

“My body is amazing from the bottom to the top” - An RCT study testing two positive body image media micro-interventions for young children aged 4–6 years

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ARTICLE INFO

Keywords:

Children
Positive body image
Micro-interventions
Weight bias
Body appreciation
Functionality appreciation
Children's media

ABSTRACT

This study presents a fully powered RCT testing the effectiveness and acceptability of two positive body image online media-based micro-interventions designed for young children. A total of 439 children aged 4–6 years were randomised into one of four conditions: i) episode intervention, ii) episode control, iii) music video intervention, or iv) music video control. Children and their accompanying parent attended two data collection sessions, approximately a week apart. During session one, each child and accompanying parent watched their assigned media together on a tablet device. Children completed measures of body appreciation, functionality appreciation, and weight bias with a trained moderator in a play-based interview pre-intervention (T1), immediately post-intervention (T2) and approximately one-week later (T3) during session two. Accompanying parents completed brief acceptability questionnaires at both sessions. Results indicated that the music video intervention had a small protective effect over the matched control on body appreciation. No effects were found for the episode intervention. Children and their parent/guardian indicated that both interventions were equally acceptable to each other and when compared with their respective, matched active controls. Results showed some promise for the immediate protective impact of appearance inclusive children's media that focuses on body appreciation and functionality appreciation.

1. Introduction

Negative body image can start to manifest in early childhood and becomes increasingly common as children get older (Dion et al., 2016; Lacroix et al., 2023; Tatangelo et al., 2016). By adolescence, negative body image is prevalent (Wang et al., 2019) and is associated with numerous risks including anxiety, depressive symptoms, disordered eating, and risky health behaviours (Bornioli et al., 2019, 2021; McLean et al., 2022). To help prevent the development of negative body image through childhood and to strengthen children's positive body image, there is a need for effective and acceptable body image interventions for younger children. Yet, few body image interventions have been designed for, and tested with, children under the age of seven years (Alleva et al., 2015; Guest et al., 2022). This paper reports the detailed evaluation of two positive body image interventions with 4–6-year-olds.

1.1. Negative body image in childhood

Children first develop an awareness of their bodies and physical appearance before they start school (Smolak, 2012). Accruing information from family, peers, media, toys, and other sociocultural influences, they quickly begin to appraise their bodies and those of others. Indeed, weight bias attitudes are observed in children as young as three years old (Harriger et al., 2019; Spiel et al., 2016). Further, research indicates children can start expressing signs of negative body image from a very early age. For instance, a systematic review focused on body image in very young children (aged 3–6 years), found between 20 % and 80 % of children indicate some dissatisfaction with their bodies (Tatangelo et al., 2016). Measurement appears to heavily influence the percentage of children who express concerns with their appearance, with pictorial scales such as the Figure Rating Scale often finding much higher levels of dissatisfaction than written or verbal methods

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<https://doi.org/10.1016/j.bodyim.2025.101851>

Received 5 September 2024; Received in revised form 25 November 2024; Accepted 10 January 2025

Available online 23 January 2025

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(Tatangelo et al., 2016).

Examining trends from existing literature, the frequency of children reporting body dissatisfaction appears to increase with age as they approach adolescence. For example, a large cross-sectional study with Canadian girls and boys (mean age = 10 years), found approximately 57 % were dissatisfied with their bodies (Dion et al., 2016). More recently, Navarro-Patón et al. (2021) found the same proportion (57.2 %) of Spanish children aged 9–12 years reporting body dissatisfaction. While there is little longitudinal research following the body image trajectories of children aged 4–10 years, recent research by Lacroix et al. (2023) showed that girls' body image worsens between the ages of 10 and 16 years, with the greatest decline observed between the ages of 10 and 14 years. Together, this research underscores a need for body image interventions in childhood to help prevent the development of negative body image over time (Alleva et al., 2015).

1.2. Body image interventions for children

There are few effective body image interventions designed for children under the age of 12 and even fewer for those aged 4–6 years. A meta-analytical review of standalone body image interventions identified just seven programmes (six group-based interventions and one individual) designed for children aged 12 or younger (Alleva et al., 2015). Overall, Alleva et al. (2015) found that the interventions targeting children were less effective than those targeting adolescents aged 13–17 years. Close examination of the included studies in Alleva et al. (2015) revealed that just one – a picture book called 'Shapesville' – was designed to improve positive body image in children aged 5–9 years (Dohnt & Tiggemann, 2008). Encouragingly, this positive body image intervention was found effective, relative to a control. However, it was only tested with girls ($N = 84$) over 15 years ago. It is therefore uncertain whether the book improves boys' body image and if the book is effective with children today, who have access to a broader array of children's digital media.

