

GENDER, AGE AND PHYSICAL ACTIVITY REPRESENTATION IN CHILDREN'S COLOURING BOOKS

Representación del género, la edad y la actividad física en libros para colorear infantiles

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Recibido: 16-12-2019

Aceptado: 12-05-2020

Abstract

Despite publishing houses recognizing the importance of ensuring equal representation of all people in curricular materials and scholars also noting their importance in teaching children gendered behaviours, it is still common to find stereotypically gendered non-coeducational curriculum materials in the international market. The aim of this study is to determine the representation of female and male characters in the illustrations of six colouring books published in the United Kingdom entitled “Books for Girls” and “Books for Boys”. A quantitative content analysis, and a supporting qualitative discourse analysis were carried out. This paper examines the effect of constructing gender difference in children’s colouring books. Gender bias in early childhood education poses the risk of perpetuating a manifestation of inequality.

Keywords: colouring books; children; gender; physical activity; representation.

Resumen

A pesar de que las editoriales reconocen la importancia de asegurar la representación igualitaria de todas las personas en los materiales curriculares y los académicos también señalan su importancia en la enseñanza de comportamientos de género a los niños, todavía es común encontrar en el mercado internacional materiales curriculares no coeducativos con estereotipos de género. El objetivo de este estudio es determinar la representación de los personajes femeninos y masculinos en las ilustraciones de seis libros para colorear publicados en el Reino Unido titulados “Books for Girls” y “Books for Boys”. Se llevó a cabo un análisis cuantitativo de contenido y de apoyo un análisis cualitativo del discurso. En el presente documento se examina el efecto de la construcción de la diferencia de género en los libros para colorear para la infancia. El sesgo de género en la educación infantil plantea el riesgo de perpetuar una manifestación de desigualdad.

Palabras clave: libros para colorear; infancia; género; actividad física; representación.

1. Introduction

1.1. Gender and physical activity in children's books

The United Nations (UN) Convention on the elimination of all forms of discrimination against women (UN, 1979) aims to eliminate any stereotyped concepts of the roles of men and women at all levels and in all forms in education by revising curricular materials and adapting teaching methods. One of the main objectives of the United Nations Educational, Scientific and Cultural Organization (UNESCO) (Brugeilles and Cromer, 2009) is to show how gender inequality is constructed in textbooks, picture books, children's books and colouring books throughout the curriculum. In the European context, Council of Europe (CE) (2007) puts forward a set of comprehensive measures to ensure effective gender mainstreaming in education. These include provision to make authors and publishers of teaching materials aware of the need to make gender equality one of the quality criteria for the production of materials; and encouraging teachers to analyse and challenge sexism in the content, language and illustration of curricular materials. Recently, the CE (2011) adopted a Convention on Preventing and Combating Violence against Women, which included specific provisions on the necessary steps to include teaching material on issues such as equality between women and men, non-stereotyped gender roles, mutual respect, non-violent conflict resolution in interpersonal relationships, in formal and informal curricula and at all levels of education. In the early childhood education (ECE) context anti-biased education is not just an opportunity but is essential in order to promote a clear understanding of the complex issues of diversity and identity of children's lives (Derman-Sparks and Edwards, 2010).

Curricular materials play an important role in the construction of the concept of the body to the extent that they are vehicles of knowledge, ideas and values through imaginary and symbolic proposals that may contain sexist messages. Gender is a social practice that constantly refers to bodies and what bodies do (Connell, 2005). García-Villanueva (2017) suggests that heterosexuality continues to be a marker of masculinity, reinforced not only by peers but also by educational personnel and even by textbooks that always show examples of man-woman couples, taking as truth a biological origin of this sexual orientation. The gender content of colouring and picture books is a source of confirmation of the gender values communicated to children (Frawley, 2008). Bias and stereotyping in children's books can mislead children about gender construction. Previous research indicates that children's books and curricular materials often depict women and girls in gender-stereotypical activities: women and girls in household tasks, and boys and men in physical activities such as walking and running (Fitzpatrick and McPherson, 2010; Martínez-Bello, Cabrera García-Ochoa, Díaz-Barahona and Bernabé-Villodre, 2020; Rachlin and Vogt, 1974; Peterson and Lach, 1990; Weitzman, Eifler, Hokada and Ross, 1972). Children can hold assumptions about what constitutes

“girls” or “boys” books. In Dutro’s (2002) study, in the context of an ECE class, both boys and girls described boys’ books as adventurous, scary, and sports centred, with the suggestion that children read their worlds in gendered ways, using gender to categorise and organise the world of reading.

