvement in the kitchen which was only observed in two videos, raters received 100% agreement. This could

skew both percent agreement and the intraclass correlation coefficients to appear high, due to the fact that many of the practices did not occur frequently. For this reason, it is not surprising that some of the practices with the highest percent agreement were some of the least common to observe in a meal. The only practice which had 100% agreement was limited (or guided) choices. Not only did this practice occur infrequently (only observed in two of the ten videos used), but when it did occur, it was an undisputed and straightforward observation, such as the parent asking the child if they wanted milk or water with dinner. Our results are similar to that of Hughes et al., which found that the behaviors which occurred more often (verbal prompts, physically intervening, disapproving) had the lowest rate of agreement between raters, while less frequent behaviors had higher rates of agreement.⁵¹ On the other hand, practices and behaviors which did not occur as frequently had higher rates of agreement between raters.⁵¹

Test re-test reliability requires the researcher to view and code the same video at two separate timepoints, and has been used to validate others parental feeding measures.^{49,52} Test re-test reliability was completed by all three coders, with three randomly selected videos. Test re-test reliability had an intraclass correlation coefficient of 0.95 indicating good reliability. Similar to what was found with inter-rater reliability, this could be skewed to appear high since if a coder noted that a practice occurred 0 times the first time a video was watched, and 0 the second time, the practice were given 100% agreement.

Pressure and encouragement were two of the most common feeding practices observed across videos (occurring 1.93 and 2.90 times per meal respectively), which is

consistent in what has been found in other observational studies which have assessed feeding practices observed during family meals.^{15,53,54} While these practices were the most common to observe in a meal, they also had the lowest inter-rater agreement rates of all practices (75.1% and 66.9% respectively), which is again consistent with other studies.⁵¹ This likely is related to the difficulty associated with quantitatively counting instances of certain behaviors. For instance, if a mother has her child's food on a spoon and puts it up to his face, prompting him to eat, should that count as one or two instances of pressure? Future studies may want to differentiate between physical and verbal instances of pressure in order to capture finer tune details.

Furthermore, the differences between pressure and encouragement are nuanced and subjective. For instance, a mother spoon-feeding her child who is developmentally able to use his or her own utensil could count as pressure, even if the mother is playfully pretending the utensil is an airplane. However, the playful tone in the mother's voice may influence an individual to count the behavior as encouragement instead of pressure. Similarly, if a mother asks her child to "please eat this", it can be challenging to discern between the two practices, and the coder can be easily influenced by how they perceive the mother. In a 2014 study by Jansen et al., the practices of encouragement and pressure were actually together as "persuasive feeding" to prevent making the coders discern between the two practices.⁵⁵ As previously mentioned, other studies have chosen to only look at the "negative" practice of pressure, rather than focusing on both pressure and the "positive" practice of encouragement. The challenges of differentiating certain practices has been

acknowledged by others in the field,^{56,57} and similar to the present study, other studies have found pressure and encouragement to have lower levels of internal reliability.⁵⁸

Nutrition education was another feeding practice that was difficult to reliably code. The challenge of clearly conceptualizing nutrition education has been reported elsewhere in the literature.²⁶ In the preschool age group specifically where children are working on language acquisition, overt nutrition education may not be as utilized as in older age groups. For example, in one video a mother was helping her child to identify foods, which is considered nutrition education according to the operational definitions of this study, but simultaneously she was using this opportunity to teach her child the words in Spanish. The intent of the practice in this instance may have been driven by the mother's motivation for the child to learn Spanish rather than utilizing nutrition education and it is unclear if this matters. In another video, a mother explains to her daughter that molars help grind our food into smaller pieces. While the mechanical grinding of food is related to digestion and absorption, would this count as nutrition education? These ambiguities associated with nutrition education warrant further exploration in order to create an age-appropriate definition.

Following suggestions made by experts, the overall category of role modeling was separated into positive and negative role modeling. There were certain instances where the differences between what was considered positive or negative was clear, such as in one video where the mother makes a face of disgust in response to a food being served to the target child. However, for several of the instances, the decision of whether to include the behavior as positive or negative modeling was ambiguous. For example, in the operational definitions, the definition of negative role modeling

included eating unhealthy foods in front of the child. However, differentiating between unhealthy and healthy foods in a video-recorded meal is challenging, an issue which has been reported by others.⁵⁸ There was no clear definition for what was considered healthy or unhealthy, and certain foods may be difficult to assess without greater detail about meal preparation. For instance, if a parent is modeling the consumption of a pasta dish, one is not able to easily discern whether it is considered healthy or not, leaving it subject to the opinion of the coder. Future video coding tools may want to incorporate a component in which the parent details what was consumed at the meal, and how it was prepared. From there, standards could be created to assess the healthfulness of the meal served.

One of the strengths of this study is the use of Vaughn's proposed schema, as well as the incorporation of definitions from previous studies. One of the biggest challenges in this field of research is the inconsistency between the practices and behaviors examined, and thus, the fact that this study aligned the practices assessed with what has shown to affect child diet quality is a strength. The differences in the videos from the pilot and the SFSH study tested how the tool captured feeding practices in videos that differed in duration and quality. Several videos from the SFSH study were sent as clips that did not cover the duration of the meal. Since parents set up the video camera for the SFSH study, the video composition was less consistent than the pilot videos. Despite variances in duration and composition, the negligible differences in percentage agreement between the pilot and the SFSH study demonstrated the ability of the tool to code different types of video-recorded meal clips, which is a strength of the tool.

However, the development and validation of the tool has several shortcomings, the most significant of which is the challenge seen with coding pressure versus encouragement. Future tools for coding parental feeding practices should include an expansive and thorough operational definitions in order to standardize inter-rater and test re-test reliability. While this study deemed coders able to code independent once 90% agreement with trainer was achieved, this was accomplished with three hours of training total. Since average percent agreement for the ten videos was below 90%, future studies may want to consider more hours of training to minimize variance between coders, and to expose coders to a greater number of videos to practice with. Furthermore, the tool was only tested on a specific population of families in Rhode Island, and would need to be tested with other populations in order to demonstrate reproducibility. Furthermore, the study population ended up being more educated, with higher SES and more ethnic homogeneity (predominantly non-Hispanic) than expected prior to recruitment, which may affect reproducibility in other populations. Additionally, the small sample size and number of the videos in this study was limited, and therefore, did not have strong statistical power. Future studies should consider testing the tool in larger, more diverse sample, and examining constructs with a statistical approach, such as confirmatory factor analysis.

IMPLICATIONS FOR RESEARCH AND PRACTICE:

Video-recorded meals allow researchers to have a glimpse into the home meal environment, and provide an opportunity to see which practices caregivers use at home. While it is well-known that the feeding practices used with children impacts diet quality and eating behaviors, there is need to improve interventions. The tool

developed and validated as a part of this study is a promising first step in providing more tailored interventions which incorporate video clips of what is actually seen in the meal.