A more recent review of positive body image interventions for children and adolescents identified 12 interventions, none of which were designed for children under the age of nine years old (Guest et al., 2022). One study published after Guest et al. (2022)'s review evaluated a theatrical production called 'Cinderella: The AWESOME Truth' (Swami et al., 2022), an intervention aimed at improving positive body image in 5-to-9-year-olds. While this study indicates promising findings, it did not include a control group rendering it difficult to draw firm conclusions as to the intervention's effectiveness.

1.3. Disrupting and harnessing children's media for universal intervention

Content analyses focused on children's TV media have found clear appearance-idealised and stereotyped messaging, emphasising the desirability of thinness for girls and women, muscularity for boys and men, while portraying larger bodies negatively (Herbozo et al., 2004; Harriger et al., 2018). In line with sociocultural theory (Thompson et al., 1999) research indicates that media exposure is associated with increased negative body image in children. This has been demonstrated cross-sectionally in girls between the ages of 5 and 9 years (Anschutz et al., 2009; Dohnt & Tiggemann, 2006) and longitudinally where media exposure predicts future body image concerns in children aged 8–11 years (De Coen et al., 2021). However, given the influence and ubiquity of children's media, and literature evaluating media strategies to improve body image in older audiences, there is the possibility to disrupt the media landscape for children creating content that does not harm body image and may also have a positive impact.

Numerous experimental studies have demonstrated the positive influence of inclusive media representation on the body image of older children, adolescents, and adults. For example, one RCT found brief exposure to inclusive Steven Universe animations (e.g., different body shapes, sizes, and facial features) boosted body satisfaction in girls aged

7–10 years and boys aged 7–14 years (Matheson et al., 2020). This is consistent with experimental studies among adults where exposure to average-size models resulted in immediate improvements in body image in women and men (Diedrichs & Lee, 2010, 2011). More recently, social media research has shown brief exposure to positive body image content on Instagram was associated with improvements in young adult women's body satisfaction and appreciation (Cohen et al., 2019). Additionally, Granfield et al. (2024) found a 75-min feature film 'Embrace Kids', that included positive body image messaging, had a positive effect on children aged between 9 and 15 years in terms of body appreciation, functionality appreciation and self-compassion. Finally, Lewis-Smith et al. (2023) found exposure to shortform (under eight minutes) video content, improved the acceptance of appearance diversity in 13- to 18-year-old girls.

1.4. The present study

The aim of this study was to evaluate the effectiveness and acceptability of two novel media micro-interventions designed to bolster young children's positive body image.

The two interventions (an episode and a music video) are from a new package of digital media content focused on positive body image for young children; 'Blippi's Wonderful Talent Show'. Content for Blippi's Wonderful Talent Show was co-created via a partnership between the Dove Self-Esteem Project (the social purpose initiative of Unilever's personal care brand, Dove) and Moonbug Entertainment, a children's media company, with insights and guidance from body image researchers (authors 1, 2, 3, and 6). Moonbug Entertainment, the creators of the popular children's YouTube show, Blippi, produced all the content. For details on the development of the Blippi's Wonderful Talent Show, please refer to the study protocol (Smith, Garbett, White, Williamson, & Craddock, 2024).

The intervention episode 'Dance Your Own Way' is the first of four short sequential episodes. It aims to teach children to recognise their body can do lots of different things and people of all shapes and sizes can enjoy dancing. The episode features Blippi and Meekah (a White man and Black woman, respectively) alongside Angel (the adult dancing expert, who is larger in size), and three child dancers. The main child dancer in this episode, Lono (a boy in a larger body) celebrates what his body can do and learns how to master a new skill to perform at the talent show (the final episode in the series). The episode ends with a song titled 'I Love My Body'.

The intervention music video is called 'My Amazing Body'. It aims to teach children to learn and appreciate how their body functions – particularly their five senses. The video stars Blippi, Meekah, Jordan (the child inventor, who is smaller in size) and Chrisslyn (the adult inventor expert, who is larger in size). It is catchy, upbeat, and repetitive to appeal to a young audience.