Considering that the levels of PA tend to reduce with age, with the most significant decrease occurring during adolescence, especially in girls (Kwan *et al.*, 2012), it is particularly important to avoid biased representation of gender in curricular materials for young children that include depictions of people engaged in PA. Because there is a lack of research addressing how PA domains are represented in curricular materials especially in children’s books (Roper and Clifton, 2013), another goal of the present study was to evaluate how PA domains are represented in the pictures in colouring books. Fitzpatrick and McPherson (2010), in North American colouring books for children, found gender differences which depicted boys in active play and girls in predominantly static positions. Similarly, in Spain, Cabrera García-Ochoa and Martínez-Bello (2014) found that illustrations in gender-specific colouring books showed a clear bias towards representing people of the same gender as those at whom the book was aimed. Similar results have been shown in other children’s materials. Weitzman, Eifler, Hokada and Ross (1972) and Hamilton, Anderson, Broadus and Young (2006) found in North American children’s picture books that male characters were often portrayed outdoors and active, whereas female characters were shown indoors and passive. Tàboas-Pais and Rey-Cao (2012) found in the pictures of physical education textbooks a clear imbalance between male and female characters, in which males were clearly predominant. Similarly, in Pakistan textbooks are gender biased and function as cultural conduits in the construction and reproduction of gendered hierarchies in sport (Ullah and Skelton, 2014), such that boys are portrayed in a wider range of outdoor competitive sports, whereas girls are either invisible or presented in selected indoor sports. In an analysis (Roper and Clifton, 2013) of a sample of North American children’s picture books that have a female main character who is involved in physical activity and/or sport, 10 picture books were found to provide young girls with imagery and text that encouraged physical activity; however this small number of books indicates there is a need to increase the availability of representations of girls’ participation in sport and PA. Gender representation in sports media has also been investigated extensively, including presenting some sports as male-appropriate and some as female-appropriate, supporting assumptions of female frailty and male strength (Koivula, 1999; Messner, Duncan and Jensen, 1993), and presenting female athletes in a sexualised manner, although some research points to the latter diminishing somewhat over the last 25 years (Cooky, Messner and Musto, 2015). Assumptions of children’s difference also affect the make-up of children’s sports teams and leagues, as Messner (2000) interpreted from the construction of gender difference between boys’ and girls’ teams in an American Youth Soccer League, restricting girls’ and boys’ opportunities to play together.

In the ibero-american context, Navarro (2014) analysed empirical studies on gender stereotypes in children conducted in Spain and Latin American countries, and show that although gender is a priority research area in these countries, studies on gender development in childhood are

lacking. The author concluded that reviewed studies reveal that children's preferences of toys and colours are quite gendered, and that particular objects and colours are strongly associated with gender. According to curricular materials, Martínez-Bello (2013) has analysed gender, racial and corporal diversity representation in Spanish early childhood education textbooks. The author found that there are bodies as unique representations by silencing others. In the same line, García-Villanueva and Hernández-Ramírez (2016) analysed the messages in the content of the stories and images in two children's stories usually employed in the Mexican ECE context. The authors found that the children's stories remains an androcentric conception framing the subordination of the female to the male that has allowed understand how gender identities are constructed from childhood.

Other studies have content analysed age and PA in curricular materials. Older people are depicted in a stereotypical manner in relation to hobbies, employments and lifestyle and sedentary activities (Crawford and Bhattacharya, 2014; Janelli, 1994). These authors suggest that the stereotyped portrayal of older people in these images reproduces negative ideas about old age. It has been shown that family support for the practice of PA is one of the main determinants of PA among young people, showing that adults have a significant function as role models when they exercise with other family members (McDavid, Cox and Amorose, 2012; Moore *et al.*, 1991). Considering that levels of PA tend to reduce with age, it is important to avoid biased representation of age as well as gender in depictions of people engaged in PA. In addition, in the transmission of gendered body ideas in the media, women are often infantilised in popular culture. It has been suggested that western media portray women as the same as girls, infantilised through childlike poses (Tylka and Calogero, 2011).

These patterns are also found in children's colouring books: Fitzpatrick and McPherson (2010) found that female characters were portrayed more often as children, whereas male characters were more often shown as adults. Although gender stereotyped representations of girls and boys are improving in some children's books (Gooden and Gooden, 2001; Hamilton, Anderson, Broaddus, and Young, 2006; Martínez-Bello and Martínez-Bello, 2015; Poarch and Monk-Turner, 2001), bias in the way boys and girls are portrayed still exists in many children's colouring books (Fitzpatrick and McPherson, 2010). Taking into account that colouring books constitute an educational resource available to teachers and families (Randall and Draper, 1981; Stokey, 2010), we contend that a focus on gender bias in gender-specific children's colouring books is important because gender segregation in any materials in the context of childhood education must be discouraged. Any media that children engage with that reinforces gender stereotypes can contribute to sexist expectations about engagement in sport, education and the workplace. Colouring books encourage creativity and the imagining of multiple worlds. Burkitt (2004) suggests that when children draw, they show how they feel about people and objects in their lives. Children's prolonged engagement with each image in a colouring book as they spend time and use their imagination to make decisions how to finish the picture could mean that colouring books contribute significantly to (gender) socialisation in young children (Fitzpatrick and McPherson, 2010). To our knowledge gender-specific colouring books in the United

Kingdom appear to have received less recent scholarly attention despite their presence in the market (Figures suggest that colouring books make up approximately five percent of the children's book market (Milliot, 2014). In this type of children's book, the publisher produces two similar books, one for girls and one for boys, with different pictures inside. In the United Kingdom, there is a popular online campaign called Let Toys Be Toys (2017), with a sister campaign Let Books Be Books, of whom a key target is colouring book publishers.

