

Differences and Agreement in Perception of Child Picky Eating Among Center- and Home-Based Childcare Providers and Parents and Its Impact on Utilized Mealtime Strategies

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ABSTRACT: Picky eating is a problematic eating behavior caregivers may encounter with children under their care. A picky eater (PE) is typically characterized as consuming a narrow range of food, as well as rejecting several food items. Much of the literature regarding PEs involves parents, although use of nonparental childcare arrangements in the United States has increased in the past several decades. Although data on parental mealtime strategies exist, little is known about how parent and childcare provider pickiness perceptions differ between types of childcare, such as center-based childcare (CBCC) and home-based childcare (HBCC), or how these perceptions influence the mealtime strategies utilized. The objectives of this study were to (1) compare perceptions of child pickiness between parents and childcare providers, (2) compare percent agreement in pickiness perception between the dyads of CBCC parents and providers and HBCC parents and providers, and (3) identify mealtime strategy utilization based on pickiness perception. A total of 52 child, parent, and childcare provider triads participated in the study and completed the Mealtime Assessment Survey and the Parent/Teacher Mealtime Strategy Survey regarding the same child. Results showed that parents are 1.4 times more likely than childcare providers to perceive a child as being picky, HBCC parents and providers are 1.4 times more likely to perceive a child as being picky than CBCC parents and providers, CBCC parents and providers disagree more in their perception of child pickiness than HBCC parents and providers (41% vs 26%), and finally, perception of child pickiness has a greater influence on mealtime strategies utilized by parents. These results can be used to focus intervention efforts aimed at improving child eating habits across the home and childcare location.

KEYWORDS: picky eating, mealtime strategies, parent, childcare provider

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Introduction

Children experience rapid changes in their diets during early childhood at a time that they are also forming their eating habits.¹ By the time children are 2 years old, 50% of parents report their child to be a picky eater (PE).² Picky eaters are typically characterized as consuming a narrow range of food, as well as rejecting several new and familiar food items.^{3,4} These behaviors can cause frustration, worry, or anxiety from the caregiver that the child is not consuming the appropriate nutrients needed for healthy growth.⁵

Eating behaviors are shaped in a variety of ways, including what food the child is introduced to, the environment in which the food is served, and the way in which the food is prepared or typically consumed.^{1,2,6–8} Strategies that caregivers use during mealtimes to encourage the child to eat can also affect their eating habits and behaviors.⁹

According to the US Census Bureau, 33% of children under age 5 are cared for in nonparental childcare arrangements for an average of 35 hours per week.¹⁰ The most popular form of

nonparental childcare is center-based childcare (CBCC), encompassing 67% of children in nonparental childcare arrangements.¹⁰ Home-based childcare (HBCC) settings represent 30% of children in nonparental childcare arrangements.¹⁰

Center-based childcare centers are a structured, “school-like” environment; typically, they contain multiple classrooms comprising children of similar ages separated in each classroom with a set teacher to student ratio. Center-based childcare centers are usually regulated with policies the childcare must follow.¹¹ Home-based childcares are environments where children are cared for in the care provider’s house. There are usually fewer children in HBCC than in CBCC settings, and typically, there is only 1 caregiver.¹² Home-based childcares have more freedom in terms of policies that need to be followed depending on their licensing status or involvement in federal reimbursement programs.¹³

Although children are being cared for in HBCC and CBCC, they typically consume at least 1 meal.¹⁴ The Academy



