ONLINE HEALTH PROMOTION: THE CROSS-CULTURAL CONSTRUCTION OF BIOPEDAGOGICAL DISCOURSES OF CHILDHOOD OBESITY

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Abstract

This paper investigates biopedagogical discourse, which instructs parents about healthy lifestyle choices, soliciting changes in their children to counter the 21st-century childhood obesity epidemic. Although biopedagogical discourse is now used in online health promotion as a more far-reaching intervention to fight the epidemic, it essentially draws on cultural schemas, or health-related knowledge which is socially shared by members of a same community. Accordingly, different cultural schemas may be invoked across health cultures for a more effective impact on parents. Cultural schemas therefore appear helpful in manipulating community-level discourses, driven by the ideology of regulating obesity in the childhood population and disciplining individual behaviours. They are thus useful analytical tools to investigate the linguistic features that instantiate biopedagogical discourses, especially where childhood obesity has become a major health issue. Based on these premises, the present study explores how biopedagogical discourse is mediated through the use of cultural schemas across US and Italian health cultures, currently affected by alarming rates of childhood obesity. The twofold aim is to investigate how cultural schemas contribute to organizing information and situating the meaning of childhood obesity cross-culturally, and to disclose possible distinctive discourse patterns. Modal verb types are analysed as indicators of potential discourse manipulation, which draws on different cultural schemas to shape these patterns, thus reflecting differences in the exertion of 'biopower'. A comparative analysis of a collection of US and Italian web-based texts is conducted, guided by a cultural approach to CDA, and specifically by cultural schema theory. Accordingly, the cultural schemas of *facts-and-concepts*, *context*, *role* and *emotion* are used as four indicative types of cognitive constructs influencing US and Italian biopedagogical discourses to frame the cross-cultural analysis. Overall, the paper sheds light on diverse approaches to constructing biopedagogical meaning across two different health cultures, and on possible contending conceptualizations of health.

1. Introduction

The 1946 Preamble to the Constitution of the World Health Organization (WHO) defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"[1]. Traditional health discourses have, how-

[1] Constitution of the World Health Organization: Principles (www.who.int/about/mission/en/).

ever, been mainly driven by the dominant biomedical approach which conceptualizes health only as the absence of disease or defect. As these discourses have been confined to the area of individual health education, promotional discourses have not thrived beyond these boundaries for quite a long time.

More recently, a new socio-environmental conceptualization of health has been advanced to offer a broader understanding of its meaning also as 'social well-being'. This has been witnessed by the closer attention paid to 'macrosocial determinants' due to their strong impact on population health. These nonmedical determinants include "factors, such as culture, political systems, economics […] that are beyond the individual […]" (Galea and Putnam 2007: 9). As a result of this paradigm shift from a biomedical to a 'social determinants' approach, new global health policies and national initiatives[2] have significantly contributed to reshaping the traditional roles of health promotion and education. Although health promotion has emerged out of the field of health education, current interventions are increasingly targeting the broader community level in order to promote changes which reduce population health risks. In this, health education has become "a primary instrumentality for achieving health promotion outcomes" (Huff *et al*. 2015: 5).

More importantly for present purposes, these changes have started to fuel new health discourses in the public arena for the sake of "enabling people to increase control over their health and its determinants, and thereby improve their health" (WHO 2006: 10). These discourses evolve primarily as constructive responses to priority health issues, while also representing effective opportunities for learning about healthy behaviours. They have thus been defined as "biopedagogical discourses" which "function to affect populations" (Harwood 2009: 22) by providing "information, advice, and instruction about bodies, psyches, health, and well-being, often moralizing or lecturing in tone" (Chandler and Rice 2013: 231). It is important to note that biopedagogical discourses do not, however, underestimate the value of epidemiological knowledge at the individual level, given that it helps "people to make individual informed choices about their health behaviours" (Laverack 2014: 82).

Within this frame, the present paper sets out to explore how biopedagogical discourses of childhood obesity are constructed cross-culturally. Currently, these discourses are "generated by escalating concerns over claims of global 'obesity epidemic' [and] are disseminated more widely through the web" (Wright 2009: 2). As such, these discourses also reflect the contemporary social practice of creating online health resources as a proactive response to the growing phenomenon of consumers seeking health information via the Internet (see Plastina 2012, 2015). In spite of their global reach, these discourses appear, however, to be significantly framed by the cultural contexts in which they operate (see MacLachlan 2000). This can essentially be assumed based on the fact that "there are no universal norms of health; [and thus] perceptions may vary across individuals and cultures" (Jensen and Allen 1993: 220). On these grounds, health discourses can therefore be seen to "select, foreground, and circulate specific cultural values" (Dutta 2015: 297).