The aim of this campaign is to ask publishing industries to stop limiting children's interests by promoting some books as only suitable for girls and others only for boys. According to Let Books Be Books, gendered books limit children's choices and can turn children away from their true preferences. Despite publishing houses recognising the importance of ensuring equal representation of all people in curricular materials (Let Toys Be Toys, 2017), gendered and gendering books are still common.

1.2. Impact on children

In the early childhood context, most children have developed a deeper understanding of themselves and they are learning normative ways to be a boy or a girl (Brown, 1998). Children are listening, and take seriously the messages they receive from books, from toys, from marketing and the adults around them. In addition, they are also aware of the play preferences, behaviours and expectations that adults favour. In terms of children's socialisation into gender roles, gender-stereotyped illustrations have been found to impact young children's colouring choices and whether these choices are a function of children's own gender (Karniol, 2011). Studies that use gender schema theory (understandings of how gender works and of one's own gender) to examine children's books show that dominant discourses are often reproduced and that children's existing gender schema are reproduced, making it difficult to make significant changes.

Gender schema also shapes our interpretations so that the way that we read gender in books is affected by our previous understandings and experiences: "A consistently unequal pattern of males and females in children's books thus contributes to and reinforces children's gender schemas and identities" (McCabe *et al.*, 2005: 200).

Bronwyn Davies counters this roles-based notion of gender by establishing the concept of subject positioning. Subjectivity or identity is a position that a social actor takes up, that they can discard or shape, and it is not fixed and unchanging. A social actor can only take up positions that are available to them in the discourses they come into contact with. "Positioning oneself as male or female is done through the discursive practices and through the subject positionings which are available within those practices" (Davies, 2003: 12).

Davies continues, 'this is not just a conceptual process. It is also a physical process. Each child's body takes on the knowledge of maleness and femaleness through its practices' (Davies, 2003:

12). Clothing, hairstyles, comportment and, we might add, type of physical activity, are affected. Usually, Davies argues, the available positions are reduced to polarised versions of male and female. Where children's books reflect this, and only make available versions of boyhood as active or versions of girlhood as sedentary, as suggested by Fitzpatrick and McPherson (2010), children encountering this material can only take up these positions. If multiple, diverse positions were available, and 'multiplicity [were] constituted as non-problematic', 'children [could] take up a range of both masculine and feminine positionings' (Davies, 2003: 12).

Drawing from this theoretical frame that supports a full range of subject positionings being available to all children, and *Let Toys Be Toys*' (2017) calls for gender diversity, our perspective is far from a liberal feminist one of desiring only the representation of girls in masculine subject positions and instead seeking to find representations of girls in active settings as well as sedentary ones; boys playing with dolls as well as with cars. This theoretical framework also prompts both a qualitative and a quantitative approach to analysing gender-specific colouring books available on the UK market.

1.3. Aim and hypotheses

Despite UN and CE regulatory frameworks and political activism against sexism in curricular materials (for instance, the *Let Toys Be Toys* campaign), and despite the presence of colouring books in the national and international market, we know little about the representation of boys and girls in gendered colouring books available to children in the United Kingdom. Our research aim focused on analysing the extent to which the characters depicted in girls' books and boys' books were similar or different across the categories of gender, age, space, and physical activity domains. Based on previous research, we tested four hypotheses:

H1. Male characters will be represented more often than female characters in colouring books for boys and female characters will be represented more often than male characters in colouring books for girls.

H2. Male characters will be portrayed doing more leisure time physical activity than female characters in colouring books for boys whereas female characters will be portrayed more in sedentary or low activities than male characters in colouring books for girls.

H3. Female characters in the books for girls will be portrayed as children whereas male characters in the books for boys will be portrayed as adults.

H4. Female characters in the books for girls will be portrayed in indoor spaces whereas male characters in the books for boys will be portrayed in outdoor spaces.

2. Material and methods

2.1. Sample

To obtain a sample of British gendered colouring books, we searched the biggest publishing houses of children's books in the UK according to the number of titles registered in *Market research and statistics* from the Publishers Association (2013). As a result, our sample included six books from three publishing houses with presence in the UK between 2011 and 2013 (two from each publishing house). These houses were Buster Books, Usborne, and Scholastic. The criteria used to select the specific colouring books were: First, for the purpose of this study, a gender-specific children's colouring book was defined as where the publisher produces two similar books, one for girls and one for boys, with different pictures inside. Second, the colouring books are primarily designed for children aged between three to eight years old. Third, they were present in the market. Fourth, these colouring books were published in the UK. Fifth, they were written in English. Sixth, all the colouring books were published between 2011 and 2013.