Table 1: Evidence-Based Rationale for the Positive Effect of Feeding Practices on Child Diet Quality and Eating Behaviors

Parental Feeding Practice	Why Considered Positive
<i>Encouragement</i>	<ul style="list-style-type: none"> • Encouragement is linked to higher consumption of fruits and vegetables³⁰
<i>Praise</i>	<ul style="list-style-type: none"> • Encouragement is linked to higher consumption of fruits and vegetables⁵⁹
<i>Reasoning/Nutrition Education</i>	<ul style="list-style-type: none"> • Provides rationale to why child should eat certain foods, thereby promoting autonomy⁵⁹ • May be associated with higher consumption of fruits and vegetables^{28,60}
<i>Child Involvement in Food Preparation</i>	<ul style="list-style-type: none"> • Keeps children interested in food and cooking¹¹ • Children more likely to try foods they are involved in preparing¹¹
<i>Positive Role Modeling</i>	<ul style="list-style-type: none"> • When child sees parent eating something, makes the child more interested in trying food⁸ • Linked to higher vegetable consumption⁶¹
<i>Child Served Self, or Directed How Much Served to Them</i>	<ul style="list-style-type: none"> • Helps develop the ability to listen to satiety and hunger cues³⁶

Table 2: Evidence-Based Rationale for the Negative Effect of Feeding Practices on Child Diet Quality and Eating Behaviors

Parental Feeding Practice	Why Considered Negative
<i>Restriction</i>	<ul style="list-style-type: none"> • Can increase child interest in restricted food^{21,62} • High levels associated with increased snacking⁶²
<i>Pressure to Eat/ Clean Plate</i>	<ul style="list-style-type: none"> • Can make child find pressured food less desirable¹⁷ • Can make child less likely to consume pressured food in future¹⁷ • Can have harmful effect of child’s ability to listen to hunger and satiety cues¹⁴ • Linked to lower fruit and vegetable consumption^{61,54}
<i>Threats</i>	<ul style="list-style-type: none"> • Can make food that is being offered less desirable⁶³ • Can undermine other motivation for child to eat desired⁶³ food and make child less willing to try new foods based on exposure only⁶³
<i>Bribes</i>	<ul style="list-style-type: none"> • Can make food that is offered as bribe (often a more palatable, less nutritious food)⁶³ • Can make food that is being offered less desirable⁶³ • Can undermine other motivation for child to eat desired food and make child less willing to try new foods based on exposure only⁶³
<i>Using Food To Control Negative Emotions</i>	<ul style="list-style-type: none"> • Linked to emotional eating later in life⁶⁴
<i>Negative Role Modeling</i>	<ul style="list-style-type: none"> • If child sees parent eating something, or doing a certain unhealthy behavior, makes child interested in doing the same thing
<i>Screen Time</i>	<ul style="list-style-type: none"> • Takes the focus of the meal away from eating⁶⁵

	<ul style="list-style-type: none"> • Can make child less interested in eating and trying new foods⁶⁵
<i>Child Did Not Serve Themselves</i>	<ul style="list-style-type: none"> • Allowing the child to serve themselves, or direct portion size, allow them to start listening to hunger and satiety cues⁵⁰
<i>Child Given Different Meal Than Family</i>	<ul style="list-style-type: none"> • Giving in to “picky eating” does not promote the expansion of the foods accepted by child^{17,54} • Children learn by modeling, and thus, having the same meal given to all in family is helpful in creating healthy eating behaviors^{23,63}
<i>Child Not Eating with Rest of Family</i>	<ul style="list-style-type: none"> • Children learn by modeling, and thus, having meals together is helpful in creating healthy eating behaviors⁶⁶

Table 3: Demographic Characteristics of Video-Recorded Caregivers

Measure		Frequency (%)
Sex	Female	7 (87.5)
	Male	1 (12.5)
Mean age (years)	30-39	6 (75.0)
	40-49	1 (12.5)
	50 or older	1 (12.5)
Ethnicity	Non-Hispanic	6 (75.0)
	Hispanic	2 (25.0)
Preferred Language	English	6 (75.0)
	Spanish	2 (25.0)
SES	Less than \$20,000	1 (12.5)
	\$20,000 to \$29,999	1 (12.5)
	\$30,000 to \$39,999	2 (25.0)
	\$40,000 to \$49,999	0 (0)
	\$50,000 or higher	4 (50.0)

Table 4: Quantitative Results of Survey Monkey Questionnaire

Survey Monkey Questionnaire Question:	Mean ± SD
On a scale of 1-5, how would you rate the usability of this tool for identifying parental feeding practices observed in a video-recorded family meal? <i>(This question seems to have been mis-formatted and allowed people to answer from 0-100)</i>	81.83 ± 11.67
On a scale of 1-5, how well do you believe this reflects the most important parental feeding practices that impact diet quality? <i>(This question seems to have been mis-formatted and allowed people to answer from 0-100)</i>	87.67 ± 13.98

Table 5: Results of Inter-Rater Reliability

Parental Feeding Practice	ID #										% Agreement per Practice
	Pilot 1	Pilot 2	Pilot 3	Pilot 4	Pilot 5	SFSH 1	SFSH 2	SFSH 3	SFSH 4	SFSH 5	
<i>Restriction</i>	0.33, 0.58 (67%)*	3.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.33, 0.58 (67%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	95.9%
<i>Pressure</i>	0.0, 0.0 (100%)	3.7, 0.58 (67%)	11, 4.7 (0.0%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	3.67, 0.58 (67%)	0.0, 0.0 (100%)	0.33, 0.58 (67%)	0.0, 0.0 (100%)	0.33, 0.58 (67%)	75.1%
<i>Threats/ Bribes</i>	0.0, 0.0 (100%)	0.0, 0.0 (100%)	7.0, 3.46 (67%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	95.9%
<i>Using Food to Control Negative Emotions</i>	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.33, 0.58 (67%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	83.4%
<i>Encouragement</i>	2.0, 0.0 (100%)	9.0, 2.65 (0%)	2.67, 0.58 (67%)	1.0, 0.0 (100%)	5.7, 1.2 (67%)	3.33, 2.31 (67%)	1.67, 1.15 (67%)	2.0, 1.0 (100%)	1.0, 1.0 (0%)	0.67, 1.15 (67%)	66.9%
<i>Praise</i>	0.0, 0.0 (100%)	8.33, 0.58 (67%)	0.67, 0.58 (67%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.33, 0.58 (67%)	0.0, 0.0 (100%)	91.8%
<i>Reasoning</i>	1.67, 0.58 (67%)	1.33, 0.58 (67%)	1.0, 0.0 (100%)	1.67, 0.58 (67%)	0.0, 0.0 (100%)	1.0, 0.0 (100%)	3.33, 1.15 (67%)	1.0, 1.0 (0%)	0.0, 0.0 (100%)	1.0, 0.0 (100%)	79.3%
<i>Child Involvement</i>	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	1.33, 0.58 (67%)	0.0, 0.0 (100%)	2.0, 0.0 (100%)	95.9%
<i>Limited/ Guided Choices</i>	1.0, 0.0 (100%)	1.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	100%
<i>Positive Role Modeling</i>	1.0, 0.0 (100%)	4.0, 1.0 (0%)	1.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	1.33, 0.58 (67%)	1.0, 0.0 (100%)	0.0, 0.0 (100%)	1.0, 0.0 (100%)	0.33, 0.58 (67%)	91.8%
<i>Negative Role Modeling</i>	1.67, 0.58 (67%)	0.0, 0.0 (100%)	4.67, 2.08 (0%)	0.0, 0.0 (100%)	1.0, 0.0 (100%)	0.0, 0.0 (100%)	0.33, 0.58 (67%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	0.0, 0.0 (100%)	95.9%
% Agreement/video	94.0%	63.7%	81.9%	97.0%	97.0%	88.0%	88.0%	84.9%	87.9%	81.9%	

