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Prior History of Feeding-Swallowing Difficulties in Children with Language Impairment

Kathy Malas[1], Natacha Trudeau[1,2,3], Marie-Claude Giroux[3], Lisanne Gauthier[3], Simone Poulin[3] and David H. McFarland[3,4]

[1]Centre hospitalier universitaire Sainte-Justine, [2]Centre de recherche interdisciplinaire en réadaptation-Institut Raymond-Dewar, [3]Université de Montréal, and [4]McGill University

Montréal, Québec, Canada

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Correspondence should be addressed to: David H. McFarland, École d'orthophonie et d'audiologie, Faculté de médecine, Université de Montréal, C.P. 6128, succursale Centre-Ville,

Montréal, Québec, H3C 3J7, Canada, david.mcfarland@umontreal.ca, 514.343.7049, Fax: 514.343.2115

Abstract

Purpose: This study updated and extended our previous investigation (Malas et al., 2015) of feeding-swallowing difficulties/concerns (FSCs) in children with language impairments (LI) by using more stringent inclusion criteria and targeting children earlier in the care delivery pathway. Method: Retrospective analyses were performed on clinical files of 29 children (average age: 60 months, SD: 9.0) diagnosed as having LI using standardized testing, non-standardized testing and final speech-language pathologist judgement. Files of children born prematurely or with history of anatomical/structural, neurodevelopmental, cognitive, sensory, motor or speech disorders were excluded. Literature-based indicators were used to determine the prevalence of difficulties in sucking, food transition, food selectivity and salivary control. Values were compared to the general population estimate of Lindberg et al. (1992). Results: Significantly higher percentage of history of FSCs (48%) was found in the files of LI children compared to the population estimate ($\chi 2$ = 13.462, df=1, $p<0.001$). Difficulties in food transition (31%) and food selectivity (14%) were the most frequent. Data confirm and extend our previous findings and suggest that previous history of FSCs may characterize LI children early in their care delivery pathway.

Keywords: Feeding, swallowing, feeding-swallowing difficulties, language impairment, children.

Although classically considered as distinct behaviors, there is increasing research and clinical interest in considering potential cross-system interactions between speech-language and feeding-swallowing (Malas, Trudeau, Chagnon, & McFarland, 2015; McFarland & Tremblay, 2006; Nip, Green, & Marx, 2011). Neurological disease or damage in the adult often results in cross-system impairments in language and feeding (Flowers, Silver, Fang, Rochon, & Martino, 2013), and common neurological structures underlying these seemingly diverse behaviors have been implicated (Martin et al., 2004; McFarland & Tremblay, 2006) . There is a well-established relationship between severe neurodevelopmental impairments and feeding-swallowing difficulties/concerns (FSCs) in children (Barnevik Olsson, Carlsson, Westerlund, Gillberg, & Fernell, 2013; Emond, Emmett, Steer, & Golding, 2010; Medoff-Cooper, Shults, & Kaplan, 2009; Stromland et al., 2005; Wilson & Hustad, 2009; Wolthuis-Stigter et al., 2015), and emerging evidence of relationships between FSCs and language impairment (LI) in less severely impaired children (Fabrizi, Costa, Lucarelli, & Patruno, 2010; Noterdaeme, Mildenberger, Minow, & Amorosa, 2002). Fabrizi et al. (2010) have observed more dysfunctional caregiver-child interactive patterns in children with feeding disorders and specific language impairment than in children with feeding disorders alone. The potential negative consequences of the language impairment on caregiver-child interactions leading to conflict and food refusal were highlighted (Fabrizi et al., 2010). Social interaction during feeding is an important learning context for infants and children (Dunham & Dunham, 1990; Reyna, Brown, Pickler, Myers, & Younger, 2012; Spegman & Houck, 2005), and caregiver vocalization during infant suckling may be a key interactive building block for later conversational turn taking (Kaye, 1977; Kim et al., 2011). These results suggest that FSCs may negatively impact language stimulation during feeding and/or LI may hinder feeding in an interactive context.

Based on these previous data, we began a series of studies to determine potential developmental links between FSCs and LI in children without severe neurodevelopmental difficulties or prematurity (Malas et al., 2015). Two groups of children with LI were studied retrospectively: those with and without concomitant motor impairments. We found that 62% of the children across both groups of LI children had previous history of FSCs, and this percentage was significantly higher than Lindberg's (1992) general population, retrospective estimate FSCs of 20%. When looking separately at the groups, 87% of the children with LI and motor impairment had previous history of FSCs. Somewhat surprisingly, and what motivated the current work, 53% of the children with LI without motor impairment had prior FSCs, and these values were again higher than the general population estimate.