The analysis was restricted to illustrations where human characters were portrayed, so that illustrations of animals with human characteristics, fantasy characters, and man-made characters (e.g. robots) were not included in the analysis. This was due to an interest in the body in physical activity (Martínez-Bello and Martínez-Bello, 2015). After counting, the total number of illustrations in these six books was 245. From this, a representative sample was taken from the total population using a confidence level of 95% and a margin of error of 5%. Once we numbered all the illustrations, we randomly selected which ones to use using a table of random numbers (on average, 22 illustrations per book). In total we analysed 136 illustrations. In each illustration the most prominent character was recorded and hence our sample was of 136 human characters (one character in each illustration). Although in the six books there were images in which it was not possible to identify the gender of the character(s), they were not discarded, instead used to create a category 'gender: unknown' as an indication of unclear or neutral gender in the books' characters.

2.2. Image analysis and coding scheme

In this study, content analysis of the images is used as the main tool to gain nuanced understandings of the construction of gender used by six gendered colouring books in the United Kingdom. Content analysis has often been used as a means of evaluating the bias inherent in textbooks and other curricular materials. Weitzman, Eifler, Hokada and Ross (1972) established content analysis of children's books in a liberal feminist tradition and came from the perspective that equal representation – women's equality with men – was to be sought for, for which quantitative analysis

of the current field was required. In the study in hand, an adaptation of the approach advocated by Fitzpatrick and McPherson (2010) and Martínez-Bello and Martínez-Bello (2015) was used. A category system was devised and subsequently two experts in human movement sciences and one expert in gender studies were asked their opinion about the categories and indicators. Following these independent discussions, the category system was rewritten based on their feedback (see Table 1). The content of each page from the sample was coded by two independent coders using this system of categories and indicators.

The coding scheme consisted of the following categories: *Gender*, *Age*, *Space*, and *Physical Activity Domains*. Each unit of analysis (representation of a human body) was coded by choosing one indicator from each of the categories. The activities included in the PA domains (leisure time physical activity (LTPA), occupational activity and household physical activity (that involve at least moderate intensity activity (≥ 3 METs) and sedentary activity (SA) in accordance with reports from Ainsworth *et al.* (2000) and the Center for Disease Control (1999). The Compendium of Physical Activities (Ainsworth *et al.*, 2000) was used during the image coding process.

The process of content analysis was performed by two independent coders who were not members of the research team. During a practice coding session, interater reliability was monitored. During this session, the researchers explained the objectives of the research project and the coding process. Coding was done independently and the coders analysed three example images in order to clarify questions about the coding process. The categories and indicators in our coding scheme were checked independently by the coders. The image was put on the desk and one member of the research group read each category containing the list of indicators.

After analysing each image the coder decided one indicator for each of them, which took an average of two minutes depending on the difficulty of the image. The final coding was carried out following the same procedure. In total, four sessions (of two hours each per coder) were needed in order to analyse all of the images. Interference by the research team was minimal and only focused on presenting the images and reading each of the categories and indicators. In order to determine the reliability of the data, we calculated the percentage of inter-coder agreement by calculating Cohen Kappa coefficients for each category. The Kappa value for *gender* was $k=0.74$; *age* was $k=0.92$; *space* was $k=0.94$ and *physical activity domains* was $k=0.88$.

For the statistical analysis, a contingency table was constructed using *Type of Book* as an independent variable against the dependent variables of *Gender*, *Age*, *Space* and *Physical Activity Domain*. In order to better represent the results to a general audience, we have chosen to represent them through graphical percentages. To define a statistically significant probability, values less than 0.05 were accepted. SPSS version 19 was used for statistical analysis.

Table 1. Coding scheme for content analysis

Categories	Indicators	Definitions
Gender	1. Male	The illustration shows one or more people whose basic characteristics represent males or females based on clothing, hairstyle, presence or absence of facial hair, physical stature, and other distinguishing characteristics.
	2. Female	
	3. Unclear	
Age	1. Children	The image shows one or more people whose basic characteristics represent different ages based on appearance and behaviour such as adult-like facial structures, clothing, occupational context, and other distinguishing characteristics.
	2. Adults	
Space	1. Indoor	The illustration shows activities occurring in outside or inside locations.
	2. Outdoor	
	3. Unclear	
Physical activity domains	1. Sedentary behaviour or low activity	Waking activities when sitting, lying or standing that involve low energy expenditure.
	2. Active commuting	Physical activities, including cycling or walking, as a way to get to places.
	3. Occupational activity	Physical activities through work or occupations.
	4. Leisure-time physical activity	Physical activities for exercise or recreation that can be organised, such as team or individual sports, or non-organised, such as traditional games or recreational sports.
	5. Household physical activity	Physical activities in a household setting such as gardening or child minding.

Source: prepared by the authors, based on previous studies (see Material and methods section).

