Manifestations of gender (in)equality and stereotypes in physical-motor

Manifestaciones de (des)igualdad y estereotipos de género en #TikTokchallenges físico-motrices: un estudio cualitativo

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Abstract:

TikTok's growth as a platform with mass use among the general population and especially among young people has significantly increased the scientific-educational community's interest in it over the last five years. One of the main factors attracting attention has been the popular #trends or #TikTokTokchallenges, which can have an impact on the transmission and perpetuation of gender stereotypes. The main objective of this work was to explore the construction of gender manifested in #TikTokchallenges using a critical approach to guide and inform possible future educational interventions. A qualitative methodology with an emergent design was used, triangulating the use of an ad hoc coeducational scale, observation through a categorical system, and content analysis of a researcher diary. The sample comprised 86 videos with physical-motor content. The results obtained did not show a high gender inequality index in the sample analysed. However, the largest percentage of videos analysed did not show stereotype-free and gender-equal content. The elements that were identified as transmitting gender (in)equality in #trends included the shot type, interactions between participants, the music used, the hashtags used, the type of skill or physical ability shown in the challenge, and the body image presented. The information obtained highlights the importance of reviewing and addressing the physical-motor content of these TikTok challenges in educational contexts. The impact that consuming and/or producing this type of content can have on the young population and the design of educational and critical interventions to promote gender equality, including social networks, are discussed.

Resumen:

El crecimiento de TikTok como una plataforma de uso masivo entre la población en general y en especial entre el sector más joven impulsó de manera significativa el interés de la comunidad científico-educativa durante el último lustro. Uno de los principales factores de atención fueron sus populares *#trends* o *#TikTokchallenges*, que pueden impactar en la transmisión y perpetuación de estereotipos de género. El objetivo principal de este trabajo fue profundizar en la construcción de género manifiesta en los *#TikTokchallenges* con un enfoque crítico que oriente y fundamente posibles futuras intervenciones educativas. Se aplicó una metodología cualitativa con un diseño emergente, en la cual se trianguló la aplicación de una escala coeducativa construida *ad hoc*, la observación mediante un sistema categorial y un análisis de contenido sobre un diario de los investigadores. La muestra fue de 86 vídeos con contenido físico-motriz. Los resultados obtenidos no revelaron un índice de desigualdad de género alto en la muestra analizada. Sin embargo, el mayor porcentaje de los vídeos analizados no mostraron un contenido libre de estereotipos y en igualdad de género. Entre los elementos identificados como transmisores de (des)igualdad de género en los *#trends* se incluyeron el plano de grabación, las interacciones entre las personas participantes, la música utilizada, los *hashtags* empleados, el tipo de habilidad o capacidad física manifestada en el reto y la imagen corporal presentada. La información obtenida manifiesta la importancia de revisar y tratar el contenido físico-motor de estos retos de TikTok en contextos educativos. Se debate el impacto que pueden tener el consumo o la producción de este tipo de contenidos en la población joven y la necesidad de diseñar intervenciones educativas y críticas hacia la igualdad de género que incluyan las redes sociales.

Palabras clave: estereotipos, redes sociales, viralidad, retos motores, actividad física, competencia digital.

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1. Introduction

TikTok is a social network that has grown rapidly over the last five years, and is very popular among young people in Spain and internationally (IAB Spain, 2023; Dixon, 2025). It is known for being entertaining and diverting, and is especially appreciated by the adolescent population (Al- Maroof et al., 2021; Suárez-Álvarez & García-Jiménez, 2021). Its rise has been linked to the pandemic of 2020, when #TikTokChallenges became a popular form of entertainment during lockdowns (López-Carril et al., 2024). These challenges, especially ones of a physical-motor and expressive-corporal nature, such as dances, are done individually or in groups, and they became a form of therapy against isolation (Kennedy, 2020; González-Ramírez, 2022).

Interest in TikTok has not only emerged in the general public but also in the scientific and educational community, which perceived its educational potential and has explored its benefits in areas such as physical-sporting education (Escamilla-Fajardo et al., 2021; López-Carril et al., 2024). The recent review by Caldeiro-Pereira and Yot-Domínguez (2023) reflected its educational potential and the wide range of educational proposals that make use of it. TikTok is used in a wide variety of areas (language, science, physical education, etc.) and has proven to be an effective resource for teaching foreign languages, for producing creative videos, and for physical expression among other aspects. Its short-video format and its capacity to share ideas or resources and generate interactions contribute to the use of TikTok in classrooms as a pedagogical tool that has a positive impact on student motivation (Escamilla-Fajardo et al., 2021; López-Carril et al., 2024; Meirbekov et al., 2024).

Nevertheless, in accordance with the ideas of Caldeiro-Pereira and Yot-Domínguez (2023), the adoption of movement without the necessary critical reflection can cause difficulties and harm for society, especially among the population that makes the most use of TikTok: adolescents and young adults (Dixon, 2025; IAB Spain, 2023; Manago et al., 2023). For example, the work of D'Ambrosi et al. (2024) found that TikTok can be an unrealistic tool in medical education and that videos with a low scientific basis were predominant in the case of treating epicondylitis. These results, combined with the proliferation and consumption of science-based content on TikTok (Micaletto-Belda et al., 2024), are an example of the possible reach of this application and are a rationale for the educational approach to the problem. In addition to the possible misinformation generated among consumers of these or other videos, there is concern that misuse of the app might contribute to the appearance of physical and mental health problems among adolescents (Falgoust et al., 2022; Patel et al., 2023). Other studies even suggest that these challenges can affect family relations (Ibanez-Ayuso et al., 2022). Works such as that by Garcés-Fuemayor et al. (2023) emphasised the need to educate in critical thinking on TikTok and also demonstrated the app's efficacy as a pedagogical tool for doing so.