The two control videos are existing pieces of content made by Moonbug Entertainment, and have the same main character, Blippi who is played by the same actor.¹ The control episode, 'Blippi Goes to the Dentist', aims to help make a visit to the dentist feel fun or at least less intimidating for young children and teach children the importance of oral hygiene. Like the intervention episode, the control episode includes a song towards the end. The control music video, 'Blippi Brushes His Teeth', aims to encourage children to brush their teeth regularly. The music is upbeat and the video shows Blippi brushing his teeth with animations and toys. Neither control condition contained any body image or appearance-related messaging and there is no body size diversity represented.

Our research questions and hypotheses are detailed in the study

¹ There are two actors for Blippi: Stevin John (the original Blippi and the show's creator) and Clayton Grimm ('new' Blippi, who started featuring on the show in 2021). The actor in all the content in this study was Clayton Grimm.

protocol (Smith et al., 2024)² so just the hypotheses and any deviations from the protocol are reported here. Our main hypotheses were:

H1: We anticipated children, randomised into one of the intervention conditions, would experience an immediate improvement (T2) in body appreciation and functionality appreciation, relative to time- and style-matched active control groups. We also expected the two intervention groups to report an immediate reduction in weight bias (T2), relative to the control groups.

H2: We expected the two positive body image media micro-interventions to be enjoyed by children and viewed as age appropriate and relevant by their participating parent/guardian (hereafter referred to as ‘parent’).

Given the limited research on body image among very young children, we had four additional exploratory research questions examining moderations, exposure, and sustained effects, with tentative hypotheses. Starting with potential moderators, we were interested in the moderating role of gender and age, as both characteristics are often relevant among older children and adolescents.

H3: Based upon findings from a meta-analysis of 16 studies testing body image interventions aimed at 6–12-year-olds (Pursey et al., 2021) and a meta-analysis of 24 studies aimed at 5–17-year-olds (Chua et al., 2020), we anticipated that the interventions will be more effective for girls than for boys.

H4: In Pursey et al. (2021)’s meta-analysis, the authors highlighted inconsistent findings with younger children, and suggested that interventions with 10–12-year-olds may be more efficacious than with children under the aged of 10 years. We therefore anticipated that the interventions will be more effective for children in Year 1 (ages 5 and 6 years) than children in Reception (ages 4 and 5 years).

In line with RCTs testing digital interventions with older children and adolescents (Garbett et al., 2023; Matheson et al., 2020), we tested exposure and sustained effects.

H5: We expected that children within each intervention condition (e.g., episode and music video) will experience greater improvements in body appreciation and functionality appreciation and greater reductions in weight bias, at one-week follow up (T3) the more they have watched their content from T2 to T3.

H6: We anticipated children to report sustained effects at one-week follow up (T3), relative to the control groups as we expected more parent-child conversations on topics related to positive body image.

2. Method

2.1. Design

A four-arm randomised controlled trial with an internal pilot design tested the two micro-interventions compared with two active controls. Assessments were captured across three time points: pre-intervention (T1), post-intervention (T2) and approximately one-week follow up (T3).

2.2. Participants

Eligibility criteria for children were: (1) English fluency, (2) aged 4, 5 or 6 years old and (3) in either Reception Class (Year 0) or Year 1 at a United Kingdom (UK) primary school. Children were excluded if they had a sibling already recruited into the study (i.e., only one child per household), if they were home-schooled, or if they had complex special educational needs that would hinder their ability to enjoy watching the

² We dropped one exploratory research question detailed in the protocol paper that aimed to compare the two interventions as this became redundant due to our observed results: specifically, in which we found no significant difference in study outcomes for the intervention episode compared with the control episode.

intervention(s) or taking part in the research process.

Overall, 439 children (52 % girls; $M_{age} = 4.94$ years old, $SD = 0.729$) and an accompanying parent from London or Birmingham (the UK’s two largest cities) were recruited and enrolled. A total of 381 (86.8 % of those enrolled) children and an accompanying parent attended Session 1 which included watching the assigned media and completing pre- (T1) and post-exposure (T2) interviews. Of those, 373 children and an accompanying parent attended Session 2 approximately a week later (T3), reflecting a 97.9 % retention rate. Full child demographics are presented in Table 1.