As a post-positivist method, quantitative content analysis offers description, and insight on the statistical relationship of gender representation to age, PA and space in this study. However, this quantitative work only identified whether human characters were male or female. It highlighted a need for qualitative, discursive analysis of the images and surrounding text concerning gender, age, PA and space in these colouring books. Content analysis cannot analyse what is invisible or missing, differentiate strong or weak examples of a code, or comment on composition and mood (Rose, 2013). Discourse analysis, in the Foucauldian sense (according to Rose, 2013), pays attention to the social construction and consequence of difference. Discourse ‘refers to groups of statements that structure the way a thing is thought, and the way we act on the basis of that thinking’ (Rose, 2013: 190). Discourse can be articulated through a variety of means or media, so intertextuality is important – that is, meanings depend on other texts too. By implementing discourse analysis, we could investigate the

reproduction of the social institution and practice of gender. This analysis coincides with Davies' (2003) and Connell's (e.g. Connell, 2005) articulation of gender subject positioning and gender relations. Hence, examination of the construction of masculinities and femininities, and how they related to one another, was undertaken to create more nuanced understanding of gender relations, subject positioning and the gendered body in these books. One lead researcher read through all six books and created written notes of the overt and covert stories told in the images; that is, the discourses reproduced in the images. For instance, characterisation; setting (such as contemporary, historical or imaginary); and juxtaposition of male and female characters were noted for individual images, and further observation of the overall discourses in each book was noted (Rose, 2013). In the following results section, the content analysis is presented in relation to each hypothesis, with qualitative analysis offering support and further illumination).

3. Results

Representation of gender in Table 2 shows that of the total characters represented in the sample, in the books for girls 75% were depicted as female, 13% as male and 12% as unclear. In contrast, in the books for boys, 60% were depicted as male, 18% as female and 22% as unclear. Chi-square analysis revealed a significant association between gender of character and type of book, $X^2(2, N = 136) = 45.28, p < 0.001$.

Table 2. Percentages (%) of subjects based on Gender, Age and Type of Book

		Gender			Age	
		Male	Female	Unclear	Children	Adults
Books for	Girls	13%	75%	12%	34%	66%
	Boys	60%	18%	22%	35%	65%

Source: prepared by the authors, based on results of this study.

The descriptive statistics in Table 2 show that there was a clear disparity across gender category taking into account type of book. In the books for girls, females were represented more frequently than males; in the books for boys, males were represented more frequently than females. This results in a narrow range of subject positions. In one of the books for girls, there was only one male character present, represented as a bridegroom at a wedding. This may suggest to girls using this

book that men are husbands but not friends, colleagues or enemies, for instance. The written language accompanying some of the images, often in second person and hence speaking to the reader, invited readers to imagine themselves as part of the images' stories; in the boys' books, readers see 'you have discovered...' or 'you have created...' that position readers (boys) as the protagonists in science or adventure settings.

A chi-square test was conducted using gender as an independent variable. We determined the PA patterns of the characters portrayed in the 136 illustrations. Because less than 5% of the images represented household activities, occupational activity and active commuting, we combined the 'household activities', 'occupational activity' and 'active commuting' indicators into one indicator (Others).

We hypothesized (in H2, above) that male characters would be portrayed doing more LTPA than female characters in books for boys while whereas female characters would be portrayed more in SA than male characters in books for girls. Of the total female characters represented in the books for girls, 67% were depicted in SA, 26% were in LTPA, and 7% were doing other activities. In contrast, of the total male characters represented in the colouring books for boys, 44% were depicted in LTPA, 42% were depicted in SA, and 14% were identified as others (see Table 4). Hypothesis H2 was only partially supported. In the books for girls, a chi-square analysis revealed a significant association between gender of character and physical activity domain, $X^2(4, N = 76) = 18.032, p < 0.001$. However, in the books for boys, despite chi-square analysis showing a trend, $X^2(4, N = 60) = 8.371, p > 0.079$, there was not a significant association between gender of character and physical activity domain.

These quantitative results for leisure time physical activity obscure some differences in the ways that active female and male characters were represented. In the books for girls, where leisure time physical activity was displayed, it was frequently dance, including ballet and bharatanatyam. In one image of horse riding, a female character rides behind a male companion who holds the reins. This is one example of female characters being submissive to or relying on men, or having a lesser role. Leisure time physical activities that only male characters were engaged in, in the books for boys, included football and fishing; and one image of active transport showed a number of men dressed in suits, walking to work. The type of leisure time physical activity was gender stereotypical, and additionally the range of positions available to boys appeared to be more diverse, plus the opportunity and encouragement of leadership in work and adventure settings was also clear in the books for boys. In sedentary activity or static positions, female characters in the books for girls were represented in fashion or fantasy settings; written instructions encouraged girls to colour in fashion items with a variety of patterns; to imagine and draw her own appearance in the future, or to imagine herself kissing someone. In one of the books for boys, where the reader was asked to imagine and draw himself, it was in a funny way, such as how he would look in a funhouse mirror.