*reported as mean, standard deviation (% Agreement)

Table 6: Average Number of Practices Occurring in Meal, Descending Order

Feeding Practice	Encouragement.	Pressure/ Clean Plate	Reasoning/ Nutrition Education	Positive Role Model	Praise	Threats/ Bribes	Negative Role Model	Restriction	Child Involvement. in Kitchen	Limited/ Guided Choices	Using Food to Control Negative Emotions
Avg # of times occurring per meal	2.9	1.93	1.2	0.97	0.93	0.80	0.60	0.37	0.33	0.20	0.03

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A. LITERATURE REVIEW

This literature review will provide background of the current consensus on research examining, observing and coding for parental feeding practices, in order to find an effective way to alter parental feeding practices to improve child diet quality. The sections of the literature review will include: parental feeding practices and relationship with child diet quality, existing measures to capture caregiver feeding practices, previous interventions that have improved child diet quality in preschool populations, measurements of parental feeding practices, how other studies have coded observed feeding practices and a conclusion that describes the remaining gaps in research.

Parental Feeding Practices and Relationship with Child Diet Quality

Parental feeding practices focus on the behaviors of parents while feeding their children at meals or snack-time.⁹ More specifically, they are the individual goal-oriented behaviors that parents use to influence what and how much a child consumes.¹⁰ The feeding practices that parents employ with their children have an effect on the immediate diet quality of their child during a specific meal,¹⁰⁻¹⁷ as well as more lasting predictors of diet quality through the development of diet habits,¹⁸⁻²¹ food preferences,^{19,20} and the ability to self-regulate hunger and satiety cues.^{5-7,11-13}

One challenge with the vast number of studies examining parental feeding practices is that studies can define a practice in different ways.¹⁴ In addition, some of the differences between parental feeding practices are nuanced; pressure and encouragement can appear similar, as both involve a parent influencing their child to try a food. Assessing the intention of the feeding practice and looking at the context of

the parental behavior is particularly important to distinguish ambiguous interactions. In order to overcome some of the challenges of defining parental feeding practices, Vaughn et al. (2016) proposed a framework whereby feeding practices are organized into three general categories: coercive control, autonomy support and structural feeding practices.¹⁴ Coercive control involves parents exhibiting control over their child's diet and includes practices such as restriction, pressure to eat, threats and bribes and using food to control negative emotions. The category of autonomy support involves empowerment of the child to have control over his or her diet and includes the following practices: encouragement, praise, reasoning, negotiation, child involvement in meal preparation and nutrition education. Structured feeding practices involve parental control of the food environment in order to influence child diet and includes: rules and limits, limited/guided choices, monitoring, establishment of meal and snack routines, modeling, accessibility and availability of food, as well as the unstructured practices of neglect and indulgence. For the current study, the categories proposed by Vaughn et al. will be used.

There has been a significant body of research examining which specific feeding practices positively and negatively affect child diet quality and health outcomes. The majority of the literature examining parental feeding practices has found coercive feeding practices increase eating habits that correspond with lower child diet quality.^{9, 14, 15} For example, parental use of restriction has been shown to increase child desire of restricted foods, higher consumption of snacks and subsequent weight gain.^{9, 14, 15} Use of the coercive practice of pressure to eat has also shown a negative effect on child diet quality, with high use of pressure linked to increase in

food neo-phobia and decrease in enjoyment and consumption of "pressured" food.¹⁶⁻¹⁸ Some studies have reported that use of pressure is correlated with lower child BMI, but researchers propose that this may be due to the fact that parents are more likely to pressure their child to eat if they have a lower BMI to begin with.^{9, 14, 15} Food-based threats and bribes are shown to generally decrease child diet quality by increasing preferences for the "bribe" food, decreases preference for the targeted food and may have a negative effect on appetite regulation later in life. On the contrary, non-food based incentives, such as stickers, are shown to increase preference for targeted food.¹⁴ Similarly to other coercive practices, using food to control negative emotions, such as offering a treat to appease the child during a tantrum is shown to lower diet quality, and may be linked to emotional eating later in life.¹⁴

Within the autonomy support practices, research supports that by increasing use of parental encouragement, there is a corresponding improvement in child diet quality through increasing fruit and vegetable intake and increasing diet variety.^{14, 19} Similarly, praise is generally shown to have a positive effect on child diet quality.^{14, 19} Child involvement in food preparation has been shown to increase fruit and vegetable intake and decrease fast food consumption.²⁰ In some studies, reasoning has been shown to increase fruit and vegetable intake.^{21, 22} There is a less clear consensus on the parental feeding practice of negotiation, however, one study did find that higher use of negotiation was positively associated with fruit and vegetable intake.²³ Additionally, the feeding practice of nutrition education remains fairly under-studied, and can be challenging to conceptualize in a meal setting.¹⁴ Nutrition education often can occur

alongside other practices, such as reasoning (e.g. "Eating your carrots will help you have good vision"), which can complicate assessing the practice during meals.¹⁴

The structural feeding practice often linked to high child diet quality is the use of modeling.¹⁵ When children see parents eating the same foods as what they are offered, it increases child interest in the food, as well as consumption.^{11, 24, 25} The majority of research examining modeling has looked specifically at healthy modeling; however, it also is possible for parents to model consumption of foods of poor nutrition quality.¹⁴ For many of the other structural practices, studies support that there is a benefit to some use of that practice, but too much use of that practice has an inverse association with child diet quality.^{26, 27}

Existing Measures to Capture Caregiver Feeding Practices

In order to capture parental feeding practices, many studies have used one of the many existing self-reported measures.⁵⁶ Self-reported measures allow researchers to assess practices and behaviors that may not occur in an observed meal and thus, can easily obtain a substantial amount of information from subjects.⁵⁶ While self-reported measures remain economical and easier to facilitate, they may also be subject to social desirability bias and may report greater use of positive parental feeding practices and less of more negative practices.^{16, 48, 56} Additionally, when it comes to parental feeding practices, it is possible some parents may be unaware of which practices they employ with their children. This may be avoided by the use of observational methods, which allow the researcher to interpret the practices without bias.¹⁶