Although this study provided important preliminary data, additional retrospective studies were needed before moving on to prospective work for several related reasons. First, considering the structure of services in the province of Quebec (Canada), children with LI are referred to rehabilitation centers fairly "late" in their care delivery pathway, and rarely admitted before the age of 5. Moreover, children are admitted to rehabilitation centers only after a speech-langage pathologist diagnosis of an LI with significant negative impact on daily communication and activities. In contrast, children are referred to tertiary care centers (such as the current study site) for initial assessment with potentially more diversified severity and functional impact of LI. Second, at the time of data collection for the first study, standardized testing and norms were not readily available for Quebec French (QF), and the clinical diagnosis of LI was based on non-standardized assessments and professional clinical judgement. Additional experimental verification, therefore, was needed to assure that our preliminary finding of the relationship between LI and FSCs was not due to sample bias linked to the recruitment site, the care delivery

pathway of the children studied, or the lack of standardized testing procedures used in the diagnosis of LI.

The present study sampled the clinical files of children that were diagnosed with LI using a multi-faceted procedure that included standardized testing using recently developed QF norms (Thordardottir et al., 2011) and non-standardized testing (including parent reports of language in everyday settings and case history). There are obvious pros and cons associated with each of these assessment methods (Bishop & McDonald, 2009; Botting, Conti-Ramsden, & Crutchley, 1997). Non-standardized testing may be crucial in providing an understanding of language impairments that impact functional communication in everyday settings (Bishop & McDonald, 2009; Botting et al., 1997; Law, McBean, & Rush, 2011). The obvious con of using non-standardized procedures alone in the determination of language status is the subjectivity in both the observation and interpretation of potential LI. The clinical site of the current investigation combines both standardized and non-standardized assessments to mitigate the strengths and weaknesses of each in order to provide a comprehensive assessment of LI.

The current investigation was designed to sample the clinical files of children diagnosed with LI using this multi-faceted approach and to determine whether our previously identified finding of a relationship between FSCs and LI would be maintained in children seen early in their delivery pathway and outside of a rehabilitation setting. A secondary goal of the current work is to compare the current data set with those previously published (Malas et al., 2015) and to set the stage for a prospective design. In addition, the current data set may add to the growing theoretical literature supporting relationships between speech-language and feeding-swallowing in both children and adults.

Methods

Participants

The relevant ethics committees approved all procedures. All data were de-identified, and strict confidentiality was maintained throughout all file consultations and data analyses.

Retrospective analyses were performed on files obtained from the children seen in the outpatient clinic of CHU Sainte-Justine Mother and Child University Hospital Center, a large, regional, pediatric hospital in the province of Quebec, Canada. The primary mandate of the speech-language pathology service of this clinic is the identification of speech-language impairments of children from 0 to 6 years of age, and the referral of children with LI to rehabilitation services in other facilities. Feeding-swallowing are also assessed. Children receive a detailed clinical speech-language assessment that includes non-standardized and standardized language assessments. The non-standardized assessments include language sampling (Ebert & Scott, 2014; Pena, Iglesias, & Lidz, 2001), criterion-referenced and developmental scale testing of receptive and expressive language development (Crais, 2011) in QF (and in another language if the child is bilingual), in various communication contexts, including structured, semi-structured and free play contexts and dynamic assessment. In dynamic assessment, children are assessed, treated for eight to ten sessions, and re-assessed to gauge the impact of treatment, and a conclusion is then reached regarding the presence (or absence) of LI (Kapantzoglou, Restrepo, & Thompson, 2012; Pena et al., 2001). Standardized testing includes the Clinical Evaluation of Language Fundamentals-Canadian French version (Wigg, Secord, Semel, Boulianne, & Labelle, 2009), the Peabody Picture Vocabulary Test in French (Dunn, Thériault-Whalen, & Dunn, 1993), the Carrow-Woolfolk Test of Auditory Comprehension of Language-Revised in QF (Groupe coopératif en orthophonie—Région Laval, 1995), the Edmonton Narrative Norms Instrument (Schneider, Dubé, & Hayward, 2002-2006) and its QF norms (Thordardottir et al., 2011) and the

Expressive One-Word Picture Vocabulary Test-Revised (EOWPVT-R) normalized in QF (Groupe coopératif en orthophonie - Région Laval, 1995). Norms and cut-offs for these tests are taken from the norms of the QF tests published in Thordardottir et al. (2011), a study which examined the sensitivity and specificity of a range of measures of language development for the identification of LI in QF speaking children.