Table 2 shows that of the characters in the sample, in the books for girls 66% were depicted as adults, and 34% as children. In the books for boys, 65% were depicted as adults, and 35% as children. There was a higher representation of adults in both types of books (books for girls and books for boys). Hypothesis H3, that female characters in the books for girls would be portrayed as children whereas male characters in the books for boys would be portrayed as adults was not supported. No significant association was found between age of character and type of book, $X^2(1, N = 136) = 0.009$, $p > 0.533$.

Table 3. Percentages (%) of subjects based on Space and Type of Book

		Space		
		Indoors	Outdoors	Unclear
Books for	Girls	18%	47%	34%
	Boys	8%	57%	35%

Source: prepared by the authors, based on results of this study.

Table 3 shows that of all the characters in the books for girls represented in the sampled illustrations, 48% were depicted outdoors, 18% indoors, and 34% in unclear spaces. Of the total characters represented in the books for boys, 57% were represented in outdoor spaces, 8% in indoor spaces, and 35% in unclear locations. Hypothesis H4, that female characters in the books for girls would be portrayed in indoor spaces whereas male characters in the books for boys would be portrayed in outdoor spaces, was not supported. Chi-square analysis did not show any statistical differences between *Space* and *Type of Book*, $X^2(2, N = 136) = 3.01$, $p < 0.222$.

Table 4. Percentages (%) of subjects based on Physical activity domains, Gender and Type of Book

	Books for					
	Girls			Boys		
	Female	Male	Unclear	Female	Male	Unclear
Sedentary or low activity	67%	40%	11%	64%	42%	54%
Leisure-time physical activity	26%	30%	33%	-	44%	31%
Others	7%	33%	56%	36%	14%	15%

Source: prepared by the authors, based on results of this study.

However, further qualitative analysis of the books for boys suggested it was common for male characters to be represented in workplace, discovery or adventure settings, depicting boys or men as scientists, astronauts, pirates, divers, strong men and superheroes. Strong men and superheroes had muscular bodies or demonstrated strength through lifting heavy objects, for instance. Although in one image, one strong man was drawn with smaller muscles, unable to lift the heavy object he had, this could be seen as providing an opportunity to laugh at a character unable to carry out his role. There was no space travel in any of the books for girls. Some images in the books for girls stand in contrast; superheroes were also found in some of the books for girls' images, but they were girls rather than women; female characters sometimes had jobs, but were 'closer to home' or smaller in scope – such as pet shop owner or botanist – compared to the astronauts and pirates of the books for boys. Female characters were close to or part of nature, drawn as fairies small enough to ride on a leaf-sized carriage drawn by birds. This contrasts with male characters in the books for boys who conquered nature – explorers on safari or anglers catching large fish. Although one outdoor image in a book for boys depicted a female pilot, she was a co-pilot sat behind the male main character, perpetuating an idea that women follow and men lead.

4. Discussion

4.1. Representation of gender

Our initial hypothesis stated that male characters would be represented more often than female characters in colouring books for boys, and female characters would be represented more often than male characters in colouring books for girls. In accordance with this, the under-representation of women and girls in the books for boys is significant compared with the representation of men and boys (Table 2). It appears that publishing houses may assume that boys using the books for boys are not interested in seeing female characters and likewise, that girls using the books for girls are not interested in seeing male characters. Let Books Be Book's (2017) concern with this is that gender-segregation in itself is an artificial and damaging divide. Their social media sites highlight the stories of a number of parents and children frustrated by implicit messages that a certain toy or book is not for them, claiming that it restricts children's opportunities and dreams. This labelling of books and toys may also lead to bullying of any children who make the so-called 'wrong choice'. Karniol (2011) has shown that when engaging with free drawing activities preschool boys are reluctant to be associated with objects and colours that are female-stereotyped. In addition, the author suggested that young children can use illustrations and colours as emblems of gender and promote behaviour in line with their gender identity. According with our results, we agree with Fitzpatrick and McPherson

(2010): as children work with these illustrations, deciding on colours, drawing and thinking about the characters, gender stereotypes may be constructed.

Similar findings have been found in pictures from gendered colouring books in Spain and in North America (Fitzpatrick and McPherson, 2010; Cabrera García-Ochoa and Martínez-Bello, 2014). This has been evident in children's books for more than forty years. For instance, in 1972 Weitzman, Eifler, Hokada and Ross found that in North American children's books males appeared in the illustrations more than twice as often as females. McDonald (1989) found that in a sample of picture books male characters outnumbered female characters and were given the majority of central character roles. Contrary to our quantitative results, Rachlin and Vogt (1974) found an equal representation of females and males in the pictures in North American colouring books. This suggests a complex field of children's materials and no clear trend over time. Our results show that the representation of boys and men in the three books for girls was even worse than the representation of girls and women in the books for boys, suggesting that girls are offered a narrower range of subjectivities, at least in terms of gender, in these books. To be a girl is to be interested in appearance, and to have a subordinate position to men. Research into children's books has long established a trend for presenting girls and boys in different occupations, environments and roles, for instance girls in more nurturing roles, boys as independent and active, a trend partially supported by our results (Hamilton *et al.*, 2006; Peterson and Lach, 1990). As Hamilton *et al.* (2006) note, these trends have only marginally diminished in the twenty-first century compared to the late twentieth.