Based on these premises, the current research attempts to make a contribution to

[2] For example, the US initiative "Healthy People 2020" considers culture as a social determinant of health (www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health).

the study of online health promotional discourse through a comparative analysis of US and Italian health cultures. The main aim is to investigate whether biopedagogical discourses of childhood obesity addressing parents are mediated through the use of different cultural schemas across these health cultures. To this end, a cross-cultural analysis of a collection of texts from US and Italian health websites may help disclose whether cultural schemas shape different linguistic patterns across the two cultures, given that schemas as cultural constructs, or "cognitive representations" are "socially shared" (van Dijk 1989: 165) by members of the same community. Different cultural schemas may thus be invoked by health experts to manipulate biopedagogical discourse for a more effective impact of their promotional initiatives. Hence, discourse manipulation here appears to be "[…] part of what health promotion and disease prevention is all about" (Zoller and Dutta 2008: 9). It is driven by the ideology of "biopower", or "[…] a power that exerts a positive influence on life, that endeavours to administer, optimize, and multiply it, subjecting it to precise controls and comprehensive regulations" (Foucault 1998: 137). In other words, the manipulation of biopedagogical discourse of childhood obesity is governed by health experts' "power-knowledge", which is grounded in "the norm […] that can be applied to both a body one wishes to discipline and a population one wishes to regularize" (Foucault 2003: 253). Hence, this kind of discourse manipulation is purposed to creating "both disciplinary effects and regulatory effects" (*ibid.*: 252) on parents, and thus contributes to building individual (disciplinary) and social (regulatory) preventive measures against the childhood obesity epidemic.

2. Materials and methodology

Online searches were performed in both English and Italian, using the key expressions "childhood obesity prevention and parents" and "prevenzione dell'obesità infantile e i genitori". The top websites yielded were filtered for texts responding to the basic functional feature of biopedagogical discourse, namely the provision of scientific information, and of instructions and advice about childhood obesity prevention under the condition of directly addressing parents. Texts from five US and five Italian websites (Appendix 1) were found to match these distinguishing features, and were thus downloaded and used as the materials for the present study. The ten texts are made up of a total of 9,492 words and 12 pictures with the US collection amounting to 5,164 words (M=1,146 words; 4 pictures), and the Italian one counting 4,328 words (M=606 words; 8 pictures). The greater conciseness of the Italian written texts thus appears to be compensated by the larger number of images, which are twice as many as those used in the US collection. Although a multimodal analysis is beyond the purpose of the present study, it is worth mentioning that the visuals are connoted with different representational meanings across the two cultures. The Italian images commonly represent parents and their children engaging in the consumption of healthy Mediterranean foods, thus creating a more immediate educational impact; the US pictures, instead, depict lonely obese children distractedly devouring fast food during sedentary activities, thus stigmatizing common unhealthy lifestyle habits. Moreover, all sample texts are written in plain language to directly address parents. This reflects the pedagogical importance the expert authors ascribe to this style in improving laypeople's health literacy (see Plastina 2016) and, more specifically, in facilitating parents' understanding of obesity-related issues.

On the whole, the texts respond to the required features of biopedagogical discourse, and are thus suitably representative samples for cross-culture analysis. In addition, the two collections have a similar word length, and are therefore sufficiently balanced to ensure a systematic analysis. In an interdisciplinary perspective, the research adopted a cultural approach to Critical Discourse Analysis (CDA) (see Gavriely-Nuri 2012), which was framed by cultural schema theory. Accordingly, Nishida's (2005) cultural schemas of *facts-and-concepts*, *context*, *role* and *emotion* were introduced as four indicative types of cognitive constructs[3], which were expected to shape US and Italian biopedagogical discourses differently. In detail, fact-and-concept schemas refer to "pieces of general information about facts", context schemas contain information "about appropriate actions to take in order to achieve goals in the context […] and suggestions for reasonable problem-solving strategies", role schemas refer to "sets of behaviors that are expected of people in particular social positions", and emotion schemas "contain information about affect and evaluation" (*ibid*.: 405-407).