There are less interventions that utilize observational methods to assess parental feeding practices due to time and monetary constraints.^{16, 67} Additionally,

since there is no “gold-standard” tool or method for coding observed parental feeding practices, researchers have used a variety of practices to assess parental feeding. Typically, researchers choose to observe the family in the home-setting to allow researchers to understand the home environment of participants and to encourage participants to act naturally.^{16,67} Some studies have utilized live coders to observe during the meal, however, many choose to ask the family to take a video instead to allow the family to act more naturally during mealtime, as well as to prevent the coder from missing an interaction.⁵⁶ Commonly, interactions are coded using adapted versions of self-reported questionnaires, however, since they are developed for self-reported use, they may not accurately reflect what can be observed in a meal.^{48,51,56} An additional problem is that many of the coding tools are labor-intensive and require significant training to complete, which can be used to generate a significant amount of data but will increase the time and training burden for the researcher coding the video.^{51,68} As with all observational methods, there may also be concern that participants may alter their behavior if they know they are being recorded.

Previous Interventions to Improve Child Diet Quality in Preschool-Aged Population

Given the rise in childhood obesity, many interventions have focused on improving child diet quality at an early age.²⁸ This is due to the surge in the number of preschoolers considered overweight or obese, as well as the increasing body of literature that links preschool weight status with adult weight and development of Type 2 diabetes mellitus.⁵ Additionally, a literature review conducted by Kader et al. (2015) found that health behavior interventions conducted with preschool aged

children were more effective than interventions at other ages.²⁸ Some previous interventions have been moderately successful at improving child diet quality in the preschool-aged population, with success often measured through changes in intake and behavior. Despite that the outcomes are focused on the child, parents are generally remain the target as the principal agents of change.²⁹ The MEND 2-4 intervention was a 10-week obesity-prevention intervention consisting of weekly 90-minute workshops for the parent and preschool-aged child.³⁰ This intervention resulted in an increase in vegetable intake and decrease in food neophobia.³⁰ The Guelph Family Health Study was a home-based obesity-prevention intervention, which used multiple home visits from a health educator and tailored materials with the goal of improving child diet quality.³¹ The Guelph Family Health Study reported an increase in fruit and fiber intake over the course of the intervention.³¹ The ANDALE Pittsburgh study was another home-based intervention.³² The ANDALE study focused on Latino preschool-aged children and their parents, and used a community health worker to deliver culturally-appropriate, weekly, tailored lessons aimed at promoting a healthy weight.³² This intervention similarly saw an increase in child fruit and vegetable intake, but also saw a decrease in saturated fat and added sugar intake.³²

Measurement of Parental Feeding Practices

In order to capture parental feeding practices, studies have used one of the many existing self-reported measures, such as Musher-Eizenmann's Comprehensive Feeding Practices Questionnaire (CFPQ) or Birch's Child Feeding Questionnaire (CFQ). Self-reported measures are easier to conduct and require less time and money than observational methods.³³ Self-reported measures additionally allow researchers to

assess practices and behaviors that may not occur in an observed meal and thus, can easily obtain a substantial amount of information from subjects.³³ While self-reported measures remain economical and easier to facilitate, they may also be subject to social desirability bias and may report greater use of positive parental feeding practices and less of more negative practices.³³⁻³⁵ Additionally, when it comes to parental feeding practices, it is possible some parents may be unaware of which practices they employ with their children. This may be avoided by the use of observational methods, which allow the researcher to interpret the practices without bias.³⁵

How Other Studies Have Coded Observed Parental Feeding Practices

There are less interventions that utilize observational methods to assess parental feeding practices due to time and monetary constraints.^{26, 35} Generally, meals are observed in the home setting, though there are studies that use other locations, as seen in a study completed by Farrow et al., which examined participants in a preschool setting.³⁶ However, the home setting allows researchers to understand the home environment of participants and encourages participants to act naturally.^{26, 35} Additionally, some studies utilize a researcher coding live, whereas many rely on an individual to set up a video-recording device to tape the meal.³⁷ While the use of video-recording technology may cause technical problems such as lost audio or a blurry video, it prevents participant behavior from being affected by the presence of a researcher, as well as allowing the researcher to re-watch clips to ensure no feeding practices were missed.³³

Since there is no "gold-standard" of coding observed parental feeding practices, researchers have employed a variety of different methods. Pesch et al. (2017)

developed a list of methodological considerations for coding family meal behaviors and found that there are four major ways that researchers choose to code observed behaviors: binary coding, frequency of behaviors, duration coding and interval coding.³³ Binary coding would be used to code a behavior that is either present or absent, such as determining whether the TV was on during the meal.³³ Coding for the frequency of behaviors determines how often a behavior is seen.³³ Duration coding considers the length of certain behaviors. Interval coding determines a set interval, such as 2-minute period, and looks at all behaviors observed within that period.³³

The existing tools used to assess observed parental feeding practices utilize a combination of the coding types described by Pesch.³³ The BATMAN is one of the tools that combines these coding types and is one of the earliest tools for coding parental feeding practices at mealtimes.³⁷ Researchers utilize an interval coding schema, where child behavior is coded every 10 seconds. The researchers then examine how family members either encourage or discourage observed behavior, and then how the child reacts to parental response to behavior.³⁷ While this tool has the potential to obtain a significant amount of information from the observed family meal, it would require a very well-trained researcher to be able to accurately utilize.

Commonly, videos are coded using adapted versions of self-reported questionnaires. The Family Meal Coding System (FMCS) developed by Haycraft adapted Birch's Child Feeding Questionnaire to be used to code observed feeding practices in home meal settings.³⁴ The four practices observed in the FMCS were pressure, physical prompt, restriction and use of incentives/conditions.³⁴ In this study, researchers coded the FMCS in real-time and counted the frequency and duration of

each behavior. One limitation of coding with the FMCS is that only coercive feeding practices are considered; thus, this ignores any positive feeding practices that are observed within the meal, such as positive role modeling.

Similar to Haycraft, Hughes adapted the self-reported Caregiver's Feeding Style Questionnaire (CFSQ) into the Feeding Behavior Coding System (FBCS) to be used in observational setting.²⁷ While the focus of this particular coding system was on determining parental feeding style, parental feeding practices were still assessed and documented using this tool. Unlike the FMCS, the FBCS examined both negative and positive feeding practices.²⁷ The FBCS broke down the meal into 2-minute segments, and assessed how much each of the 25 traits were present in that period using a Likert-scale of 1 to 5 (with 1 indicating that the trait was not at all present, to 5 indicating a great deal present).²⁷ Similar to the BATMAN tool, the FBCS can be used to generate a significant amount of data, yet increases the time and training burden for the researcher coding the video.

While there are a variety of tools that have the ability to assess observed parental feeding practices, there are no existing tools to our knowledge that were created with the intention of providing feedback to parents on the positive and negative practices observed within the video. The tool to be developed as a part of this project will be novel in the sense that it will assess parental feeding practices and video-tailored feedback will be provided using the same tool.