In accordance with this concern, which revolves around the development of critical thinking in the culture of immediacy, and in line with Agenda 2030 (SDG 5, "gender equality"), one of the recent focusses in research into TikTok centres on gender (e.g., Micaletto-Belda et al., 2024). In this area of study, social network use patterns have been seen to reflect and reinforce gender stereotypes and can shape people's opportunities (Manago et al., 2023). For example, some researches have noted that TikTok #dancechallenges often transmit sexualised images of women with athletic bodies and tight clothing, perpetuating gender stereotypes (González-Ramírez, 2022; Kennedy, 2020). This phenomenon is not unique to TikTok, but is also apparent on various social networks, where likes and comments can reflect and promote discriminatory attitudes (Yu et al., 2020; Gil et al., 2022).

The present work seeks to examine in depth the construction of gender apparent in #TikTokchallenges using a critical focus that orients and justifies possible future educational interventions. The specific objectives are as follows:

1. To analyse #TikTokchallenges that relate to physical-motor and/or corporal-expressive content from a gender perspective and how they influence virality.

2. To identify elements that can transmit gender stereotypes and discrimination in these challenges as the basis of future educational interventions.

2. Method

A qualitative method was used, with observation using two instruments that have an ad hoc design and content analysis of a researcher diary. The methodology considers the difficulty of inquiring into the little-explored world of audio-visual research on networks, as well as the need to generate procedures for accessing research on TikTok in response to the requirements apparent in previous works (e.g., González-Ramírez, 2022; Huamán & Ramírez, 2022). In order to meet the objectives rigorously and credibly, avoiding biases in qualitative research, this study is based on triangulation of researcher and methods.

2.1. Sample

To select a sample from an infinite population that is the result of how TikTok works (Huamán & Ramírez, 2022), this study used purposive sampling, which is characteristic of qualitative research, with one selection criterion: challenges that include physical-motor and/or corporal-expressive activity. Establishing a single inclusion criterion is an opportunity to analyse the situation in all of its complexity, including videos from diverse perspectives (social, educational, etc.) recorded by different users, with the aim of this analysis reflecting the wide variety of realities that girls, boys, adolescents, and young people might encounter in #TikTokchallenges.

The selection of videos was done by two experts in physical activity and sport. Hashtags were used as a search strategy, in line with previous research (González-Ramírez, 2022; Suárez-Álvarez, 2022). These were #trend, #challenge, #TikTokChallenge, and #reto. The collection process was also enriched manually through TikTok's "For you" algorithm, making use of this social network's applied artificial intelligence, which drives the network's functioning and offers users new videos relating to what they have previously viewed (Roth et al., 2021). Therefore, new challenges were added that did not feature the tags mentioned above, but did respond to the inclusion criterion.

The final sample comprised 86 videos and their respective captions. With regards to the search strategy, it is notable that using hashtags to search for content is an opportunity to discover with greater accuracy the reality that people see. When a search is done, the app itself orders videos by how viral they are, with the top results being the videos with the most interactions. These are then the ones that a TikTok user is most likely to find.

2.2. Tools

In this research, two instruments with an ad hoc design were applied: the observational-critical scale of the co-educational value of physical-motor #TikTokchallenges and the observational coding system for physical-motor #TikTokchallenges with a gender perspective.

The first instrument is intended to establish the degree of (in)equality present when assessing a challenge. It has six indicators with a dichotomous response option (Yes/No) to assess whether the challenge contributes to gender equality. These items evaluates gender discrimination (indicator 1), verbal or non-verbal language (indicator 2), the classification of physical skills and capacities (indicator 3), body image and gender stereotypes (indicator 4), use of spaces (indicator 5), and use of equipment (indicator 6). It should be noted that these indicators were developed following a prior review of literature on the gender perspective in physical activity and sport, as well as a discussion within the research team. The number of items fulfilled gives a gender inequality index (GII = number of indicators fulfilled from 0 to 6). The higher this number, the more inequality and gender stereotypes are transmitted in the challenge analysed. The instrument also collects observations where the analyst can express qualitative information relating to the coding of the videos. This scale was designed through various discussion groups comprising the research team (five experts in physical activity and gender perspective) and by applying the instrument in various pilot studies until its final format was reached.

The second instrument is a categorial system for coding the videos, which is based on the Critical Visual Methodology (Rose, 2016), and is a method for addressing the problem of #DanceChallenges in earlier studies (González-Ramírez, 2022). This instrument includes various categories based on a prior literature review that relate to gender stereotypes in physical-sporting and artistic-expressive activity. They were classified in the dimensions listed by Rose (2016):

- Circulation and audience: this reflects the impact of the challenge considering the characteristics of the social network, analysing categories such as the number of likes, comments and views; type of influencer, and gender of the influencer (Arróniz et al., 2021; González-Ramírez, 2022; Huamán & Ramírez, 2022).

- Production: the categories include content characteristic of the challenge and the context in which it is carried out from a physical-sporting and artistic-expressive point of view, analysing categories such as verbal or non-verbal language, content type (conditioning, motor skills, etc.), the physical capacities displayed, the style or type of music (e. g., Cremades, 2022; Garrote-Escribano & Avilés, 2021).