These schemas were first analysed to understand how they broadly affect the organization of the information conveyed by biopedagogical discourses. Content and frequency analyses were conducted on raw textual data according to the criteria of cultural schema type and frequency of occurrence. Linguistic elements associable with one of the four cultural schemas were classified accordingly, and their occurrences were computed. Comparisons between US and Italian data were then drawn to pinpoint possible cross-cultural differences in the use of schemas. As a second step, a closer analysis was carried out to investigate how "situated meaning" (Gee 2014: 53) of childhood obesity was constructed at the discourse level. Meaningful linguistic features reflecting the use of each cultural schema type were identified, and distinctive patterns of biopedagogical discourse and possible cross-cultural variations across the two health cultures were recorded. Based on these findings, modality was then considered as a potential tool of discourse manipulation reflecting the ideology of biopower as it presupposes "the presence of an individual subjectivity [the health expert] behind the printed text, who is qualified with the knowledge to pass judgement […] or assign responsibility [to parents]" (Fowler 1991: 64). The analysis specifically focused on the choices made of epistemic, dynamic and deontic modal verbs as indicators of discourse manipulation. Epistemic modals reflecting health experts' opinions were expected to be used to manipulate propositional content influenced by social norms regulating childhood obesity (context schemas) or by individual discipline (parent role schemas), as well as by power-knowledge (expert role schemas), and evaluative information (emotion schemas); dynamic modals were seen as manipulating "events that are not actualized, […] but are merely potential" (Palmer 2001: 70) according to individual disciplinary norms of obesity prevention (parent role schemas) in order to encourage parents to accept responsibility for their own actions; deontic modals were expected to be used to manipulate "events that have not taken place" (*ibid*.: 70) by drawing on the authority of health experts (expert role schemas), and on reliable scientific information (fact-and-concept schemas) in the attempt to get parents to preventively act on their children.

[3] The other four types included in Nishida's cultural schema theory were not considered properly applicable to biopedagogical discourse.

3. Cultural schemas in biopedagogical discourses

3.1. *The US schemas of obesity*

Results from the content analysis recorded 254 tokens of cultural schemas, and frequency analysis showed that schema types were unevenly distributed across the five US texts. In particular, a major use of context schemas (42.3%) and fact-and-concept schemas (35.4%) was found. By contrast, a much lower frequency of role schemas (13.7%) and emotion schemas (8.6%) was recorded. These preliminary findings point to the general organization of biopedagogical discourses, which seems to be mainly shaped by instructional information "about appropriate actions to take in order to achieve goals in the context […]" (context schemas), and by "pieces of general information about facts" on childhood obesity (fact-and-concept schemas) (Nishida 2005: 405). This further seems to anticipate that these discourses were only marginally embedded with information imposing specific behaviours expected of parents coping with obese children, and even less with evaluative information about parents. Findings on the frequency of occurrence (%) of single cultural schema types used in US texts are reported in Table 1.

Cultural schemas: types	Frequency of occurrence	Mean frequency distribution
Fact-and-concept	**90 (35.4%)**	18 (37.98%)
Role	35 (13.7%)	7 (13.62%)
Context	**107 (42.3%)**	21.4 (39.36%)
Emotion	22 (8.6%)	4.4 (9.04%)

Table 1. The use of US schemas: cultural types and frequency

Results from the analysis of "situated meanings" of childhood obesity showed that different linguistic features were used to draw on cultural schemas. In particular, the category of action verbs was found to reflect the use of context schemas in all US texts with the highest frequency of occurrence recorded for the five verbs *choose, begin, show, help*, *give* (73.2%). Hence, the underlying ideological purpose of these verbs was to empower parents to take appropriate actions. By drawing on fact-and-concept schemas, four types of information were conveyed: social (e.g. *this epidemic is no longer just a problem for adults – childhood obesity is steadily on the rise, too*); nutritional (e.g. *your body gets all it needs from sugar naturally occurring in food – so anything added amounts to nothing but a lot of empty calories*); economic (e.g. *companies spend more money marketing sugary drinks to youth than they spend on any other food category*), and research (e.g. *below are some of the major findings from the Yale study*). However, the higher frequency of social facts (44.5%) indicates that a 'social determinants' approach was adopted to construe these discourse practices. This was further confirmed by the discourse organization of nutritional information (35.5%), which was not significantly entwined with research facts (8.8%), given their low frequency of occurrence. Furthermore, the choice of placing major emphasis on social factors was also evident from the scant economic information recorded (11.2%).