Our convenience sample consisted of all of the 131 children seen in the speech-language pathology clinic between April 2011 and March 2012. None of these children had been evaluated by a speech-language pathologist (SLP) prior to their assessment at the CHU Sainte-Justine. From this base, children were excluded if they had cognitive, sensory, visual, hearing, or motor impairments or global developmental delay (n=8), epilepsy, neurological, genetic problems or acquired cerebral lesions (n=8), history of prematurity (n=11), autistic spectrum disorders or other pervasive developmental deficit (n=7) all diagnosed by a paediatrician or other medical specialist. The presence of these exclusion criteria was noted and files excluded from further analysis without any additional information extracted from the medical files. Also excluded were children with oral or craniofacial abnormalities (n=2), stuttering (n=7) and childhood apraxia of speech (n=35) all diagnosed by an SLP. Seven children had normal language development and were also excluded. From the remaining 46 children, 17 were excluded because their language status was determined by SLP judgement alone without any standardized testing of impairment. This resulted in a final sample of 29 children with standardized assessment of LI using the cut-offs specified in Thordardottir et al. (2011). Twenty-two were male and seven were female with an average age of 60 mo (age range 43-71 mo; SD 9 mo). Twenty-seven had a final clinical diagnosis of receptive and expressive language impairments and two had a final clinical diagnosis of expressive impairments only. Table 1 presents the LI characteristics of each of the 29 children including their

standardized test results and final SLP diagnoses. All children had at least one receptive or expressive language standardized test result below cut-off. Differences between standardized and non-standardized assessments were observed for 9 children. Six children had standardized test scores within normal limits for expressive language, but had scores below cut-off for receptive language and a final clinical judgment of LI. One child had standardized test scores within normal limits for receptive language but was below norm for expressive language and had a final clinical judgment of LI. Two children (#12 and #21) had standardized results under the cut-off scores for receptive language, but did not receive a final clinical judgment of receptive LI. They both had a final clinical judgment of expressive LI, and only one had scores below the cut-off for expressive language.

Eleven of the 29 children had oral mechanism difficulties as determined by an SLP, three had resonance difficulties, such hyponasality and nasal air emissions, four had a lingual lisp and four had oral and non-oral praxis difficulties. None were diagnosed with an oral motor control impairment or speech sound disorder.

Procedures

Retrospective analyses followed our previously published procedures (Malas et al., 2015) and were based on the recommendations of Gearing, Mian, Barber, and Ickowicz (2006) and Matt and Matthew (2013). Data were extracted from clinical files by two graduate research students in speech-language pathology under the supervision of two professors/clinicians and an SLP (the first author) who works at the target site. The clinical files contained data from parent interviews and questionnaires, medical reports, and SLP assessments. Our previously published medical chart consultation form was used to extract feeding-swallowing and speech-language data from the clinical files (Malas et al., 2015). Students and the supervising SLP used three sample clinical

files for training and to establish agreement. The consultation of all files was done over a period of two months.

Clinical files were assessed for the presence of FSCs using four general categories: difficulties in sucking, food transition difficulties, food selectivity and salivary control issues, as indicated in Table 2 and based on previous literature (Adams-Chapman, Bann, Vaucher, & Stoll, 2013; Arvedson, 2008; Chatoor & Ganiban, 2003; Delaney & Arvedson, 2008; Dobbelsteyn, Marche, Blake, & Rashid, 2005; Howe, Sheu, Hsieh, & Hsieh, 2007; Johnson, King, & Reddihough, 2001; Lindberg, Bohlin, & Hagekull, 1992; Mascola, Bryson, & Agras, 2010; Motion, Northstone, Emond, Stucke, & Golding, 2002; Reilly, Skuse, & Poblete, 1996; Samara, Johnson, Lamberts, Marlow, & Wolke, 2010; Skuse, Stevenson, Reilly, & Mathisen, 1995; Wright, Parkinson, Shipton, & Drewett, 2007). Specific indicators were used to identify the presence or absence of these four general categories, and these are also listed in Table 2 with the literature supporting each indicator. Data were coded for presence or absence of FSCs alone without any additional specifics such as the duration of the occurrence of a specific indicator or whether it had resolved at any point during the child's development. Specific indicators of FSCs were extracted from the case history or from the assessment report of the professional or paediatrician. Consequently, some FSCs were reported by the parent to the professional, and some were noted by the professional in their notes in the clinical file.