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of Nutrition and Dietetics (formerly the American Dietetic Association) recommends that children in part-time programs receive foods and beverages that provide at least one-third of the daily nutrient requirements, whereas those in full-term programs receive foods and beverages that meet at least one-half to two-thirds of daily nutrient needs.¹ Consequently, children are exposed to different eating environments and potentially different feeding strategies. However, most of the literature in this field focuses on parental feeding strategies,^{15–19} leaving a gap that focuses on how mealtime strategies used at different childcare locations may be varied from those at home. In addition, there is a gap in the literature that addresses how perceptions of child eating behavior, specifically picky eating, differ between caregivers. It is also unknown whether parents and childcare providers of the same child agree in their perceptions of child pickiness and whether pickiness perception has any impact on the mealtime strategies that are utilized. Finally, little is known regarding the differences between HBCC and CBCC parents and providers, even though these are 2 of the most popular forms of nonparental childcare in the United States. Therefore, the objectives of this study were to (1) compare perceptions of child pickiness between parents and childcare providers, (2) compare percent agreement in pickiness perception between the dyads of CBCC providers and parents and HBCC providers and parents, and (3) identify mealtime strategy utilization of each caregiver group (ie, HBCC parents and HBCC providers) based on pickiness perceptions. Due to the differences in mealtime environments between the family home, HBCC, and CBCC, it was hypothesized that perceptions of child pickiness would differ among caregivers in these 3 locations. Due to the considerable differences between HBCC and CBCC centers, especially in terms of structure and policies, it was further hypothesized that HBCC and CBCC caregivers would have different perceptions of child pickiness. Finally, it was hypothesized that differing perceptions of child pickiness would affect the mealtime strategies that were utilized.

Methods

Participants

This study was approved by the Institutional Review Board at the University of Illinois. Parents and their families in Champaign-Urbana, IL, were recruited through their child's childcare provider. A total of 27 families and 7 CBCC providers were recruited from the Child Development Laboratory (a CBCC on the University of Illinois campus), and 25 families and 12 HBCC providers were recruited from HBCC centers. Childcare providers were recruited via recruitment phone calls, mailed flyers, word of mouth, and advertising during local childcare provider workshops. Families were then recruited via flyers and information the childcare providers gave the parents.

Participation requirements included having at least 1 child aged 3–5 years with no food allergies. The 3- to 5-year-old

age range for the study was determined based on the literature findings that this age range is when picky eating behaviors peak.^{20,21} If families had 2 children in the age range of 3–5 years, they could enroll both children if desired. Only 1 family from CBCC and 1 family from HBCC enrolled 2 children in the study; all others enrolled only 1 child. This resulted in 26 parents from CBCC enrolled and 24 parents from HBCC enrolled in the study. Two HBCC providers who were also mothers of children participating in the study were removed from the analysis.

Measures

Parents and teachers completed 2 surveys either online or in paper: the Mealtime Assessment Survey (MAS) and the Parent/Teacher Mealtime Strategies Survey (PMS/TMS). For all surveys, parents and childcare providers responded to questions using a 5-point Likert scale with Never, Rarely, Sometimes, Often, or Always response options.

The MAS contained 34 items and assessed a child's typical mealtime behavior. It was developed through a series of focus groups and conjoint analyses examining actions displayed by PE, nonpicky eater (NPE), and parents during feedings and adapted from questionnaires found in the literature regarding toddler mealtime behaviors.^{22–26} Parent and teacher perceptions of the child's pickiness were determined via the question "How often is your child/student a picky eater?" on the MAS. Responses were dichotomized to classify a child as PE (Always, Often, and Sometimes) or an NPE (Rarely and Never). This method of dichotomization is well accepted and has been reported previously in the literature.^{2,22,27}

The PMS contained 22 items regarding mealtime strategy utilization.²⁸ The TMS contained 18 questions. Questions on the TMS were similar to those on the PMS, although some questions were tailored for applicability to a childcare setting or were removed.²⁸

Statistical analysis

To test the first objective, the McNemar test for paired, binary data was used to determine differences in pickiness perceptions (PE/NPE) between childcare providers and parents within each childcare setting. The chi-square test is not an appropriate test for these data because 2 perceptions per child were compared, thus violating the assumption of independence. For more detailed analysis that accounted for the clustering of responses within childcare setting, a multinomial cumulative logit model was used to explore the association of childcare setting (CBCC vs HBCC), caregiver type (parent vs provider), and their interaction on pickiness perception as measured using the full 5-point categorical scale. The proportional odds assumption was confirmed using the Rao score test (chi-square score statistic) for testing equality of slope parameters. The resulting beta coefficient is interpreted as the increase in the

log odds of higher perceived pickiness rating associated with a 1-unit change in a covariate after holding all other covariates as constant. To obtain the odds ratio (OR) and the 95% confidence interval (95% CI), the exponent of the beta coefficient was determined.