As the predominant type of fact-and-concept schema, social facts were more closely analysed for their situated meanings. Three main linguistic features were found to situate specific US social determinants of childhood obesity: qualifiers (e.g. *average, typical, quick,*

busy, safe), intensifiers (e.g. *high, largest, more, on the rise*), and temporal deixis (e.g. *daily, today, less time, often, constant non-stop*). The first feature pointed to US community lifestyle and environment, the second to advertising as a social determinant, while the third touched on the factor of ethnicity, as shown in the sample tokens in Table 2, where the linguistic features used to situate cultural meaning are highlighted in bold font.

Social determinants	Linguistic tokens
Lifestyle & environment	• *The **average** American consumes 50 gallons of soda and other sweetened beverages each year.* • *a **typical** 20-ounce soda …* • *On **average,** kids between the ages of 6-11 drink about 15 ounces of soda a day.* • *the **high** consumption of sugar-sweetened drinks amongst kids is considered the **largest** contributor to childhood obesity.* • *these sweetened beverages have become the **daily** beverage choice.* • *if you add the hard candy sweet from a **quick** stop at the store…* • ***Today**, 1 out of 3 children and teens in the U.S. are overweight or obese.* • ***Busy** families are cooking **less**…* • *Kids spend **less time** actively playing outside, and more time watching TV, playing video games, and sitting at the computer.* • *The local YMCA, YWCA, or Boys' and Girls' Club are **safe** places for children to exercise and play.*
Advertising	• *Youth are **often** the main target of sugary drink ads* • *the **constant non-stop** advertisement geared towards them to drink these beverages* • *Teens hear 46% **more** radio ads for sugary beverages than adults do*
Ethnicity	• *African-American and Latino youth saw 80 to 90 percent **more** TV ads for sugary drinks compared to white youth.* • *Marketing for these beverages on Spanish-language TV has also been **on the rise** since 2008.*

Table 2. Situating the meaning of US social determinants of childhood obesity

On the other hand, all the instances related to role schemas addressed parents through the person pronoun *You* to directly solicit them to become role models. Positive qualifiers were therefore attributed to this behavioural outcome (e.g. *you can have a **great** influence on your kid's preferences; you need to be a **good** role model; you can set a **great** example*). Finally, emotion schemas were mostly rendered through nominal phrases (6.7%), which were meant to arouse feelings of fear, reinforced by a disease-oriented approach to emotion (e.g. *looming health hazards*, *alarming rate*, *cause of preventable death in America, the risk of future heart disease*, *at the highest risk*). Very few instances of verbal phrases (1.9%) were found to convey concerns of social exclusion

(e.g. *other kids may tease and exclude them*). Overall, these findings unfold the general pattern of US biopedagogical discourses summarized in Table 3.

Cultural schemas	Situated meanings	Main linguistic features
Context	empowering parents	action verbs
Fact-and-concept	'social determinants' approach	qualifiers intensifiers temporal deixis
Role	parents as role models	personal pronoun *You* positive qualifiers of role modelling
Emotion	disease-oriented approach to fear	disease qualifiers

Table 3. The pattern of US biopedagogical discourses

3.2. *The Italian schemas of obesity*

The 239 tokens identified in the Italian texts also covered all four types of cultural schemas with varying frequencies as shown in Table 4.

Cultural schemas: types	Frequency of occurrence	Mean frequency distribution
Fact-and-concept	**103 (43.2%)**	20.6 (41.62%)
Role	57 (23.8%)	11.4 (24.06%)
Context	57 (23.8%)	11.4 (25.88%)
Emotion	22 (9.2%)	4.4 (20.85%)

Table 4. The use of Italian schemas: cultural types and frequency

These results first show that fact-and-concept schemas outweighed all other types (43.2%), and that role schemas were as relevant as context ones (23.8%), while emotion schemas lagged behind (9.2%). Significant differences were found in the four different types of information conveyed through fact-and-concept schemas: social (51.4%), research (24.3%), nutritional (24.3%) and economic (0%). Hence, while Italian discourses were slightly more structured by social facts compared to their US counterparts (respectively 51.4% and 44.5%), a noticeable difference was found in the use of research facts (Italian 24.3%; US 8.8%). This means that Italian discourses were imbued with more medical notions of obesity, and were thus also oriented by the biomedical approach. In this sense, nutritional facts were mostly embedded with medical references: e.g. *in uno studio pubblicato sul Lancet, una rivista specializzata in Diabete e Endocrinologia, si ricorda che […] una lattina di Coca-Cola contiene 139 calorie* [A study published in *Lancet*, a specialized journal in *Diabetes and Endocrinology*, recalls that a can of coke contains 139 calories]. As for economic facts, no significant data were recorded.