- Image: the categories describe what is intuitive or palpable in the challenge, serving to generate an overview or snapshot of what is viewed. Categories are analysed such as the groupings (individual, pairs, etc.), shot type (close-up, three-quarter, etc.), camera angle (back, front, etc.), the primary emotional expression (happiness, sadness, neutral,

etc.), or equipment used (conventional physical education or repurposed equipment), among other aspects (e. g., Blández, 1995; González-Ramírez, 2022; Huamán & Ramírez, 2022; Learreta et al., 2006, pp. 56–58).

Similarly, content analysis was applied to the insights of the research team included in the Observational-Critical Scale. These observations form a researcher diary, which is a tool to control the quality of the study and is also an element that collects reflections, decisions, constructs, concepts, etc. relating to the research topic (Gehrig & Palacios, 2014), which can favour exploration of the objectives of a study.

2.3. Procedure

An emergent research procedure, characteristic of qualitative research, was used with the application of each instrument and its procedures dependent on the previous phases to which they relate. There were three phases intended to explore the two study objectives (Table 1).

Tabla 1. Summary of phases of the qualitative research design applied.

Aim of the research	Phase	Instrument	Agents
1. Analysing #TikTokChallenges relating to physical-motor and/or corporal-expressive content from a gender perspective and its influence on virality	1	Observational-critical scale of the co-educational value of physical-motor #TikTokchallenges	5 researcher(s) 3 analysts applied the scale 2 analysts took part to reach a consensus and perform an audit
2. Identifying elements that can transmit gender stereotypes and discrimination in these challenges as the basis of future educational interventions	2	System of observational coding of physical-motor #TikTokchallenges with a gender perspective applied to the videos that transmitted more gender (in)equality after applying the previous scale	2 researcher(s)
	3	Content analysis of the diary of the research team: information contained and expressed by the analysts in the section of observations of the categorisation of the observational-critical scale of the co-educational value of physical-motor #TikTokchallenges.	1 researcher

During phase 1 and after selecting the sample of videos, the observational-critical scale was applied to identify transmission of gender (in)equality in the selected sample. To do so, meetings were held between three experts and researchers in the field of physical-sporting activity and gender perspectives, with the videos being watched in successive meetings and each indicator from the scale being discussed to determine whether the indicators were fulfilled. The discussion was set out in a summarised form in the observations of the document, with this part comprising the researcher diary. Consensus was reached on all of the indicators

from the scale except for 8 videos that required a second round of review on 11 indicators. These were analysed by two external reviewers who are experts in physical activity with a gender perspective who participated in the construction of the scale. The external reviewers agreed on the categorisation of 10 of the 11 indicators, and so a final review was done by the first analysts to categorise the remaining item, thus reaching consensus on all of them.

During phase 2, and taking this analysis as a starting point, the most unequal videos were selected, identified with a GII of 4 or more. The observational coding system for physical-motor #TikTokchallenges with a gender perspective was applied to these challenges. In this procedure, a first pilot test was carried out to ensure that this categorial group would be applied appropriately between two analysts (one of whom had participated in phase 1) who applied the categories independently in the definitive coding.

During the third and final phase, inductive content analysis was applied to the observations made in the observational-critical scale of the co-educational value of physical-motor #TikTokchallenges applied in phase 1. The purpose was to identify for discussion the thematic axes on which the analysts centred their attention and establishing whether or not the indicators from this scale were fulfilled.

2.4. Data analysis

The information from the observations (researcher diary) contained in the coeducational scale was processed qualitatively using Atlas.ti version 24. This analysis was done through in-depth inductive coding in several cycles using the networks tool from Atlas.ti to refine and relate the categories. The data from the application of the Coeducational Scale and the Coding System applied in the observation of the videos were processed quantitatively using the SPSS version 23 software program. Descriptive statistics were applied, namely frequencies and percentages for the categories observed. The normality of the data was assumed owing to the number of videos analysed ($n = 86$), and the Pearson correlation test was used to inquire into the relation between the GII and the virality data (likes, views, and comments).

3. Results

The results of the analysis of the selected physical–sporting #TikTokchallenges showed a low GII. The mean was of 1.53 ± 1.29, with videos with a GII of 1 being most numerous ($n = 55$, 64%) (Table 2).

TABLE 2. Results of the #TikTokchallenges by gender inequality index.

Gender inequality index	Frequency	Percentage
0	8	9.3
1	55	64
2	8	9.3
3	4	4.7
4	7	8.1
5	3	3.5
6	1	1.2
Total	86	100

In-depth analysis of each indicator (Table 3) showed that transmission of gender inequality mainly occurred through fulfilment of the following indicators: 1, manifestation of gender supremacy and/or discrimination behaviour (Yes = 15 videos); 4, transmission of a stereotyped vision of women or men (Yes = 15 videos); and 3, manifestation of skills or capacities classified by gender (Yes = 13 videos).

TABLE 3. Fulfilment of the indicators from the coeducational scale.