To test the second objective, percent agreement in pickiness perception between parents and childcare providers was determined based on whether or not the caregivers (parent and childcare provider) perceived the same child as a PE. If the 2 caregivers perceived the same child as a PE, their responses were recorded in the “agreed” category. Across-childcare differences in percent agreement between parent-childcare provider pairs were compared using chi-square test.

To test the third objective, the frequency of the use of mealtime strategies by the parents and the childcare providers was identified using chi-square test via child pickiness perception (PE/NPE) that was dichotomized as previously described.

All statistical analyses were performed using Microsoft Excel (version 15.0.4727.1000; Microsoft, Redmond, WA, USA) or Statistical Analysis Software (SAS) version 9.3 (SAS Institute, Cary, NC, USA). A 2-tailed, significance level of $P < .05$ was considered statistically significant. No adjustment for multiple testing was performed.

Results

A total of 50 child, parent, and childcare provider triads participated in the study. There were approximately equal proportions of boys and girls (48% and 52%, respectively). Demographic characteristics were descriptively summarized using *n* and percentages. In total, 35% of the children were 3 years old, 40% were 4 years old, and 25% were 5 years old. Most (72%) of the parents in the study were women, 46% were between the age of 26 and 35 years, and 61% were white. All childcare providers, regardless of location, were women. Most (47%) childcare providers were between the age of 46 and 55 years and white. Income and education levels varied among caregivers. More detailed demographic information can be found in Table 1.

The results from objective 1 showed that 56% of CBCC parents and 44% of CBCC providers perceived their child or student as a PE, whereas 57% percent of HBCC parents and 48% of HBCC providers perceived their child or student as being a PE (Figure 1). Although these proportions were not statistically significant within each childcare setting, using a multinomial cumulative logit model, the results showed that parents are about 1.4 times more likely than providers to rate the child as being more picky (OR, 1.4; 95% CI, 1.3-1.5). In addition, HBCC parents and providers are also 1.4 times more likely to rate a child as being picky than CBCC parents and providers (OR, 1.4; 95% CI, 1.3-1.4) (Table 2).

Results from objective 2, percent agreement in pickiness perception between HBCC and CBCC parents and childcare providers, showed that parents and providers do not agree in their perception of the same child's pickiness, supporting our hypothesis. Center-based childcare parent/provider pairs

significantly disagreed more than HBCC parent/provider pairs; 41% of CBCC parent/provider pairs did not have the same perception of child pickiness compared with 26% of HBCC parent/provider pairs ($P = .0205$) (Table 3).

Results of objective 3 identified 2 strategies to be significantly different between CBCC parents who perceived their child as being picky compared with those parents who do not (Figure 2). In contrast, no mealtime strategies were found to be significantly different when a CBCC provider perceived a child to be a PE vs when they did not. In other words, the mealtime strategies used by CBCC providers were consistent, regardless of their perception of a child's pickiness.

Also, in objective 3, 3 strategies were shown to be significantly different between HBCC parents who perceived their child to be a PE vs those who did not (Figure 3). Among HBCC providers, 2 strategies were found to be differently utilized based on differing perceptions of child pickiness (Figure 4).