At the discourse level, meanings of social facts were mostly rendered through the use of nouns and adjectives to situate geographical differences, technology and cultural diets as specific Italian social determinants of childhood obesity, as shown in Table 5.

Social determinants	Linguistic tokens
Geographical differences	1. *Le percentuali sono **più alte** nelle regioni del **centro** e del **sud**.* [Percentages are **higher** in the **central** and **southern** regions] 2. *il motivo per cui i bambini non vanno a scuola a piedi al **Nord** è prevalentemente la **mancanza di tempo**, al **Sud** è soprattutto per la **paura dei pericoli**.* [the reason why children do not walk to school in the **North** is predominantly due to **the lack of time**, in the **South** it is mostly for **fear of the dangers**]
Technology	3. *I ragazzi consumano i pasti stando davanti al **pc** e parlando al **cellulare** o mandando **sms**.* [Kids eat meals in front of their **computers** and while speaking on their **mobile** or **text messaging**] 4. *la maggior parte resta sveglia fino a tardi a caccia di curiosità nella **rete**.* [Most stay up late surfing the **Net** for curious stuff]
Cultural diets	5. *sempre più spesso si preparano piatti stile "**fast-food" all'americana*** [**American-style fast food** meals are being prepared more and more often] 6. *i bambini italiani si sono ormai allontanati dal modello della "**dieta mediterranea**" per consumare sempre più "**junk food**"* [Italian children have now moved away from the "*Mediterranean diet*" model to eat more and more "**junk food**"]

Table 5. Situating the meaning of Italian social determinants of childhood obesity

The first two instances point to the social determinant of *geographical differences* in the spread of the phenomenon of childhood obesity. In the first example, the nouns 'centre' (*centro*) and 'south' (*sud*) generically point to higher percentages (*percentuali… più alte*) of obesity in these Italian areas; in the second, 'north' (*nord*) and 'south' (*sud*) discriminate between the social reasons behind the fact that children do not walk to school. Thus, they function as cultural pointers to "the lack of time" (*la mancanza di tempo*) in the hard-working northern regions, and to "the fear of the dangers" (*la paura dei pericoli*), also stereotypically alluding to potential violence in the southern regions. Examples (3) and (4), instead, introduce technological referents like 'computers' (*pc*), 'mobile phone' (*cellulare*), *sms*, and 'internet' (*rete*) as determinants of eating disorders. On the other hand, examples (5) and (6) use cultural nominal expressions, such as 'American fast food' (*"fast-food" all'americana*), 'Mediterranean diet' (*dieta mediterranea*), and *junk food* to denote dietary changes which shift towards US habits. The deictics 'more often' (*sempre più spesso*), 'have now moved away from' (*si sono ormai allontanati dal*) are further used as emphatic temporal markers of these unhealthy cultural changes.

As for context schemas, these relied on the use of implicit evaluative statements: e.g. *i genitori lasciano bere e mangiare sostanze zuccherine e grasse liberamente ai propri figli* [parents allow their children to freely drink and eat sugary and fatty stuff], as well as on explicit evaluative ones: e.g. *la responsabilità è delle mamme che preparano sempre gli stessi soliti piatti* [the mothers are to blame for always preparing the same usual dishes] for the common purpose of denigrating parents. Role schemas were also used to

address parents as responsible for their children's obesity: e.g. *ma nella maggior parte dei casi il problema è legato all'alimentazione e dunque ai genitori* [but in most cases the problem is tied to eating and therefore to parents]; *un'altra causa determinante l'obesità infantile risiederebbe nel fatto che i genitori non considerano mai grassi i propri figli* [another determinant of childhood obesity lies in the fact that parents never consider their own children to be fat]. In a similar vein, emotion schemas were mostly referenced to overtly criticize parents' wrong emotions (7.7%): e.g. *le ansie sbagliate dei genitori* [parents' misplaced anxieties]; *la paura dei genitori che i loro figli non siano abbastanza nutriti* [parents' fear that their children are not sufficiently well nourished]. Emotional reactions were also culturally related to more traditional Italian beliefs: e.g. *derivanti da un antico retaggio culturale secondo cui il bambino grasso è anche sano* [deriving from the old cultural idea according to which a fat child is also healthy]. Thus, they summoned warnings like *Sos mamme* [Sos mothers]; *gravi conseguenze* [serious consequences]; *considerevole rischio* [considerable risk].