Indicators		Frequency	Percentage
1. Gender supremacy and/or discrimination behaviours are apparent in the interactions observed in the video.	Yes	15	17.4%
	No	71	82.6%
2. There is no explicit treatment of gender equality, no assertions appear in the form of hashtags or other verbal or non-verbal audiovisual indications (for example, audio or music).	Yes	78	90.7%
	No	8	9.3%
3. Skills or capacities characterised by gender that transmit stereotypes are present (skill or capacity traditionally regarded as feminine done by men or vice versa).	Yes	13	15.1%
	No	73	84.9%
4. A stereotyped view of women, hypersexual, submissive, shallow-unintelligent, hypersensitive, etc.) and/or of men (insensitive, aggressive, etc.) is expressed shaping diversity in free expression of gender.	Yes	15	17.4%
	No	71	82.6%
5. Spaces that are stereotyped by gender are used without a critical sense (football pitch, dance studio, pole dance room, etc.).	Yes	3	3.5%
	No	83	96.5%
6. Equipment stereotyped by gender is used without a critical sense (rhythmic gymnastics ribbon, beauty equipment, football or rugby balls, resistance bands, gender-marked clothing such as skirts, cropped tops, caps, handbags, waist bags, etc.).	Yes	8	9.3%
	No	78	90.7%

The Pearson correlation test found no statistically significant correlations between the GII and the number of likes, views, or comments, but did find significant relationships and a medium and positive association (between .3 and .5) between comments, likes, and views (Table 4).

TABLE 4. Correlation between GII and virality of content.

		No. of likes	Inequality index	No. of views	No. of comments
No. of likes	Pearson correlation	1	-.027	.356**	.406**
	Sig. (two-tailed)		.805	<.001	<.001
	n	86	86	86	86
Inequality index	Pearson correlation		1	.069	.005
	Sig. (two-tailed)			.525	.967
	n		86	86	86
No. of views	Pearson correlation			1	.122
	Sig. (two-tailed)				.263
	n			86	86
No. of comments	Pearson correlation				1
	Sig. (two-tailed)				
	n				86

Note: ** the correlation is significant at the .01 level (two-tailed).

To consider in more depth the elements that transmit gender stereotypes, the #TikTokchallenges were categorised in three levels: low level of inequality (GII 0 and 1, *n* = 63), medium level of inequality (GII 2 and 3, *n* = 12), and high level of inequality (GII 4, 5, and 6; *n* = 11). The observational system was applied to the 11 videos identified as most unequal. The results are shown in Table 5 grouped by: circulation and audience, production, and image (González-Ramírez, 2022; Rose, 2016).

In relation to circulation and audience, the videos were most frequently published by elite influencers (45.5%) who are female (63.3%). The predominant settings were urban and non-sporting (*n* = 9, 81.8%), with the most frequent spaces being: the home (*n* = 5, 55.6%), streets (*n* = 2, 22.2%), shopping centres or shops and studios or multi-purpose halls (*n* = 1, 11.1%, respectively). With regards to sport spaces, the most unequal #TikTokchallenges were recorded on multisport courts (*n* = 2, 18.2%).

In relation to the production, the most frequent categories of these challenges displayed perceptive-motor content (*n* = 6, 54.5%) or physical conditioning content (*n* = 3, 27.3%). The language present was mainly non-verbal (*n* = 10, 90.9%) and the most frequent musical style was reggaeton (*n* = 4, 18.2%).

In relation to image, the challenges were done without equipment (*n* = 9, 81.8%), in pairs (*n* = 5, 45.5%), and in homogeneous male or female groups (*n* = 6, 54.5%). The most frequent type of topic was imaginary (*n* = 9, 81.8%) and the movements done were abstract (*n* = 9, 81.8%). Considering the emotional expression identified in the videos in more depth, expressions of happiness were most common (*n* = 9, 69.2%).

TABLE 5. Characteristics of less coeducational #TikTokchallenges in the circulation and audience dimension.

Dimension	Category	Subcategory	n	%
Circulation and audience	Type of influencer[1]	Elite (1-5M followers)	5	45.5
		Macro influencer (500K-1M followers)	0	0
		Intermediate influencer (50K-500K followers)	3	27.3
		Micro influencer (10K-50K followers)	3	27.3
		Nano influencer (1K-10K followers)	0	0
		Non influencer (fewer than 1K followers)	0	0
	Influencer gender	Male (one or more people)	2	18.2
		Female (one or more people)	7	63.6
		More than two people of different genders	2	18.2
Production	Type of content	Perceptive-motor	6	54.5
		Basic or specific motor skills	1	9.1
		Physical conditioning	3	27.3
		Perceptive-motor and motor skills	1	9.1
	Language used	Verbal	0	0
		Non-verbal	10	90.9
		Combined	1	9.1
	Style of music	Reggaeton	4	18.2
		Pop	2	12.6
		Rap/Hip-Hop	1	9.1
		Electronic music	1	9.1
		Dance	2	18.2
		No music	1	9.1

Image	Equipment (physical education perspective)	No equipment	9	81.8
		Conventional physical education	1	9.2
		Recycled or alternative use	1	9.2
	Groupings	Individual	3	27.3
		Pairs	5	45.5
		Three or more people	3	27.3
	Groups from the perspective of gender	Individual	3	27.3
		Heterogeneous	2	18.2
		Homogeneous	6	54.5
	Type of theme[2]	Imaginary	9	81.8
		Real-concrete	1	9.1
		Real-abstract	1	9.1
	Type of movement[2]	Abstract movement	9	81.8
		Figurative-imitative movement	1	9.1
		Figurative-symbolic movement	1	9.1

Note: *n* = number of quotes; % = percentage; 1 = classification by González-Ramírez (2022); 2 = classification by Learreta et al. (2006, p. 56).