Discussion

The findings of this research showed that parents are more likely to identify their children as being PEs than those children's care providers. Parents may rate children as being pickier for several reasons. It could be that parents are more sensitive to the child's eating behavior and are therefore more likely to perceive a child as being picky. Because most parents worry about their child's growth, any indication of hesitance to eat from the child may lead the parent to perceive their child as a PE.²⁹ On the contrary, childcare providers may not be as sensitive to their student's eating habits because they are caring for multiple children³⁰ or focus on other objectives during mealtime.³¹

Another theory as to why parents are more likely than childcare providers to rate their children as PEs is that children may, in fact, display more picky eating behaviors at home than at childcare.²⁸ Children are likely aware that at home other food is available if they do not prefer what is served to them and are more inclined to reject or avoid that food until they are given an item they do enjoy.³² In addition, children are also aware of their parent's sensitivity to their eating habits and may know that if they avoid or refuse an item, they will be offered a different food. At childcare, especially CBCC, it is speculated that these options do not exist,³⁰ therefore resulting in less PE behavior from the child.

It was also found that between CBCC and HBCC caregivers (both parents and childcare providers), HBCC caregivers are about 1.4 times more likely to rate a student as a PE. Due to the nature of HBCC, in that it is typically a neighbor or friend of the parents,² these caregivers may have similar ways of thinking or may talk more about the child's eating habits and, therefore, have a more similar perception of the child's pickiness than CBCC caregivers.³³ In addition, the HBCC environment is more similar to the family home and there may not as many children as a typical CBCC, which lead children to act in

Table 1. Participant demographic information (% total).

	CHILD (N=50)	PARENTS		PROVIDERS	
		CBCC (N=26)	HBCC (N=22)	CBCC (N=7)	HBCC (N=11)
Gender					
Male	24 (48)	9 (35)	5 (23)		
Female	26 (52)	17 (65)	17 (77)	7 (100)	11 (100)
Age (years)					
3	18 (36)				
4	20 (40)				
5	12 (24)				
18-25		2 (7)	4 (18)		1 (9)
26-35		24 (585)	18 (82)	2 (28)	2 (18)
46-55		2 (7)		3 (43)	6 (55)
56-65				2 (29)	2 (18)
Marital status					
Single		4 (15)	9 (41)	5 (71)	3 (27)
Married		21 (81)	13 (59)	2 (29)	8 (73)
Not indicated		1 (4)			
Race/ethnicity					
White		10 (38)	19 (86)	3 (43)	7 (64)
African American		3 (11)	2 (9)		2 (18)
Asian		12 (46)			
Hispanic		1 (4)		2 (28)	
Other/not indicated			1 (5)	2 (28)	2 (18)
Education level					
High school graduate			2 (9)	1 (14)	2 (18)
Some college		5 (19)	5 (23)	1 (14)	4 (36)
Bachelor degree		2 (8)	9 (41)	5 (71)	2 (18)
Graduate degree		18 (69)	6 (27)		2 (18)
Not indicated		1 (4)			
Income					
Under \$25000		5 (19)	3 (14)	2 (29)	1 (9)
\$25000-\$49999		6 (23)	5 (23)	3 (43)	3 (27)
\$50000-\$74999		3 (12)	3 (14)		1 (9)
\$75000 and above		11 (42)	10 (45)	1 (14)	3 (27)
Not indicated		1 (4)	1 (5)	1 (14)F	3 (27)

Abbreviations: CBCC, center-based childcare; HBCC, home-based childcare.

a more similar manner during mealtimes in their HBCC location and their home vs CBCC children.

Similarly, HBCC parents and childcare providers were in greater agreement with each other in their perception of child

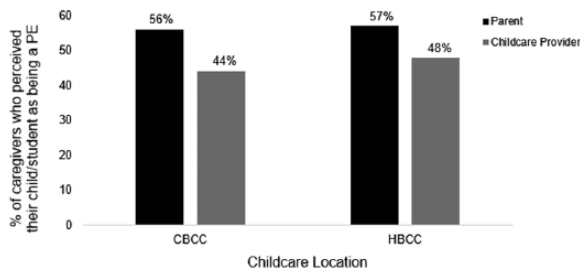


Figure 1. Differences in percent of caregivers who perceive the child as being a picky eater between CBCC providers ($n=7$) and parents ($n=26$) and HBCC providers ($n=11$) and parents ($n=22$). Proportions not significantly different within each childcare setting. CBCC indicates center-based childcare; HBCC, home-based childcare.