On the whole, these findings point to the general pattern of Italian biopedagogical discourses summarized in Table 6.

Cultural schemas	**Situated meanings**	**Main linguistic features**
Context	denigrating parents	explicit evaluative statements
Fact-and-concept	social determinants	geographical markers technological referents cultural markers/temporal deixis
	biomedical approach	research/medical references
Role	parents as responsible for	blame language
Emotion	parent's wrong emotions	negative emotional nouns

Table 6. The pattern of Italian biopedagogical discourses

The comparative analysis of US and Italian data confirms the present research hypothesis that cultural schemas framed biopedagogical discourses across the two health cultures with different functional purposes and varying frequencies of occurrence, as reported in Table 7.

Cultural schemas	**US**	**Italian**	**Frequency variation**
Context	empowering parents (42.3%)	denigrating parents (23.8%)	**- 19%**
Facts-and-concepts	"social determinants" approach (35.4%)	social determinants + biomedical approach (43.2%)	**+ 7.8%**
Role	parents as role models (13.7%)	parents as responsible for (23.8%)	**+10.1%**
Emotion	disease-oriented approach to fear (8.6%)	warning approach to parents' wrong emotions (9.2%)	**+0.6%**

Table 7. Variations in the use of cultural schemas across Italian and US discourses

These findings show that Italian discourses were less driven by instructional purposes than their US counterparts (context schemas: -19%), slightly more permeated also by biomedical facts (fact-and-concepts schemas: + 7.8%), and more overtly targeting parents (role: + 10.1%). Based on these variations, modal verbs were analysed to see whether their use differed cross-culturally as an indicator of discourse manipulation.

3.3. *The cross-cultural use of modality for discourse manipulation*

Results from the analysis revealed a much higher occurrence of modal verbs in US texts (*N*=162) than in Italian ones (*N*=64), which were also featured by explicit evaluative statements about parents (*N*=54 occurrences). This appears to be consistent with the variations reported in the cross-cultural use of schemas (see Table 7). More importantly, differences were found in the natural distribution of the most frequent verbs recorded in the US texts (CAN, MAY, WILL, SHOULD) and in the Italian ones (MUST, SHOULD, COULD), as shown in Table 8.

Modality	**US texts**	**Frequency of occurrence** (*N*=162)	**Italian texts**	**Frequency of occurrence** (*N*=64)
Epistemic	==	==	MUST SHOULD COULD	**43 (67.2%)** 14 (21.9%) 7 (10.9%)
Deontic	CAN MAY SHOULD	**62 (38.3%)** 23 (14.2%) 14 (8.6%)		
Dynamic	CAN WILL	18 (11.1%) 23 (14.2%)		

Table 8. Cross-cultural differences in the use of modality types

Divergences in the use of these modal verbs already point to cross-cultural differences in discourse manipulation, suggesting ideological inconsistencies. In detail, the predominant use of deontic modality (61.1%) in US texts suggests that health experts mainly manipulate discourse to direct parents to take preventive actions on their children, as shown in Examples (1) - (3):

(1) *You <u>can</u> encourage them to lift weights.*
(2) *You <u>may</u> opt for products labeled "reduced sugar" or "no added sugar".*
(3) *You <u>should</u> set rules that limit the amount of time your children spend on the computer.*

Examples (1) and (2) show directives expressing deontic possibility, whereby the events are merely potential, and "the conditioning factors are external to the relevant individual" (Palmer 2001: 9), namely the parents, who also depend on their children's willingness to change their behaviours; in example (3), instead, the directive expresses deontic necessity as a recommendation, but "the speaker admits the possibility that the

event may not take place" (*ibid*.: 73). In all cases, the tentative physical and dietary directives draw upon context schemas of regulatory norms, whereby the actions (*encourage*, *opt*, *set rules*) are socially acceptable, as well as on role schemas acknowledging the authority of the health experts, and on fact-and-concept schemas of scientific knowledge to directly address the subject *You* (parents). Moreover, US texts were also featured by the dynamic modals CAN and WILL (25.3%) to indicate parents' "ability and willingness" as "internal" factors (*ibid*.: 9), and thus create meanings of individual (disciplinary) prevention as shown in Examples (4) - (5):