The content analysis of the observations from the observational-critical scale (researcher diary) identified the following as elements that transmit gender stereotypes and (in)equality in the #trends analysed (Figures 1 and 2): shot type; interactions between people in the video; body image; physical-motor and corporal-expressive activities/content; music in the challenge; and verbal language or hashtags used.

In the case of shot type, it was found that the way male and female performers share space and the gender of the protagonists of the physical-motor challenge could transmit gender (in) equality, acting as an assertion of equality or displaying supremacy of one gender over the other. This was recorded in the researcher diary:

- "The women with quite sexualised movements are directed by a man who dictates the tempo and control of the video" (video 70).

- "You can see a muscular and stereotypical body image of the man, who dominates the video and expresses himself with a certain superiority with phrases like 'I asked my wife to do this acrobatics and she didn't say no.' He dominates the video compared with the woman who follows the instructions of the man in the background" (video 9).

With regards to interactions, the diary reflected a debate about whether people of different genders need to be present in #TikTokchallenges. It was also found that mixed groups and cooperative challenges featuring people with diverse ethnic, gender, age, etc. characteristics could promote gender equality. The following quotes reflect these results:

- "Doubts about skipping as a skill classed as feminine. We do not see it like that because of the type of cooperative skipping and the music used" (video 33).

- "Positive appearance and participation of people of different gender, age, ethnicity…" (video 13).

In relation to verbal language and captions, the use of hashtags as elements asserting gender equality stood out, and there was also discussion of the use of these hashtags to dominate TikTok's algorithm and control the audience for the published content, as expressed in the following quote from the researcher diary:

- "Reflection on the initial hashtag (SEXTOU, 'sex for you') when a challenge with a skill typically seen as masculine, such as football, is done by women, while the men only start up and receive the challenge, without participating as protagonists. Maybe this could send a gender message" (video 80).

It was also found that the captions and information in the #TikTokchallenges could act as a virality strategy that transmitted gender (in)equality in physical-motor challenges, as expressed in the following extract on a #trend done by a man in which it is stated that "no woman can do this":

- "We think doing the challenge is more feasible, including for the female gender, for reasons of flexibility. The message is constructed to generate inequality and features an explicit treatment of gender inequality. There is also an athletic and shirtless image of the man that is unnecessary for the challenge that is manifested. We reflect on these virality strategies that can transmit stereotypes…" (video 16).

In relation to this quote, body image appears as an element of gender (in)equality in the results from the researcher diary. With regards to this element, the researchers' reflections found how the normotypical body image associated with femininity and masculinity was manifested on several occasions, with an athletic and muscular image for men and another slimmer, more slender, and sexualised one for women. However, in other #TikTokChallenges, it was found that the image appeared free from stereotypes, favouring free gender expression. Likewise, there was discussion of the origin of a new aesthetic stereotype that promotes an athletic female image associated with building strength with the label *fitness girl*. Clothing was another axis of discussion regarding body image, with challenges being seen where this could transmit traditional gender stereotypes and others where it favoured free expression of gender. The following quotes reflect these results:

- "It can be seen that the traditional attire, despite being different and being bound by rules, can transmit stereotypes, but it does not transmit a hypersexualised female gender image. Debate on the different male and female clothing in the types of sport" (video 2).

- "The body image of the person on the left breaks with stereotypes, which we regard as positive for the topic in question" (video 37).

- "There is debate on 'the muscular or strong image of the woman at present'. Movement or change towards this stereotype?" (video 9).

Another thematic axis categorised in the researcher diary was the physical-motor activities/content itself, identifying how activities are classified by gender (football for example was associated with masculinity and dancing or poledancing were linked to femininity) and how this might or might not transmit gender stereotypes according to the focus of the challenge and the protagonism of female or male performers within them. As an example, in the following

quotes, the same piece of dramatised content was identified as transmitting inequality and equality in two different challenges:

- "The dramatisation of the man is interpreted as a possible criticism of the macho culture in relationships of couples. The more feminine movements and carrying of the child in parenting tasks is an assertion of equality" (video 84).

- "The question is raised of whether (dramatised) parody sought to exaggerate features and attributes of femininity, thus contributing to inequality and the transmission of stereotypes" (video 76).

Furthermore, a debate arose regarding strength and flexibility as attributes associated with masculinity and femininity, with an openness and a break with the traditionally transmitted gender ideology regarding these capacities being apparent. This was reflected in the following extract from the researcher diary:

- "The figure of the woman as base [a person in acrobatic gymnastics who performs supporting and pitching roles] and element of maximum strength in the figure as positive point of the challenge stands out" (video 9).

One last thematic axis that was discussed as an element that transmits gender stereotypes was the music. Several #dancechallenges were filmed using songs with macho and discriminatory content, with reggaeton being the musical style that the researchers identified most often as a cause of hypersexualisation and submission of women. This is reflected in the following quotes:

- "The music shapes the type of hypersexual dance and so seems to be linked more to femininity. Reggaeton music features moves, like the *conejita*, that can be discriminatory" (video 69).