It is important to note than none of the children within our sample had feeding or swallowing *disorders*. Rather, we were assessing the presence of feeding and swallowing *difficulties* that would be more subtly represented in the child's developmental history but still highly salient to caregivers (Lindberg et al., 1992; Sanchez, Spittle, Allinson, & Morgan, 2015).

If specific indicators of one or more general category were noted, the child was considered to have a previous history of FSCs. To be conservative in our estimates, a clinical file was considered to be without FSCs if no specific indicator was present.

Statistical analysis

Percent occurrence of FSCs was calculated and compared to the general population estimate of Lindberg et al. (1992), as well as to the previous data of Malas et al. (2015) using chi-square analyses. An odds ratio (OR) was used to provide an effect-size statistic by determining the odds of having earlier occurring FSCs and later occurring LI.

Ten of the 131 files (17%) were selected randomly and coded by a second evaluator, a graduate student in speech-language pathology. The second evaluator was blinded to the results of the first evaluator. To assess intra-judge reliability, the initial evaluator completed a second round of data extraction of 17% of randomly selected files. Inter and intra-judge agreements (Kappa statistic) and the percentage of concordance of the identification of the presence or absence of the four categories of FSCs were calculated. Inter-judge and intra-judge reliability (κ=1.0) and percent agreement (100%) were perfect for exclusion/inclusion criteria as well as for the four categories of FSCs.

Results

Presented in Table 3 are the percentages of the four categories of FSCs extracted from the clinical files and their specific indicators. FSCs were noted in 14 out of the 29 (48%) of the clinical files of the LI children. The percentage of FSCs was significantly higher than the general population estimate ($\chi 2 = 13.462$, df=1, $p<0.001$). The OR calculation revealed that children with LI were 2.834 (95% CI 1.340 - 5.993) times more likely to have a previous history of FSCs when

contrasted to the general population estimate of Lindberg et al. (1992). Food transition difficulties (31%) and food selectivity (14%) were the most frequently occurring FSCs.

Also presented in Table 4 are the percentages of the four categories of FSCs and their specific indicators from the Malas et al. (2015) study. Chi-square analyses revealed no significant differences ($\chi 2= 0.1416$, df=1,p= 0.7066) between the occurrence of FSCs in LI children of the current study (48%) and the occurrence of FSCs in LI children with no motor impairment in the previous study (53%). Significantly lower percentages of difficulties in sucking were found in the current data (3%) when contrasted with the Malas et al. study (2015) (20%) ($\chi 2= 4.4058$, df=1, p= 0.0358), and no significant differences were found in the other categories of FSCs between the two studies.

Three out of 14 children with FSCs in the current study (21%) as contrasted to 16 out of 31 children in the Malas et al. study (2015) (52%) had a combination of two or more of the four general FSCs categories. Chi-square analyses revealed a marginally significant difference in these percentages ($\chi 2= 3.602$, df=1,p= 0.0577). No assessments were made of any potential relationship between language profiles or LI severity and history of FSCs due to the small number of participants.

Discussion

This study was designed to increase our knowledge of potential relationships between FSCs and LI. The novel contribution of this study is in exploring the relationship between LI and FSCs using more stringent inclusion criteria and targeting children earlier in their speech- language pathology service delivery. This investigation was a crucial next step in our pathway to prospective designs and was necessary to determine whether our previously determined FSCs and LI relationship was not due to lack of standardized assessment procedures or sample bias linked to the recruitment site or the care delivery pathway of the children studied. The current finding of

48% of children with LI showing prior history of FSCs is highly consistent with, and not significantly different from, the 53% of the children in the Malas et al. (2015) study with FSCs and LI and without motor impairment. Using the OR measure, our data suggest that children with LI impairment are over two times more likely to have earlier occurring FSCs when compared to the general population. Together these data argue strongly for the further assessment of FSCs and LI using prospective designs and relative-risk calculations.

Food transition difficulties and food selectivity were the most frequently occurring of the four categories in both the current and the previous investigation of Malas et al. (2015). Although not reaching statistical significance, fewer children with LI in the current study had a combination of one or more categories of FSCs. This may have been due to the fact that the clinical files sampled in the Malas et al. (2015) investigation were from children previously diagnosed with significant LI and referred to a rehabilitation center for treatment. Given that rehabilitation centers have stringent access criteria, not all children seen in our outpatient diagnostic hospital setting would qualify for services in a rehabilitation center. Children who qualify for treatment within the rehab center may be more likely to have subtle motor difficulties, potentially expressed in more than one category of FSCs, than the children from the current sample drawn from an outpatient diagnostic hospital setting.