(4) *Parents can set a great example for the whole family by creating a healthy environment at home.*
(5) *If you stick with it, physical activity will become a part of your family's routine.*

The examples draw on *role* schemas to express "subject-internal" ability or volition in order to strategically stimulate parents to realize the proposed directives.

By contrast, epistemic modals were the only type used in Italian texts, thus denoting a completely different manipulative strategy. This was characterized by three different degrees of certainty of propositional content, namely a strong degree marked by the prevailing use of the present indicative form DEVONO (MUST) (67.2%) combined with direct evidential markers to strengthen the truth-value of content; a medium degree marked by a less frequent use of the present conditional DOVREBBERO (SHOULD) (21.9%), and a weak degree of certainty marked by a much less frequent use of the present conditional POTREBBERO (COULD) (10.9%), as shown in Examples (6) - (8):

(6) *Soltanto 1 genitore su 3 sa che frutta e verdura devono essere consumate più volte al giorno* [Only 1 out of 3 parents knows that fruit and vegetables must be consumed several times a day].
(7) *I genitori dovrebbero educare i propri figli a un'alimentazione consapevole* [Parents should train their children to be aware of what they're eating].
(8) *Le mamme potrebbero evitare loro stesse abitudini alimentari scorrette così da non crescere bambini in sovrappeso* [mothers could themselves avoid wrong dietary habits so as not to raise overweight children].

Example (6) shows how the verb DEVONO (MUST) conveys epistemic necessity by drawing on health norms (context schema), as well as on the expert's power-knowledge (role schemas) to make the strong negative judgement of parents' poor health literacy (emotion schemas). The certainty of the claim is further strengthened by the co-occurrence of the evidential marker *soltanto 1 genitore su 3* (only 1 out of 3 parents). While example (7) also appears to convey epistemic necessity, there is a weaker degree of certainty of propositional content expressed through DOVREBBERO (SHOULD), further marked by inferential evidentiality, i.e. we need to infer that Italian parents do not train their children properly, and to interpret the implicit negative judgement (emotion schemas) based on cultural facts (context schemas). Example (8), instead, indicates epistemic possibility based on general cultural knowledge (context schemas), whereby the expert shows lack of confidence in the proposition as it is not justified by observational evidentiality as in (6), or by inferential evidentiality as in (7). Hence, the truth-value of the propositional content manipulated through the modal

POTREBBERO (COULD) appears to be purely subjective, and designed to express the negative judgement of mothers (parent role schemas), thus using power-knowledge to exert social control (expert role schemas).

Moreover, Italian discourses were further characterized by explicit evaluative statements, as shown in examples (9) and (10):

> (9) *Altro errore comunissimo è non abituarli a una buona e sana prima colazione, che consente loro di fare il pieno di energia per la giornata* [another common mistake is not getting them used to having a good and healthy breakfast, which allows them a full intake of energy for the day].
> (10) *le abitudini alimentari di noi occidentali proprio non vanno, e a farne le spese, spesso, sono proprio i più piccoli* [our Western food habits are very wrong, and often those who pay for it are the little ones].

In both instances health experts act as knowledgeable authorities in the field as shown in the propositions "a full intake of energy for the day" and "our Western food habits", respectively grounded in biomedical and sociocultural facts. These then allow the writers to position their epistemic stance, which acts as both a subjective and intersubjective manipulative device. In example (9), subjective linguistic manipulation is accomplished through the negative evaluative expressions "another common mistake" and "not getting them used to having". This person-oriented manipulative device is deliberately deployed to construct a negative intersubjective image of parents, allowing the writer to fully claim his knowledgeable authority. In example (10), instead, the expression "our Western food habits are very wrong" is loaded with subjective negative evaluation, which favours the use of a society-oriented manipulative technique in order to construct a negative image of the Western community as a whole. In turn, this allows the writer to position her evaluative stance of community blame, which is justified by the repercussions on children as passive agents of obesity.