However, this trend has been modified in other curricular materials. For instance, Gooden and Gooden (2001) have shown that in picture books the representations of girls and boys have improved over time and Poarch and Monk-Turner (2001) found that despite some gender role stereotyping, the representation of female characters in children's books is increasing overall and showing them more frequently with tools or in a role outside home; and Roper and Clifton (2013), located a small number of books providing young girls with examples of PA. McCabe *et al.* (2005) point out that Weitzman, Eifler, Hokada and Ross's (1972) study had some positive influence on publishers to change their books, and this may be similar to what is happening today with the consumer pressure of parents' groups like Let Toys Be Toys. However, Peterson and Lach (1990) were unable to find a statistically significant decrease in the use of stereotypes in children's literature, and caution against suggesting elimination of gender stereotypes will happen soon.

4.2. Representation of physical activity domains

We hypothesised that male characters would be portrayed doing more LTPA than female characters in colouring books for boys and female characters would be portrayed more in SA or low intensity activities than male characters in colouring books for girls. Results showed that there was no statistical association between PA domains and gender in the books for boys, with men and boys

shown to participate in both SA and LTPA (42% and 44%, respectively). In contrast, in the books for girls, a chi-square analysis revealed a significant association between gender of character and PA domain, $X^2(4, N = 76) = 18.032, p < .001$. For instance, the number of illustrations that show female characters in SA is more than twice as high as the number of girls and women doing LTPA (26% vs 67%). Male characters in the books for boys were portrayed in a greater variety of LTPA than female characters (44% vs 26%, respectively). In addition, 18% of characters in the books for boys were female and they were unlikely to be represented as physically active (26%). Qualitative analysis also indicated differences in the type of LTPA represented in the two types of books, with common use of gender normative activities, bodies and spaces.

According to our results, where there is an under-representation of female characters and a high representation of male characters doing LTPA in colouring books for boys (Table 4), this associates boys and men with a healthy perspective on PA. Furthermore, in the books for girls, despite there being a high representation of female characters, they are portrayed doing a limited range of LTPA and predominantly are represented in SA. This is similar to Fitzpatrick and McPherson's (2010) assertion that girls see more stereotypes about girls in their colouring books. The subject positions available to girls in these books have a narrow scope and reproduce discourses that girls are less active. If girls working with these colouring books see a low number of female characters doing LTPA, it could affect the active participation of girls in a variety of physical activities. Blaise (2005) pointed that how children move their bodies and arrange how others perceive them through body movements is performed in relation to hegemonic masculinity and reinforces emphasised femininity to varying degrees.

This not being a survey of all gendered books or even colouring books over a recent period, we cannot fully conclude whether things are getting worse or better. We can however make comparisons with colouring book studies from other countries. In ECE textbooks Martínez-Bello and Martínez Bello (2015) recently found that three Ibero-American publishers seem to have made an effort to represent boys and girls doing non-stereotypical motor activities in a way that promotes equality between genders. Hence, our results that point out the association of LTPA with boyhood are troubling.

4.3. Representation of age and space

In the transmission of gendered body ideas, women are often infantilised (Fitzpatrick and McPherson, 2010; Lawton, 2009). Analysis of the age variable in this study showed that adults had the highest representation in the images independent of the type of book. This result was contrary to our second hypothesis that female characters in the book for girls would be portrayed as children whereas male characters in the books for boys will be portrayed as adults. However, no significant association was found between age of character and type of book (Table 2). Similar results have been

found in gendered colouring books in the Spanish market. For instance, Cabrera García-Ochoa and Martínez-Bello (2014) found that adults appeared in the illustrations more than twice as often as children. Fitzpatrick and McPherson (2010) found that in their analysis of North American colouring books females were more likely to be depicted as children, whereas male characters were significantly more likely to be depicted as adults.