Conclusion

There is a need to improve child diet quality to prevent chronic diseases. This may be accomplished through improving parental feeding practices. To improve parental

feeding practices, video-recorded family meals would help better assess which parental feeding practices parents are being used. Providing parents video-tailored feedback concurrent with motivational interviewing could better improve parental feeding practices since it would be relevant to the family and could show parents practices that they may be unaware that they use. This needs to be a process that families find useful and easy. The creation of a reliable, valid, easy-to-use instrument to both assess video-recorded meals and to provide parental feedback would expand on current existing measures, and aid in the success of future interventions.

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**B. ONLINE QUESTIONNAIRE SENT TO EXPERTS FOR FACE
VALIDITY**

1. On a scale of 1-5, how would you rate the usability of this tool for identifying parental feeding practices observed in a video-recorded family meal?
2. On a scale of 1-5, how well do you believe this reflects the most important parental feeding practices that impact diet quality?
3. Are there any feeding practices not captured on this tool which you believe are important in providing feedback to help parents improve their child's diet quality?
4. If you answered "yes" to the previous question, which feeding practices would you recommend including?
5. Are the operational definitions for the selected feeding practices appropriate?
6. If you answered "no" to the previous question, which definitions would you change and how?
7. Are there any other modifications/changes or suggestions you would make to improve this tool?
8. Other comments:

C. INITIAL TOOL SENT TO EXPERTS FOR FACE VALIDITY

ID#:	Location of meal:	Who is present for meal:	Meal Start and End Time:	Coded by:	Date:	
What foods are being consumed?						
Observed Parental Feeding Practices		Primary Parental Feeder (to TC)				
		Count:	Time Observed	Comment/Description:	Total:	Key:
Coercive Control Practices	1. Restriction				Coercive Control Practices Total:	
	2. Pressure					
	3. Threats/Bribes					
	4. Using Food to Control Negative Emotions					
	5. "Clean Plate"					
Autonomy Support Practices	1. Encouragement				Autonomy Supporting Practices Total:	
	2. Praise					
	3. Nutrition Education					
	4. Reasoning					
	5. Negotiation					
				Time Observed:		
Structure Practices	1. Role Modeling				Structure Practices Total:	
	2. Was the TV on during meal?	<input type="radio"/> No	<input type="radio"/> Yes, observed and heard	<input type="radio"/> Yes, heard only		
	3. Were cell phones/tablets used during meal?	<input type="radio"/> No	<input type="radio"/> Yes, seen and used during meal	<input type="radio"/> Seen but not used		
	4. TC* selected own portions/served self?	<input type="radio"/> All foods	<input type="radio"/> Some foods	<input type="radio"/> Foods portioned/served by parents		
	5. Did TC eat same meal as other family members?	<input type="radio"/> Yes	<input type="radio"/> Initially given a different meal	<input type="radio"/> TC initially given same meal, then given a replacement meal		
	6. Did TC get up from table from beginning of meal to end?	<input type="radio"/> No	<input type="radio"/> Yes, number of times _____			

*TC = target child

D. INITIAL OPERATIONAL DEFINITIONS SENT TO EXPERTS

R34 Coding Tool Operational Definitions

- Purpose: This tool should be used to code videos of family meals for the purpose of identifying areas for feedback to help improve parental feeding practices.
- For the top of the coding sheet (who is present for meal, what foods are being consumed, etc.) the coder should identify to the best of their ability. Depending on the how the video is set up, it may not be possible to clearly see who is at the meal, or what is being consumed.
- Feeding practices should be coded for each time observed. For instance, if parent pressures child to try food item, child refuses, and parent repeats prompt, pressure should be coded twice.
- Only code the parental practices that are used with the “target child”. The parents will be instructed to indicate who the “target child” is at the start of the video (i.e. “This is Emily, who is in the red shirt”). Any parental feeding practices used with siblings should not be coded.
- Certain observed feeding practices may be somewhat ambiguous (i.e. deciding between pressure and encouragement). It is important to consider the nature of parental control in the situation to properly assess the observed practice.
- Once the video has been coded, one video clip will be used provide feedback “on what they are doing well” and one video clip will be used for feedback on “what they could be improving on”. The selection of these feeding practice video clips may be:
 - A certain behavior that occurs multiple times in a meal
 - A specific interaction that stands out in a positive or negative way
- The selection of these feeding practice video clips should be:
 - Something parents are able to change
 - A feeding practice that has shown to be associated with child diet quality

	Variable Coded	Definition
Coercive Control Practices	1. Restriction	<p>Limiting children’s consumption of foods, for example by not letting them have any more cheese or garlic bread, or by restricting the amount of biscuits the child is allowed to eat. This can be verbal “you can’t have any more” or physical restriction, such as moving the garlic bread away.¹</p> <p>Note: this does not refer to controlling or limiting portion sizes which are given to the child.</p>
	2. Pressure	<p>Parental verbally prompting child to consume more food, such as: “eat a little bit more”, “have some peas” or “eat three more mouthfuls”. Includes gentle use of coercion, such as: “just eat the meat”, or “try a mouthful”.¹</p>
	3. Threats/Bribes	<p>Parent threatens to take/takes something away for misbehavior or promises/offers something to the child in return for desired behavior. Threats and bribes can be used to manage child’s behavior for the purposes of general obedience or behaviors specific to eating. Threats and bribes can be food based, but those around eating behaviors may also be nonfood based.²</p>
	4. Using Food to Control Negative Emotions	<p>Parent uses food to manage or calm the child when he/she is upset, fussy, angry, hurt, or bored²</p>

	5. "Clean Plate"	Parent pressures child to finish all of the food on their plate, or to finish a certain food item on plate before eating something else. ²
Autonomy Support Practices	1. Encouragement	Parent suggests or offers specific foods to the child as a prompt for the child to eat the target foods. Parents may also command or direct their child to eat, but prompts come without a consequence for noncompliance. ²
	2. Praise	Parent provides positive reinforcement by verbally commending the child for eating specific foods or trying new foods. ²
	3. Nutrition Education	The explanations selected may educate the child about foods' nutritional qualities, such as the benefits of eating healthy foods or the consequences of eating unhealthy ones. ²
	4. Reasoning	Parent uses logic to persuade child to change their eating behavior. Often involves trying to convince the child of the food's positive attributes or, in the case of unhealthy foods, trying to convince them of the food's negative attributes. ²
	5. Negotiation	Parent and child have back-and-forth discussion on the amount and type of food the child consumes. ²
Structure Practices	1. Role Modeling	Parent purposefully demonstrates healthy food choices and eating behaviors to encourage similar behaviors in the child; or parent unintentionally

		exhibits unhealthy eating behaviors in front of the child. ²
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2. Vaughn, A. E., Ward, D. S., Fisher, J. O., Faith, M. S., Hughes, S. O., Kremers, S. P. J., ... Power, T. G. (2016). Fundamental constructs in food parenting practices: A content map to guide future research. *Nutrition Reviews, 74*(2), 98–117. <https://doi.org/10.1093/nutrit/nuv061>