On the whole, US biopedagogical discourses were found to rely on syntactic manipulation through deontic modality to promote regulatory healthy actions, and through dynamic modality to encourage disciplinary ones at home, thus exerting modern biopower for instructional purposes. Italian discourses, instead, used syntactic manipulation through epistemic modality together with lexico-semantic manipulation rendered by evaluative statements to claim power-knowledge, and thus exert traditional biopower in the form of social control (see Foucault 2003). These features denote how health was promoted from different cultural angles. In US discourses, parents were considered as active participants in fighting childhood obesity, and were thus empowered to take action through the proposed role-model approach; in Italian discourses, instead, parents were considered as passive participants who were stigmatized through a victim-blaming approach to health education, whereby they were held responsible for their children's dietary behaviours. In other words, Italian biopedagogical discourses were oriented by the "behavioural change model", which promotes a more biomedical view of health, and is further connoted with victim blaming and with underlying assumptions of "healthism" (see Crawford 1980) focusing on individual responsibility; on the other hand, US discourses were influenced by the "collective action model", which requires people (parents) to acquire the knowledge and skills necessary for health changes, and to achieve healthy outcomes both individually and collectively.

4. Concluding remarks

The present study has explored online biopedagogical discourses of childhood obesity through a comparative analysis across US and Italian health cultures. It has investigated how the four main cultural schemas of fact-and-concepts, context, role and emotion play a key role in shaping these discourses also for manipulative purposes. These cognitive constructs have been taken as potential indicators of different cultural choices expressed through a range of discourse instantiations, which were analysed in terms of variation and frequency of occurrence. Qualitative and quantitative findings highlighted a recurring use of action verbs, qualifiers, intensifiers, temporal deixis, the *You* pronoun and nominal phrases to express US cultural schemas, whereas Italian ones were rendered through the frequent use of explicit evaluative statements, geographical markers, technological referents, temporal deixis, research/medical references, negative emotional nouns and blame language. The analysis has further moved beyond these discursive features as situated meanings of cultural schemas to consider the health promotional discourses in which they occurred. At this broader level, the investigation has shown that both Italian and US discourses were framed by manipulative strategies which consistently reflected the underlying cultural schemas selected. A combination of syntactic manipulation in the form of epistemic modality and lexico-semantic manipulation marked by evaluative statements was predominantly used in Italian discourses to stigmatize parents, and thus promote behavioural changes; syntactic manipulation by means of deontic and dynamic modalities was, instead, employed in US discourses to empower parents and promote collective action. These cross-cultural variations thus reveal contending conceptualizations of health as individual responsibility versus collective action. The different use of discourse manipulation is oriented by the opposing "behavioural change" and "collective action" models, and thus by different approaches to promoting health. Ultimately, this means that discourses of health empowerment will probably resonate more positively with parents. Conversely, those stigmatizing and blaming parents are more likely to have a negative promotional impact leading to their alienation which, in turn, may aggravate their children's medical conditions.

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Appendix 1 - Health-related websites on childhood obesity

US Websites

1. Parents take charge

https://www.parentcoachplan.com/obese.php

2. Helping Your Child Reach and Maintain a Healthy Weight

https://www.helpguide.org/articles/diet-weight-loss/weight-problems-and-obesity-in-children.htm

3. Sipping on Sugar

http://www.nourishinteractive.com/healthy-living/free-nutrition-articles/235-rethink-your-drink

4. Targeting children with sugary drinks
http://kohlshealthyfamilyfun.org/
5. Let's move
http://www.letsmove.gov/parents

Italian Websites
1. Bambini e genitori a tavola
http://www.bambiniincucina.it/blog/106-bambini-e-genitori-a-tavola
2. Sos mamme: come combattere l'obesità infantile, un fenomeno in crescita
http://chefacile.com/news/show/sos-mamme-come-combattere-lobesita-infantile-un-fenomeno-in-crescita
3. Obesità infantile: i consigli per i genitori
http://www.pianetamamma.it/il-bambino/malattie/obesita-infantile-i-consigli-per-i-genitori.html
4. Mangiare Sano dai 2 ai 18 anni
http://www.obesitainfantile.org/mangiare-sano-dai-2-ai-18-anni-2/
5. Io e il mio bambino
http://www.ioeilmiobambino.it/neonato/mangiare-insieme-previene-lobesita_prevenzione_salute_sicurezza-0-12-mesi/?refresh_ce-cp.