At the present, we can only speculate as to the possible explanations of why children with LI might have a history of earlier occurring FSCs that differs significantly from population estimates. One possible explanation is that difficulties in feeding-swallowing, including food selectivity, may negatively influence language development perhaps by impacting language stimulation and interaction (Fabrizi et al., 2010). Food transition and food selectivity were the most frequently occurring FSCs noted in the clinical files of our sample, and we know that

mealtime interactions are an important source of caregiver-child language stimulation and social interaction (Dunham & Dunham, 1990; Reyna et al., 2012; Spegman & Houck, 2005). A second potential explanation is that oral motor difficulties in chewing and sucking might influence later neurodevelopmental outcomes (Motion et al., 2002; Reilly et al., 1996). For example, Mizuno and Ueda (2005) found that term infants with reduced sucking efficiency at two weeks post-natal age had minor to severe neurodevelopmental disabilities at 18 months, as measured by a global neuromotor, language and cognitive assessments (Mizuno & Ueda, 2005). They have suggested that sucking proficiency may actually provide insights into the "integrity of the nervous system" of developing infants (Mizuno & Ueda, 2005)

It could be that difficulties in feeding-swallowing and speech-language represent subtle sensory/motor impairments that are distributed across these seemingly independent processes (Hill, 2001; McFarland & Tremblay, 2006; Nip et al., 2011). Clearly, motor signs have been observed in children classically thought of as specific language impaired (Noterdaeme et al., 2002; Zelaznik & Goffman, 2010), and neurological disease and damage quite often impacts both speech-language and feeding-swallowing processes in children (Adams-Chapman et al., 2013; Hustad, Allison, McFadd, & Riehle, 2013; Wolthuis-Stigter et al., 2015). The current data set the stage for more in-depth assessments of potential links between FSCs and LI using prospective analyses which overcome many of the obvious limitations of retrospective designs. Our goal in these prospective designs is to begin to determine whether FSCs may eventually combine with other risk factors to signal later LI in vulnerable children.

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Table 1

Language characteristics, clinical diagnosis and standardized test results (in percentile) of LI children.

Participant	Socio-demographic data		FSCs presence	Clinical diagnosis		Standardized testing- Receptive language domains	Standardized testing-Expressive language domains
	Age at asse-ssment (mo)	Sex		Clinical diagnosis-EL difficulties	Clinical diagnosis RL difficulties		
1	58	M	N	Y	Y	EVIP: 32	EOWPVT-R: 1
2	68	M	N	Y	Y	CELF-CFD: 2	WNL
3	44	M	N	Y	Y	EVIP: 13	No test
4	59	M	N	Y	Y	CELF-BC: 16	No test
5	54	M	N	Y	Y	EVIP: 12	CELF-EV: 5
6	51	M	N	Y	Y	CELF-CFD: 5; CELF-SS: 9; CELF- BC: 1	No test
7	49	F	N	Y	Y	EVIP:1	No test
8	69	M	N	Y	Y	WNL	CELF-RS: 16; CELF-NR:16; ENNI: 9
9	55	F	N	Y	Y	EVIP: 8; CELF-BC: 9	CELF-NR:9
10	69	M	N	Y	Y	CELF-CFD: 1; CELF-SS: 2	No test
11	57	M	N	Y	Y	EVP: 30	No test
12	70	F	N	Y	N	EVIP: 17	No test
13	70	F	N	Y	Y	EVIP: 5; CELF-CFD:9	WNL
14	71	M	N	Y	Y	EVIP1; CELF-SS: 5; CELF- USP: 5	CELF-WCE: 5; EOWPVTR: 4; ; CELF- USP: 5
15	53	M	N	Y	Y	EVIP:1	No test
16	43	F	Y	Y	Y	EVIP: 6	No test
17	51	M	Y	Y	Y	CELF-BC: 16	WNL
18	64	M	Y	Y	Y	CELF-CFD:1; CELF-SS: 2	CELF-RS:1; CELF-WCE: 2
19	69	F	Y	Y	Y	EVIP:9; CELF-BC: 2; CELF-SS:5; CELF-WCR:9;	WNL
20	63	M	Y	Y	Y	EVIP: 9; CELF-CFD: 5; CELF- USP: 5	CELF- USP: 5
21	54	M	Y	Y	N	CELF-CFD: 5	CELF-WCE:9
22	66	M	Y	Y	Y	CELF-SS:9; CELF-USP: 9	CELF-USP: 9