E. UPDATED TOOL FOLLOWING FACE VALIDITY FEEDBACK

ID#:	Location of meal:	Who is present for meal:	Meal Duration:	Coded by:	Date:	
What foods are being consumed?						
Observed Parental Feeding Practices		Primary Parental Feeder (to TC)				
		Count:	Time Observed	Comment/Description:	Total:	Key:
Coercive Control Practices	1. Restriction				Coercive Control Practices Total:	
	2. Pressure/ "Clean Plate"					
	3. Threats/Bribes					
	4. Using Food to Control Negative Emotions					
Autonomy Support Practices	1. Encouragement				Autonomy Supporting Practices Total:	
	2. Praise					
	3. Reasoning/ Nutrition Education					
	4. Child Involvement in Meal Preparation					
	5. Limited/ Guided Choices					
			Time Observed	Comment/Description:		
Structure Practices	1. Positive Role Modeling				Structure Practices Total:	
	2. Negative Role Modeling					
	2. Was the TV on during meal?	<input type="radio"/> No <input type="radio"/> Yes, observed and heard <input type="radio"/> Yes, heard only				
	3. Were cell phones/tablets used during meal?	<input type="radio"/> No <input type="radio"/> Yes, seen and used during meal <input type="radio"/> Seen but not used				
	4. How was food served to TC?	<input type="radio"/> Child served most/all foods <input type="radio"/> Parents served most/all foods <input type="radio"/> Both child and parent served TC <input type="radio"/> Parent served child, but child directed what and how much was served				
5. Did TC eat same meal as other family members?	<input type="radio"/> Yes <input type="radio"/> Initially given a different meal <input type="radio"/> TC initially given same meal, then given a replacement meal <input type="radio"/> Parent not eating meal with child					

*TC = target child

F. UPDATED OPERATIONAL DEFINITIONS FOLLOWING FACE VALIDITY FEEDBACK

R34 Coding Tool Operational Definitions

- Purpose: This tool should be used to code videos of family meals for the purpose of identifying areas for feedback to help improve parental feeding practices.
- For the top of the coding sheet (who is present for meal, what foods are being consumed, etc.) the coder should identify to the best of their ability. Depending on the how the video is set up, it may not be possible to clearly see who is at the meal, or what is being consumed.
- Feeding practices should be coded for each time observed. For instance, if parent pressures child to try food item, child refuses, and parent repeats prompt, pressure should be coded twice.
- You may see an instance when two practices are used at the same time (i.e. “If you don’t finish all the food on your plate, you can’t watch television tonight”, which would be considered both “pressure” and “threats”). You should code both practices in such case.
- Only code the parental practices that are used with the “target child”. The parents will be instructed to indicate who the “target child” is at the start of the video (i.e. “This is Emily, who is in the red shirt”). Any parental feeding practices used with siblings should not be coded.
- Certain observed feeding practices may be somewhat ambiguous (i.e. deciding between pressure and encouragement). It is important to consider the nature of parental control in the situation to properly assess the observed practice. What was the parent’s tone when speaking with the child? What do you believe the intent of the practice was? Thinking about the context of the practice is beneficial when deciding between practices.
- Once the video has been coded, one video clip will be used provide feedback “on what they are doing well” and one video clip will be used for feedback on

“what they could be improving on”. The selection of these feeding practice video clips may be:

- A certain behavior that occurs multiple times in a meal
- A specific interaction that stands out in a positive or negative way
- The selection of these feeding practice video clips should be:
 - Something parents are able to change
 - A feeding practice that has shown to be associated with child diet quality

	Variable Coded	Definition
Coercive Control Practices	1. Restriction	<p>Limiting children’s consumption of foods, for example by not letting them have any more cheese or garlic bread, or by restricting the amount of biscuits the child is allowed to eat.</p> <p>This can be verbal “you can’t have any more” or physical restriction, such as moving the garlic bread away.¹ This includes controlling or limiting portion sizes which are given to the child. “Only one serving of pasta tonight”</p>
	2. Pressure/ “Clean Plate”	<p>Parental verbally prompting child to consume more food, such as: “eat a little bit more”, “have some peas” or “eat three more mouthfuls”.¹</p> <p>This can also include the “clean plate” practice, where a parent pressures child to finish all of the food on their plate, or to finish a certain food item on plate before eating something else.²</p>

		<p>This also includes use of physical pressure, such as a parent spoon feeding child.</p> <p>Pressure differs from encouragement in that there is forcefulness exhibited (i.e. “eat some peas” as pressure versus “you should try some peas” as encouragement). It’s important to consider the context of the parental behavior.</p>
	3. Threats/Bribes	<p>Parent threatens to take/takes something away for misbehavior or promises/offers something to the child in return for desired behavior. Threats and bribes can be used to manage child’s behavior for the purposes of general obedience or behaviors specific to eating.</p> <p>Threats and bribes can be food based, but those around eating behaviors may also be nonfood based.² “You can’t watch TV tonight if you don’t eat your dinner” “If you finish all of your peas, we can go to the zoo tomorrow”</p>
	4. Using Food to Control Negative Emotions	<p>Parent uses food to manage or calm the child when he/she is upset, fussy, angry, hurt, or bored</p> <p>² Ex: parent offering child juice to calm them from a tantrum</p>
Autonomy Support Practices	1. Encouragement	<p>Parent suggests or offers specific foods to the child as a prompt for the child to eat the target foods. Parents may also command or direct their child to eat, but prompts come without a consequence for noncompliance.² Additionally,</p>

		<p>there is a lack of force exhibited by parents when making suggestion or offer. “You should try these peas!”</p> <p>Encouragement could also be encouraging the child to express their food “likes” and “dislikes”. “Which is your favorite food on your plate?” “It’s okay if you don’t like the peas, but I’m so glad you tried it!”</p>
	2. Praise	<p>Parent provides positive reinforcement by verbally commending the child for eating specific foods or trying new foods.² “Good job eating your vegetables today!” “I’m so proud you tried the carrots tonight!”</p>
	3. Reasoning/ Nutrition Education	<p>Parent uses logic to persuade child to change their eating behavior. Often involves trying to convince the child of the food’s positive attributes or, in the case of unhealthy foods, trying to convince them of the food’s negative attributes. ² “You loved this meal last time we had it!” “Look how colorful this salad is!”</p> <p>This overlaps with nutrition education, where a parent educates the child about foods’ nutritional qualities, such as the benefits of eating healthy foods or the consequences of eating unhealthy ones. ² “These carrots will help your eyesight!”</p>
	4. Child Involvement in Meal Preparation	<p>Child is involved in some level of meal preparation. This could include tasks such as helping to cook or shop, or tasks such as setting</p>