Weitzman, Eifler, Hokada and Ross (1972) found in children's pictures books that male characters were often portrayed outdoors and active, whereas female characters were shown indoors and portrayed as passive. In the same line, Hamilton *et al.* (2006) found in North American popular children's pictures books, that female characters compared to male characters were portrayed in more indoor than outdoor scenes. Taking into account these results, we tested our third hypothesis in order to check that females would be portrayed in indoor locations whereas male would be portrayed outside. However, contrary to our hypothesis, there were no differences between the male and female characters with regard to the space category. In both kinds of books, women and men were represented in indoor and outdoor spaces, independently of gender. Although (as noted above) women and girls remain represented in stereotypical activities, the reasons for the contrary findings on space and place may be positive developments in gendered representations over time: the notion of women and girls being confined to the home has largely been dismissed in our Western context. Another reason could be the high percentage in our study of images determined as unclear location (34% and 35% in the books for girls and in the books for boys, respectively), affecting the finding of any statistical difference in the space category. These high percentages of unclear location suggests that these colouring books do not focus on space and place as key elements in the construction of an illustration; however, it also indicates potential for further study on the portrayal of gender, PA and space or place in curricular materials. Other areas for further investigation also arose during the analysis. Although the scope of this paper is only on gender, the qualitative analysis highlighted a lack of representation of larger bodies, non-white bodies and people with disabilities.

5. Conclusions

Our analysis of recently published gendered colouring books indicates a misbalance between the representation of boys and girls. By representing narrow ranges of masculinities and femininities, the colouring books analysed did not promote and legitimise gender equality. Although there was no symbolic annihilation of girls in the colouring books under investigation – a concern that McCabe *et al.* (2005) had about children's literature – there was a bias in the gender of the main characters such that colouring book titles aimed specifically at girls often made a girls the main character. We argue that it is the way that these characters are portrayed, the activities they are doing and the spaces or

environments they are in that we need to pay attention to: uses of stereotypes; marginalisation of girls in colouring books for boys (and vice versa); and narrow gender subject positionings. Gender diversity is not always acknowledged nor celebrated; additionally, although women and girls appear in children's colouring books, they are not portrayed involved in a variety of PA domains. In Roper and Clifton's (2013, p. 148) terms, this has the power to send a message to girls that 'women's and girls' sport experiences are insignificant and irrelevant'. This message currently continues far into participatory and elite sport in adolescence and adulthood (Messner, *et al.*, 1993). Furthermore sexism in the ECE context poses the risk of perpetuating a manifestation of inequity and social injustice (Kliman, 1978) affecting children's rights (Brugeilles and Cromer, 2009). Corresponding with our results we contend that girls and boys do not need separate books. To separate children solely on the basis of sex in the typical distinction of "books for girls" and "books for boys" solely because of their sex generates, as have been shown extensively, a feeling of difference and impassable boundaries around 'girl' and 'boy' (Messner, 2000). This does not aid in providing an opportunity for young people to develop their ideas of what it means to be a girl or a boy, or to explore and assess their own and their community's attitudes about society, gender, and sexuality.

A number of publishers of children's colouring books have recently agreed to produce no more gendered titles, instead agreeing to gender-neutral books (Let Toys Be Toys, 2017). We agree with García-Villanueva (2017) about that identity only exists in acts, in practices, but to the degree it is used in speech, which is when identity occurs, a discourse appears from which practices derive and vice versa. As has been pointed out by Pidgeon (1983) there was a naïve assumption that finding evidence of stereotyping would be enough to persuade publishers, writers and illustrators not to produce books which encourage gender stereotyped views, and as a result the next generation would be free of stereotypes. Let Toys Be Toys' consumer pressure on publishers also meets some resistance from publishers and retailers who claim that consumers seek and appreciate security in gender differentiated goods, so education should continue (Let Toys Be Toys, 2017). We agree with Martínez-Bello, Cabrera García-Ochoa, Díaz-Barahona and Bernabé-Villodre (2020) that analysing curricular materials in terms of the social construction of the body and addressing gender-related biases, we can combat the systematic stereotyping of people simply because they are girls or boys.

This has implications for building and maintaining gender-sensitive curricula specifically in physical education, where it has long been noted that oppositional constructions of boys and girls or masculinities and femininities can contribute to constraining young people's engagement in diverse physical activities (Vertinsky, 1992; Wright, 1995). Emphasis should be to encourage publishers to reconsider how they compile their books, but there are things that teachers and parents might do. Parents might be encouraged to get involved in consciousness-raising efforts such as actively talking about children who make gender non-stereotypical choices. Critical pedagogy with children might encourage them to request non-gendered, non-stereotypical or gender-neutral books. Resources aimed at assisting teachers to support transgender and gender-nonconforming children have some

suggestions for ways to approach gendered materials with children, including providing access to books representing a variety of gender and sexual identities (Wells, Roberts and Allan, 2012). Reading egalitarian books to children has been shown to shape children's beliefs (Trepanier-Street and Romatowski 1999), but one book is unlikely to have much effect because of the reproduction of gendered discourses across materials. As Davies (2003) suggests, talking about gender in books is just one element in a difficult journey towards less prescribed gender roles and relations and greater acceptance of gender diversity, because of the pervasiveness of gender conformity in products and media aimed at children. She offers ways that parents and other people who read with children can ask questions about books' content and characters to encourage children to handle alternative readings or challenge the gender relations they encounter. In addition, teachers and parents should avoid resources with gender stereotyping and we agree with Davies' (1998) suggestion that teachers as researchers act to examine their own gendered practices and think through the changes they could make.

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