Table 2. Multinomial cumulative logit regression model for the association of childcare type and caregiver with the outcome of increasing child pickiness perception.

VARIABLE	BETA COEFFICIENT	STANDARD ERROR	OR (95% CI)
Site (HBCC vs CBCC)	.303	0.0307	1.4 (1.3-1.4) ^a
Caregiver (parent vs provider)	.362	0.0396	1.4 (1.3-1.5) ^b

Abbreviations: CBCC, center-based childcare; CI, confidence interval; HBCC, home-based childcare; OR, odds ratio.

^aOR of 1.4 for site indicates that HBCC parents and providers are 1.4 times more likely to perceive a child as being a PE.

^bOR of 1.4 for caregiver indicates that parents are 1.4 times more likely than childcare providers to perceive a child as being a PE.

Table 3. Percent agreement of perceived child pickiness between parents and childcare providers.

CAREGIVER PAIRS	DID NOT AGREE (%) [*]	AGREED (%)
CBCC parents and providers	41	59
HBCC parents and providers	26	74

Abbreviations: CBCC, center-based childcare; HBCC, home-based childcare.

^{*}Significant at $P < .05$ using chi-square. In total, 41% of CBCC parents and teachers did not agree in their perception of the same child's pickiness as opposed to 26% of HBCC providers and parents not agreeing.

pickiness than CBCC parents and providers. This may also reflect the fact that the HBCC environment is usually more similar to the home environment and CBCCs.³³ This similarity in environment could result in comparable behavior from the child and therefore similar perception of child pickiness. In addition, HBCC providers and parents oftentimes know one another on a personal level,² which could result in sharing or coordination of mealtime strategies and therefore in more agreement in perceptions of child pickiness.

Regarding behavioral strategies around mealtimes, CBCC parents with perceived PEs used a greater variety of mealtime strategies than parents with perceived NPEs, which confirmed

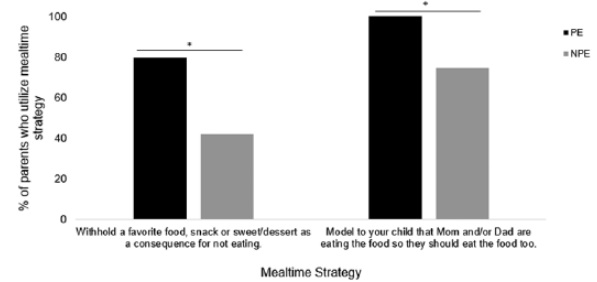


Figure 2. Association of mealtime strategies with child's pickiness perception (PE [$n=15$] and NPE [$n=12$]) among center-based childcare parents. Significance according to chi-square test ($*P < .05$). Parents who perceived the child as a PE used both mealtime strategies more often than those who perceived the child as an NPE. NPE indicates nonpicky eater; PE, picky eater.

our hypothesis. The strategies included using food as a contingency factor and parental modeling. Previous research found that using food as a contingency factor negatively affected a child's preference for that food.^{8,15} In contrast, parental modeling of positive eating behaviors has been shown to be effective in establishing healthy eating habits in children.¹⁷⁻¹⁹ Parents with perceived PEs may use more mealtime strategies than parents of perceived NPEs in efforts to improve food consumption in their child.

Center-based childcare providers did not change their mealtime strategies, regardless of their perception of child pickiness. Strategies utilized by this group of caregivers were consistent, not only from student to student for the same childcare provider but also across childcare providers. This may be due to the policies and procedures surrounding mealtime that have been put into place by the CBCC that providers must follow.³⁰

As with CBCC parents, HBCC parents with perceived PEs were more likely to use different strategies, including rewards and making the meal into a game, to encourage eating. The consensus on whether the strategies of using foods/nonfoods as a reward for eating are beneficial are inconclusive.^{34,35} Some studies have shown that these are negative strategies in that the child can develop dislike for the food that is being used as a means to receive the reward,^{18,36,37} whereas others show that using rewards can be motivating to children.³⁸ The strategy of making a meal into a game to encourage eating may also be negative because it distracts the child from focusing on the meal and their satiety cues.³⁹ Similar to CBCC parents, these results indicate that parent perception of child pickiness does have an effect on mealtime strategy utilization. Based on these results, HBCC parents with perceived PEs are more likely to use ineffective strategies at mealtime in attempts to improve child eating.