		<p>the table.</p> <p>In a video-recorded meal, may not actually see the involvement, but it may be mentioned by family during meal. “You did such a good job tearing the lettuce for dinner tonight!”</p>
	5. Limited/ Guided Choices	<p>Parent allows child to choose between two healthy options.</p> <p>“Would you like water or milk for dinner tonight?” “Would you like carrots or broccoli as a vegetable tonight?”</p>
Structure Practices	1. Positive Role Modeling	<p>Parent purposefully demonstrates healthy food choices and eating behaviors to encourage similar behaviors in the child. ²</p> <p>Healthy modeling may include comments like “Wow the vegetables are so good!”.</p>
	2. Negative Role Modeling	<p>Parent unintentionally exhibits unhealthy eating behaviors in front of the child. ²</p> <p>Unhealthy modeling includes comments such as: “I don’t like eggplant, so I’m not going to eat that”, or behaviors such as drinking soda at the dinner table.</p>

1. Haycraft, E. L., & Blissett, J. M. (2008). Maternal and paternal controlling feeding practices: Reliability and relationships with BMI. *Obesity, 16*(7), 1552–1558. <https://doi.org/10.1038/oby.2008.238>
2. Vaughn, A. E., Ward, D. S., Fisher, J. O., Faith, M. S., Hughes, S. O., Kremers, S. P. J., ... Power, T. G. (2016). Fundamental constructs in food parenting practices: A content map to guide future research. *Nutrition Reviews, 74*(2), 98–117. <https://doi.org/10.1093/nutrit/nuv061>

G. COMMUNITY HEALTH WORKER FEEDBACK FORM

H. ID#:	General Information about the Family Meal Observed:

Video Clip #1:	What Kind Of Feeding Practice is Observed?	What is pertinent about what was observed?

Video Clip #2:	What Kind Of Feeding Practice is Observed?	What is pertinent about what was observed?

Coercive Behavior Feeding Practice	Why Considered Positive/Negative
Restriction	We saw in the video that you used this some restriction of _____. This can be unsuccessful when trying to prevent your child to eat a specific food, as it may make your child want the food you are restricting even more. Instead, consider providing another healthier choice and/or an explanation as to why you are restricting the food.
Pressure to Eat	We saw in the video that you might have tried to use some pressure to make your child eat _____. This may make your child find the food that you are pressuring them to eat less enjoyable. This may also make your child less likely to eat the pressured food in the future. Instead try to encourage them to give the food a try, and continue to “model” healthy eating behaviors at meal times.
Clean Plate	We saw in the video that you encouraged your child to eat all the food on his/her plate. This can have a harmful effect on your child’s ability to listen to “hunger” and “fullness” cues later in life. Instead, consider offering smaller portions and allowing your child to ask for more if they are still hungry.
Threats	We saw in the video that you tried to have your child _____ by _____. When you offer a food as a “threat”, it may make your child enjoy that food less. Instead try to encourage them to give the food a try, and continue to “model” healthy eating behaviors at meal times.

Bribes	We saw in the video that you bribed your child to eat _____ by _____. When you offer a food as a “bribe”, it may make the food that you are trying to offer less desirable and make the “bribe” food more desirable. Instead, consider offering a non-food based incentive, like a sticker, to encourage your child to eat the food, or just praise child verbally.
Autonomy Support Practices	Why Considered Positive/Negative
Encouragement	In the video, we saw you encourage your child to eat _____. This is a great practice to use to help your child consume healthy foods. Children who are encouraged to eat a healthy diet in meal time eat more fruits and vegetables and have an overall more varied diet.
Praise	In the video, we saw you praise your child for the consumption of _____. This is a great practice to use to help your child consume healthy foods. Children who are praised a lot for their healthy eating behaviors in meal time eat more fruits and vegetables and have an overall more varied diet.
Reasoning/ Nutrition Education	In the video, we saw you _____. This is a good practice to use with your child, as it shows that it’s important to consider the healthfulness of the foods we eat!
Child Involvement in Food Preparation	In the video, we saw/heard that your child was participating in food preparation. This is a good practice to use with your child, as it keeps them interesting in food

	and cooking, and encourages them to try the foods they cook with you!
Structure Support	Why Considered Positive/Negative
Positive Role Modeling	We saw in the video that you ate “healthy” foods in front of your child. This is very helpful increase your child’s fruit and vegetable intake, as when they see Mom eat something, they want to try it too! It seems to also help children be less hesitant to try new foods and helps to expand the variety they have in their diet.
Negative Role Modeling	We saw in the video that you ate “unhealthy” foods in front of your child. Since children want to drink/eat what Mom does, that behavior can encourage their consumption of the same foods! Instead, try to remember that your child is always watching you during meal times, and model by eating the foods/practicing the behaviors you want them to follow.
Screen Time	We saw in the video that you/your child was using _____ during the meal times. This can take the focus of the meal away from eating and may make your child less interested in eating/trying new foods. Instead, try limiting meal-time distractions to allow everyone focus on eating and each other.
Child Did Not Serve Themselves	We saw in the video that your child did not serve themselves. Allowing the child to serve themselves can actually be very helpful to develop an understanding of their “hunger” and “fullness” cues. While it may be tricky at first, especially if you have a child who does not eat well, try allowing them to serve themselves!

Child Served Self	We saw in the video that your child served themselves during the meal. This is a great practice to use with your child, as it lets them be in charge of how much they are eating. This lets them develop the ability to listen to “hunger” and “fullness” cues.
Child Given Different Meal Than Family	We saw in the video that your child ate a different meal than other family members. Offering and allowing your child to eat the same foods as the rest of the family is important to help expand the foods your child eats!
Child Not Eating with Rest of Family	We saw in the video that your child was not eating with other family members. Family meal times are an important time for family bonding and meal time exploration. Try to make a routine of having meals together most nights of the week!

H. STRONG FAMILIES START AT HOME CODING TRAINING MANUAL

Necessary Materials:

- Intervention Coding Sheet
- Control Coding Sheet
- Intervention Operational Definitions (none for control)
- Intervention Community Health Worker Feedback Sheet
- Control Community Health Worker Feedback Sheet

Video Coding Purpose: For the SFSH study, we are asking families to provide videos of the target child either eating a meal or reading/looking at a book with a family member, depending on which group they are assigned to. For both groups, we will be selecting two video clips to use in a motivational interviewing session with the community health worker and the parent. One video clip should be a positive clip, or something that the parent is doing well, and the other clip should be something that the parent could improve upon. This is especially important in the healthy meals group, which is the main area of focus for our study.