FIGURE 1. Elements that transmit gender stereotypes in #TikTokchallenges based on the researcher diary.
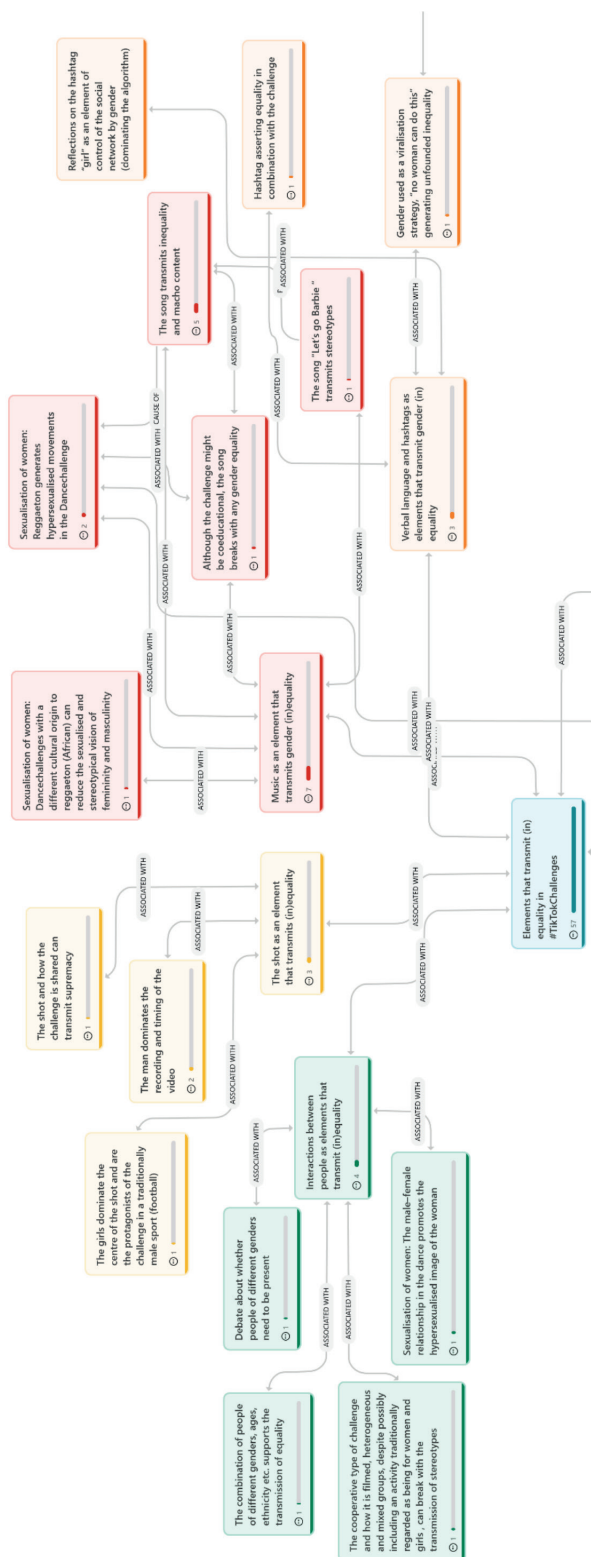
FIGURE 2. Elements that transmit gender stereotypes in #TikTokchallenges based on the researcher diary (continuation of Figure 1).

Another finding that emerged in relation to almost all of the elements that transmitted gender (in)equality in #TikTokchallenges (physical-motor and corporal-expressive activities/content, personal interactions, body image, and music) was sexualisation of women (Figure 3). Reggaeton #dancechallenges, the Korean feminine image spread in the manhwa genre, and the interactions and movements in some dances contributed to the transmission of a sexualised vision of women. This is reflected in the following quotes from the researcher diary:

- "The song's lyrics seem to be about flirting with a man. Discussion of the normalisation of the somewhat more sensual hip movements in women owing to their body type and the fact that it seems to be flirtation or seduction through movement and that the positions acquired being more sensual" (video 26).

- "The music shapes the type of hypersexual dance. Reggaeton music features moves like the *conejita*, that can be discriminatory in reggaeton" (video 69).

However, the results identified two #trends whose recording favoured the elimination of this vision: one linked to tonal-postural control in poledancing and another in which the use of an African dance and music reduced the normotypical and sexualised view of the woman. These results are reflected in the following quotes:

- "The fact its deals with poledancing, a typically feminine behaviour can be interpreted as transmitting stereotypes. However, the fact it transforms it both with the body image and with the challenge itself removes affective-sexual meaning from the habitual/frequent behaviour or poledancing" (video 23).

- "There is reflection on differences (regarding sexualisation) of this type of culturally African dances and others like reggaeton" (video 81).

FIGURE 3. Sexualisation of women in #TikTokchallenges based on the researcher diary.
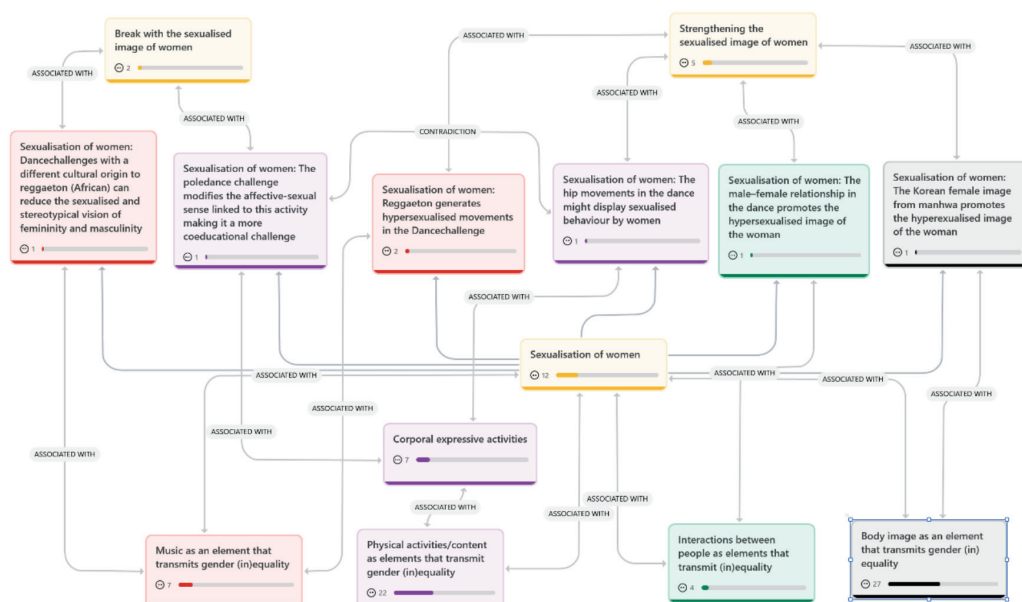
4. Discussion