Home-based childcare providers with perceived PEs were found to use the strategy of spoon-feeding more than HBCC providers who did not perceive to have PEs. Children between the age of 3 and 5 years should have the ability to feed



Figure 3. Association of mealtime strategies with child's pickiness perception (PE [n=13] and NPE [n=10]) among home-based childcare parents. Significance according to chi-square test (* $P < .05$, ** $P < .01$). Parents who perceived the child as a PE used all mealtime strategies more often than those who perceived the child as an NPE. NPE indicates nonpicky eater; PE, picky eater.

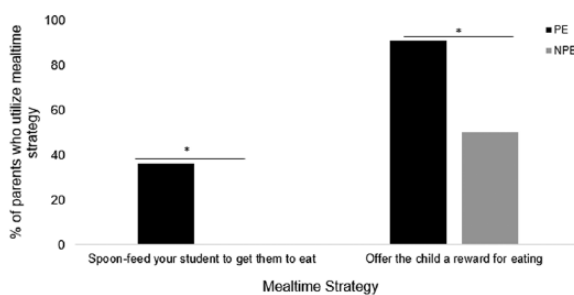


Figure 4. Association of mealtime strategies with child's pickiness perception (PE [n=11] and NPE [n=12]) among home-based childcare providers. Significance according to chi-square test (* $P < .05$, ** $P < .01$). Parents who perceived the child as a PE used all mealtime strategies more often than those who perceived the child as an NPE. NPE indicates nonpicky eater; PE, picky eater.

themselves, rendering this strategy inappropriate for children in this age range, but HBCC providers with perceived PEs may not have this knowledge, and therefore, use this strategy.⁴⁰ In addition, HBCC providers with perceived PEs were found to offer a child a reward for eating more than providers who did not perceive to have PEs. Although a consensus on the benefits or consequences of using rewards for eating has not been reached, it may be that HBCC providers with perceived PEs use this strategy because in a setting such as HBCC, this strategy is effective. Although only 2 strategies were found to be different, these results indicate that pickiness perception does affect mealtime strategy utilization in HBCC providers.

The findings from this study provide insight to not only elucidate differences regarding pickiness perception between parents and childcare providers and how that affects utilized mealtime strategies but also further our understanding regarding differences in mealtime between home and childcare overall. The caregivers with perceived PEs, regardless of location, are more likely to use a variety of mealtime strategies, even potentially ineffective ones. These results can be shared with parents trying to decide which childcare to

choose, be used as a basis for mealtime strategy interventions with parents and childcare providers, and aid educators when trying to create educational materials for parents or childcare providers on mealtimes.

Our study is not without limitations. First, due to the difficulty of recruitment of this study population, our sample size is small. The study population is novel in that we enrolled pairs of parents and providers for the same child, meaning recruitment was 2-fold. Not only did the childcare provider have to want to participate in the study, but so did the parents whose children attended the childcare. In addition, our study population included HBCC, a group that is not routinely investigated. Contacting, locating, and building enough rapport with this population kept our sample size small. Future research should focus on achieving a greater sample size in multiple states to validate findings. Second, although these findings show that there are differences in pickiness perception among caregivers who care for the same child, we do not know the reason why. Without understanding why differences in perceptions exist, location-specific interventions cannot be effectively created. Therefore, future research should focus on determining why parents and childcare providers of the same child have differing perceptions of child pickiness to develop appropriate feeding strategy interventions for caregivers based on their location.

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Author Contributions

Each person listed as an author has participated in the study to a significant extent and accepts responsibility for the content of the manuscript.

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