23	44	M	Y	Y	Y	CELF-SS: 9	CELF-EV: 2
24	62	M	Y	Y	Y	EVIP: 4	WNL
25	56	M	Y	Y	Y	EVIP: 45	WNL
26	71	M	Y	Y	Y	EVIP: 9; CELF-USP: 16	EOWPVT-R: 6; ; CELF- USP: 16
27	55	M	Y	Y	Y	EVIP: 1; CELF-CFD: 2; CELF-SS:16	No test
28	68	M	Y	Y	Y	EVIP: 1; CELF-CFD: 2; CELF-BC: 2; CELF-SS:2	No test
29	71	F	Y	Y	Y	CELF-SS:9	No test

CELF CDN: Clinical Evaluation of Language Fundamentals- Canadian French version; CELF-BC; basic concepts; CELF-CFD: concepts and following directions; CELF-NR: number repetition; CELF-RS: recalling sentences; CELF-SS: sentence structure; CELF-USP: understanding spoken paragraphs; CELF-VE: expressive vocabulary; CELF-WCR: Word Class receptive; CELF-WCE –Word Class expressive; ENNI: Edmonton Narrative Norms Instrument QF norms; EOWPVT-R: Expressive One-Word Picture Vocabulary Test-Revised (EOWPVT-R) normalized in QF; EVIP: Peabody Picture Vocabulary Test in French; FSCs: Feeding-swallowing difficulties/concerns; N: No; TACL: Carrow-Woolfolk Test of Auditory Comprehension of Language-Revised in QF; WNL: within normal limits; Y: yes.

Cut-offs

EVIP: 50th percentile (Thordardottir et al., 2010, 2011)

ENNI: 10th percentile (Thordardottir et al., 2010, 2011)

TACL, CELF-CDN all subtasks, EOWPVT-R: 16th percentile (Thordardottir et al., 2010, 2011)

Table 2

Specific indicators of the four categories of FSCs

Categories	Specific indicators
Difficulties in sucking	Weak or uncoordinated (or immature) suck, increased duration of feeds, absence of sucking movements, choking, coughing, frequent vomiting, or regurgitation (spit-up) during sucking (Delaney & Arvedson, 2008; Dobbelsteyn et al., 2005; Howe et al., 2007; Motion et al., 2002)
Food transition difficulties	Late or difficult introduction of solids, increased mealtime duration (purees and solids), poor (or reduced) appetite, oral residue, loss of food during eating, vomiting, choking, coughing, gagging (or retching), regurgitation (or spit-up) during food transitions, difficulty in oral phase, such as during lip, tongue, or jaw movements during munching or chewing or in the pharyngeal phase of swallowing (Adams-Chapman et al., 2013; Arvedson, 2008; Delaney & Arvedson, 2008; Lindberg et al., 1992; Reilly et al., 1996; Skuse et al., 1995)
Food selectivity	Food rigidity, food refusal, food selectivity (Chatoor & Ganiban, 2003; Fabrizi et al., 2010; Lindberg et al., 1992; Samara et al., 2010)
Salivary control issues	Excessive drooling, dribbling of saliva, salivary control not acquired (Adams-Chapman et al., 2013; Johnson et al., 2001; Motion et al., 2002; Skuse et al., 1995)

Table 2 modified from Malas et al. (2015)

Table 3

Occurrence of the four categories of FSCs

	Difficulties in sucking		Food transition difficulties		Food selectivity		Salivary control issues	
	n	%	n	%	n	%	n	%
LI (n=29)	1	3	9	31	4	14	3	10

Table 4

Statistical comparison of the results in the LI with no motor impairment sample of Malas et al. (2015) a*nd in the sample of the current study.*

	Malas et al. (2015) (n=59)		Current study (n=29)		Statistical significance
	n	(%)	n	(%)	
FSCs presence	31	(53)	14	(48)	$\chi2$= 0.1416, df=1,p= 0.706652
Difficulties in sucking	12	(20)	1	(3)	**$\chi2$= 4.4058, df=1,p= 0.035817**
Food transition difficulties	14	(24)	9	(31)	$\chi2$= 0.5375, df=1,p= 0.463454
Food selectivity	18	(31)	4	(14)	$\chi2$= 2.8973, df=1,p= 0.088726
Salivary control issues	6	(10)	3	(10)	$\chi2$= 0.0007, df=1,p= 0.979644