In order to correctly identify feeding practices and choose “best” and “worst” practices, it is essential to have a good understanding of the literature:

Essential Literature:

- Vaughn, A. E., Ward, D. S., Fisher, J. O., Faith, M. S., Hughes, S. O., Kremers, S. P. J., ... Power, T. G. (2016). Fundamental constructs in food parenting practices: A content map to guide future research. *Nutrition Reviews*, 74(2), 98–117. <https://doi.org/10.1093/nutrit/nuv061>
- Musher-Eizenman, D. R., Goodman, L., Roberts, L., Marx, J., Taylor, M., & Hoffmann, D. (2018). An examination of food parenting practices: structure, control and autonomy promotion, (9).
<https://doi.org/10.1017/S1368980018003312>

Additionally, it's beneficial to familiarize yourself with the Operational Definitions for the intervention groups so that you can quickly identify the behaviors. Coding the control videos is considerably more straight-forward with more easily identifiable behaviors (ex: parents asks child question about the story).

Once the videos are coded, we will need to fill out a feedback sheet that we will share with the community health worker. In that sheet, we will make note of some general information about the meal/reading activity, as well as what is seen in each clip, and why the behavior in that clip can be seen as positive or negative. On the CHW forms for both the control and intervention groups, there is generic feedback you can give for each practice. You will likely need to alter the feedback to make it more specific to what is seen in the clip, but it will give you a good idea of where the research lies.

Coding Intervention Videos:

- For the top of the coding sheet (who is present for meal, what foods are being consumed, etc.) the coder should identify to the best of their ability. Depending on the how the video is set up, it may not be possible to clearly see who is at the meal, or what is being consumed.
- Feeding practices should be coded for each time observed. For instance, if parent pressures child to try food item, child refuses, and parent repeats prompt, pressure should be coded twice.
- You may see an instance when two practices are used at the same time (i.e. “If you don’t finish all the food on your plate, you can’t watch television tonight”, which would be considered both “pressure” and “threats”). You should code both practices in such case.
- Only code the parental practices that are used with the “target child”. The parents will be instructed to indicate who the “target child” is at the start of the video (i.e. “This is Emily, who is in the red shirt”). Any parental feeding practices used with siblings should not be coded.
- Certain observed feeding practices may be somewhat ambiguous (i.e. deciding between pressure and encouragement). It is important to consider the nature of parental control in the situation to properly assess the observed practice. What was the parent’s tone when speaking with the child? What do you believe the intent of the practice was? Thinking about the context of the practice is beneficial when deciding between practices.

- Once the video has been coded, one video clip will be used provide feedback “on what they are doing well” and one video clip will be used for feedback on “what they could be improving on”. The selection of these feeding practice video clips may be:
 - A certain behavior that occurs multiple times in a meal
 - A specific interaction that stands out in a positive or negative way
- The selection of these feeding practice video clips should be:
 - Something parents are able to change
 - A feeding practice that has shown to be associated with child diet quality

Coding Control Videos

- As mentioned earlier, the coding of the control videos should be more straightforward than the feeding videos.
- Each practice should be coded for each time observed.
- Only code the parental practices that are used with the “target child”.
- Once the video has been coded, one video clip will be used provide feedback “on what they are doing well” and one video clip will be used for feedback on “what they could be improving on”. The selection of these reading video clips may be:
 - A certain behavior that occurs multiple times in a meal
 - A specific interaction that stands out in a positive or negative way

- For the reading videos, it may be more challenging to pick an overtly negative clip, as many of the negative behaviors are absence of the positive behaviors (i.e. parent does not ask the child questions). In that case, you may select two positive behaviors. In the case of no obvious positive behaviors, please find something positive to show, even if it is not one of the listed as a positive behavior (ex: endearing moment between mom and child).

Protocol for video coding:

1. Project manager will alert coders when a new video is uploaded to the server.
2. Prior to watching the video, have Operational Definitions and Coding Tool readily accessible. While the coder will have the Operational Definitions available to them during the coding process, it is important that they are comfortable with identifying the different practices.
3. Watch video and fill out coding sheet. It is likely that the video may need to be paused multiple times while coding, and certain clips may need to be re-watched if the parental practices seem ambiguous. For further directions on when to code, refer to the directions on the top of the Operational Definitions sheet.
4. While watching the video, note if there is a specific interaction that stands out in a positive or negative way, or if a behavior occurs multiple times within a meal. If there is not a positive and negative clip that stands out, use best judgment to select a clip.

5. Follow below protocol to edit the video so it contains only the “positive” and “negative” clips.
6. Fill out the CHW Feedback Sheet by writing a quick overall description of the meal at the top of the sheet. Mention anything that may be beneficial for the CHW to know about the meal (Remember that the CHW will not be viewing the full video).
7. Briefly describe what practice the video clip is showing.
8. Copy and paste the appropriate sample feedback. Modify as necessary so that feedback is specific to what is observed in the video, and upload to the CHW’s folder on the Google Drive.
9. Go onto RedCap application, and copy the information from coding tool onto the “Video Coding” tab.

Protocol for video editing using iMovie:

1. In order to edit the video with the positive and negative clip, import the entire video into iMovie.
2. Create a new project and name it StudyID_VideoClips_1 or StudyID_VideoClips_2.
3. When in the “My Media” tab of the “Projects” section, drag the clip to the bottom half of the screen (it should be a lighter gray than the top).
4. Trim the video so it only includes the desired positive clip by moving the bidirectional arrow cursor that will appear at the front and end of the clip.

5. Add a title slide that says “Clip 1” before the video clip. Find this by clicking the “Titles” tab and dragging the desired title to the bottom half of the screen.
6. Repeat Step 5 to create a title slide that says “Clip 2” following the first positive video clip.
7. Repeat steps 3 and 4 to trim the clip to only include the desired negative video clip.
8. Export the video by going to the “File” tab, then “Share”, then “File”. The video clips will then be downloaded as a .mov

I. INSTRUCTIONS FOR VIDEO RECORDING ACTIVITY FOR CAREGIVERS ENROLLED IN INTERVENTION



Activity Video-Taping Directions:

- We are asking video you to send us a video recording of you and your child so that we can give you feedback that is specific to you and your family
- Make sure that you set up the tripod in a place where both you, your child and the activity (either reading or eating a meal, depending on your group assignment) can be viewed.
- Start the video recording before the activity starts and wait until it's over until stopping the camera.
- Remember, we are not judging or grading you on these activities, but are just trying to get an accurate idea of what it's like during reading-time or meal-time in your household so we can give you feedback just for your family.
- Please share the video with strongfamilies@etal.uri.edu or WhatsApp: 401-542-9105.



Direcciones de grabación para la actividad de video:

- Le pedimos que nos envíe un video de usted y su hijo/a para que podamos darle comentarios que sean específicos para usted y su familia.
- Asegúrese de configurar el trípode en un lugar donde se pueda ver tanto usted como su hijo/a (ya sea leyendo o comiendo una comida, dependiendo de su grupo).
- Inicie la grabación de vídeo antes de que comience la actividad y espere hasta que termine antes de que detenga la cámara.
- Recuerde, **no estamos juzgando o calificando cómo usted hace estas actividades.** Queremos entender que esta pasando en su hogar para poder darle sugerencias específicas para su familia.
- Por favor, comparta el vídeo con strongfamilies@etal.uri.edu o WhatsApp: 401-542-9105.