The main aim of this study was to explore from a gender perspective the construction of gender manifested in #TikTokchallenges, analysing their influence and how that can transmit stereotypes with a critical focus to guide and inform possible future educational interventions. The results showed a low gender inequality index in the #trends observed, with level 1 of the coeducational scale designed and applied for this work being predominant. However, only 8 of the 86 #TikTokchallenges analysed featured content that was completely free from stereotypes and was equal in nature. These results coincide with previous research that has noted the prevalence of gender stereotypes in popular dance challenges on TikTok (González-Ramírez, 2022; Kennedy, 2020), and the perpetuation of hegemonic masculinity, for example, in the #sugardaddy tag (Suárez-Álvarez, 2022). The results also reflected the presence of #trends with physical-motor content that transmit an ideology of equality and act as feminist content, which is aligned with studies that found a reduction in gender stereotypes in content published by adolescent influencers (Suárez-Álvarez & García-Jiménez, 2021). This supports the idea that TikTok is a platform that needs special attention owing to the high cultural and social load of its content, with a significant influence on the construction of adolescents' identities (Micaletto-Belda et al., 2024). Thus, it is necessary to include training in and on the use of TikTok (and other social networks) in secondary and higher education, as adolescents and young adults participate most in these platforms (Garcés-Fuenmayor et al., 2023). According to these researchers, digital literacy at these educational stages should promote students' critical judgement regarding the consumption of these short videos, which, as shown by their results, might be surrounded by explicit and implicit gender ideology (González-Ramírez, 2022; Kennedy, 2020).

In relation to the virality of the content, TikTok's "For You" algorithm can transmit stereotyped content based on the user's gender, thus perpetuating gender stereotypes and hegemonic masculinity and increasing contact with similar content (Bueno-Fernandes & Campos-Fellanda, 2022; González-Ramírez, 2022). This is especially worrying when the viral content comes from the accounts of influencers, as the least equal videos identified in the study came from the accounts of elite, intermediate, and micro influencers (González-Ramírez, 2022). Furthermore, it should be noted that physical-motor #TikTokchallenges require physical contact in their recording, which underlines the need to reflect on the potential of social networks to stimulate physical contact (Delbosc & Mokhtarian, 2018). The findings of this study underline the need to increase the sensitivity of the TikTok algorithm towards potentially discriminatory content to protect the youth and adolescent population, as use of social networks starts at increasingly early ages (Caldeiro-Pedreira & Yot-Domínguez, 2023). Furthermore, this study underlines the importance of literacy and the development of digital competence in educational institutions for responsible and ethical use of social networks. In fact, previous studies have shown how creators of TikTok content have advanced digital competences (Micaletto-Belda et al., 2024), something that should be accompanied by a responsible performance.

The second objective of this research was to identify elements that transmit gender stereotypes in the challenges analysed. One of these elements was the music that accompanies #TikTokchallenges, something that is coherent with earlier research where the music and lyrics of the songs reinforce gender discrimination (Suárez-Álvarez, 2022). Reggaeton in particular was identified as transmitting gender ideology and discrimination. This coincides with other studies that note its popularity among adolescents and the fact it is good for dancing (Cremades-Andreu et al., 2024). Among the variety of physical-motor #trends, therefore, #dancechallenges deserve special attention, being one of the types of content most spread by adolescents (Suárez-Álvarez & García-Jiménez, 2021), especially among the Hispano-Latin population, where reggaeton is the trend for the production of challenges that display sensual movements and a normotypical and sexualised vision of women (González-Ramírez, 2022). In line with previous works, the results warn of the macho culture and patriarchal model transmitted in its lyrics (Díez-Gutiérrez & Muñiz-Cortijo, 2023). In fact, the qualitative analysis

identified that one of the factors associated with this musical style was the encouragement of sensual movements and behaviours, especially by women who dance, for they reinforce a sexualised image of women.

The sexualisation of women was a theme present in the observations by the researchers, who identified some #TikTokchallenges that contributed to self-sexualisation by women. This phenomenon is not only associated with music, but also with body image, with some videos representing men as strong and dominant and objectifying women as attractive and objects of desire (Moreno-Barreneche, 2021). Nonetheless, some #trends that broke with stereotypical gender images were identified. In this sense, the analysis of the researcher diary acknowledged a thematic axis on a new image and model of beauty in women representing in some #TikTokchallenges and derived from the opening up of strength activities to femininity: the *fitness girl* as an aesthetic ideal of body image. These results are aligned with those obtained by Roberts et al. (2022), showing how the model of a toned body, fundamentally transmitted by peer groups and social networks, combines with the beauty ideal of a slim body in women at present. Nonetheless, the diversity of corporal realities present in the physical-motor #TikTokchallenges analysed and also reflected in the content analysis of the researcher diary revealed a new line of research into this phenomenon at a time like the present one, where the pressure of social networks is apparent in dissatisfaction with the body image and well-being, especially among adolescents (Jarman et al., 2021; Roberts et al., 2022).

Another element that transmits gender ideology was the verbal language used, especially the hashtags. Some hashtags acted positively for equality, while others transmitted a discriminatory discourse, constructing gender in the #TikTokChallenges and segregating users (González-Ramírez, 2021; Suárez-Alvárez, 2022). The researchers identified some challenges in which this segregation and gender, deliberately developed and proposed through messages such as "No woman can do this", "#twinsgirls", or "#blondegirls", might be a strategy for the virality and diffusion of the challenge. This fact deserves, at least some reflection, and is grounds for future research on #TikTokchallenges with physical-motor content and/or corporal-expressive content, with this type of content not being disconnected from what is known as hashtag activism (Schultermandl, 2022), which allow the vindication of inequalities and contact with a desired audience with shared interests and identity (Suárez-Álvarez, 2022).

Finally, the physical-motor activities were also elements that transmit gender stereotypes, perpetuating the traits socially attributed to femininity and masculinity (Blández et al., 2007). Nonetheless, some #TikTokchallenges displayed positive aspects in relation to the free development of physical activities, breaking with pre-established gender models. The researcher diary found that strength or flexibility activities and collective and artistic-expressive types of sports fostered debate and reflection by the analysts. Indeed, indicator 3 from the scale, linked to this topic, was one of the ones most identified as not being coeducational in the #trends analysed. The findings bolster the debate around this social network and identify TikTok, at least in the #trends analysed, as something that can contribute to a break with hegemonic models (Suárez-Álvarez, 2022) that classify physical activities as being for a specific gender, as addressed in previous research (Xiang et al., 2017).

This study strengthens the debate about TikTok as a platform that is active in constructing gender, even though the range of results, sometimes promoting equality and sometimes promoting inequality, requires more consideration of the topic. It is crucial to observe these phenomena through an intersectional prism that considers factors such as race, culture, and age to understand the complexity of the identities formed and expressed in #TikTokchallenges (Alvermann et al., 2021; Suárez-Álvarez & García-Jiménez, 2021). In-depth knowledge of this reality provides support for the pedagogical approximation to a world with a high potential for socialising young people and adolescents to go beyond the limits of the classroom and develop relevant teaching interventions with a pedagogical, alternative, and critical focus (Garcés-Fuenmayor et al., 2023; Meirbekov et al., 2024).

5. Conclusions

This work started with the intention of analysing a specific type of TikTok #trend: ones that display physical-motor and/or corporal-expressive content or content with a gender perspective. The results do not enable any uniform or strong conclusions to be reached. Coeducational content or content that displays gender equality was found, as was other content with performances that could transmit inequality and encourage gender-based discrimination. This reinforces the need for deeper knowledge of a problem that has been little explored (González-Ramírez, 2022).

Regarding the first study objective, analysing #TikTokChallenges relating to physical-motor and/or corporal-expressive content from a gender perspective and their influence on virality, no significant relationships were observed between the virality of content and whether the videos displayed more or less gender inequality. This fact requires the scientific-educational community to consider the physical-motor content that is popular on TikTok closely and carefully, making gender inequalities visible to young people and acting to raise awareness of the content of the #TikTokchallenges in educational contexts that address physical and corporal-expressive activity.

In relation to the second objective of the study, to identify elements that can transmit gender stereotypes and discrimination in these challenges as the basis of future educational interventions, the following foci of attention were found: body image, the type of physical activity displayed in the challenge, interactions between participants, shot type, the music linked to the challenge, and the verbal language or hashtags. The results have implications for the development of future interventions with #TikTokchallenges in the field of physical-sporting and artistic-expressive education. Future interventions should consider these elements in the design and development of physical and corporal-expressive #trends with students in order to transmit an equal image to the educational community. Similarly, an intervention on raising consciousness and critical awareness of gender (in)equality in the field of physical education based on TikTok (or other social networks), should consider certain factors (for example, body image, the type of physical activity, hashtags, or music) in order to achieve its educational goals.

Nevertheless, this study has some limitations that give rise to future lines of research. While this research considered the field of physical activity, inequalities can manifest themselves in other spheres that can contribute to the construction of gender and the transmission of inequalities. Therefore, we propose further inquiry into the impact of content generated on social networks, evaluating other educational contexts beyond the physical and expressive sphere of movement. Furthermore, the pioneering, qualitative, and emergent focus of the research, with a design using ad hoc instruments, based on rigorous criteria such as the triangulation of researcher and techniques, is a basis for the development of future quantitative studies. In view of the design of an observation scale, we suggest validating the coeducational scale for studying the problem, reaching a broader sample of #TikTokchallenges with a quantitative observational methodology. Finally, there is growing interest in measuring impact on gender beliefs among students after applying educational proposals that consider the elements that transmit gender identified in this work and encourage responsible use of TikTok to promote inclusive activities and a consciousness of equality in young adults and adolescents on social networks.

Authors' contributions

Jorge-Agustín Zapatero-Ayuso: Conceptualisation; Data curation.

Elena Ramírez-Rico: Writing (original draft).

Miguel Villa-de Gregorio: Conceptualisation; Visualisation.

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Artificial intelligence (AI) policy

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