2.3. Measures

The development of the bespoke measures used in this trial is described in the study protocol paper (Smith et al., 2024).

2.3.1. Body appreciation

Body appreciation was assessed using two items; ‘do you love your body?’ and ‘do you think your body is amazing?’. Both used a two-step approach. Taking each question in turn, children were first asked to respond: ‘yes’ or ‘no’. To make this playful, children were asked to respond by standing on one of two identically sized rectangles labelled ‘yes’ or ‘no’. Children who responded ‘yes’ were asked to indicate *how much* they love their body and *how amazing* they think their body is, either: ‘a little bit’, ‘a medium bit’, or ‘a lot’. Children indicated their response by standing on one of three circles placed on the floor (small circle = ‘a little bit’; a medium circle = ‘a medium bit’, and a large circle = ‘a lot’).

Scores for each item ranged from 1 (*no*) to 4 (*yes - a lot*). A mean of the two items was calculated with higher scores indicating higher body appreciation. Cronbach’s alpha was acceptable/good for girls and boys at each time point, ranging from $\alpha = .667$ (girls) and $\alpha = .705$ (boys) at T1, $\alpha = .720$ (girls) and $\alpha = .736$ (boys) at T2, to $\alpha = .726$ (girls) and $\alpha = .755$ (boys) at T3.

2.3.2. Functionality appreciation

To ascertain children’s functionality appreciation, moderators asked:

Table 1
Participant characteristics (N = 381).

Participant Characteristic	N	%
Gender		
Girls	198	52.0
Boys	183	48.0
School Year		
Reception (age 4–5 years)	191	50.1
Year 1 (age 5–6 years)	190	49.9
Ethnicity		
Asian	34	8.9
Black	64	16.8
Multiple ethnic groups	60	15.8
White	223	58.5
Child’s Size (Moderator observed)		
Small	302	79.3
Medium	68	17.8
Large	9	2.4
Not reported	2	0.5
Parent Household Annual Income		
< £20,000	50	13.1
£ 20,001–£ 40,000	98	25.7
£ 40,001–£ 60,000	49	13.0
£ 60,001–£ 80,000	87	22.8
£ 80,001–£ 100,000	51	13.4
£ 100,000 +	42	11.0
Prefer not to say	4	1.0

'tell me all the amazing things you can do with your body'. Children could respond with as many answers as they wished before a 60 second sand-timer ran out, and responses were recorded verbatim.

A total frequency score was calculated based on unique and valid responses, with a higher number of responses indicating higher functionality appreciation.

2.3.3. Weight bias

To measure weight bias, children were asked to rate both a larger and a smaller child on a 3-point scale containing two polar-opposite adjectives or phrases. There were five pairs in total, presented in the same alternated order; very clever/not clever at all, cute/ugly, has no friends/has lots of friends, active/not very active and good at dancing/not good at dancing.

The response options were 1 = *child rates the image positively*, 2 = *child rates the image as 'somewhere in the middle'*, a neutral response, and 3 = *child rates the image negatively*. A total score was calculated by the mean difference between larger and smaller child, with higher scores reflecting more weight bias.

2.3.4. Intervention acceptability

Children were asked three acceptability questions at T2. Using the same rectangles and circles as per the body appreciation measure, children were asked: 'did you like the [episode/music video] you just watched?'. Children first indicated 'yes' or 'no'. If the child responded 'yes', they were asked 'how much' using three response options: 'a little bit' (smallest circle), 'a medium bit' (medium circle), or 'a lot' (biggest circle). They were encouraged to give details of what they did/did not like. Finally, children were asked: 'did you learn anything while watching the [episode/music video]?' (prompt – what was it about?).

At T2, parents completed a paper-based acceptability questionnaire. Questions included: 'how much did you like the [episode/music video]?' with responses on a 5-point scale ranging from 1 = *did not like it at all* to 5 = *liked it very much*. They were also asked to respond to the questions: 'Do you think this message is important for your child to learn at their age?' and 'Would you recommend this episode/music video to other parents of children of a similar age?' on a 3-point scale yes, no or unsure.

2.3.5. Repeat watching

In between post-intervention (T2) and follow-up (T3), parents were given access to their assigned media content via a secure link so their child could re-watch it as frequently as they wished before their next session in approximately 7-10-days time. Parents indicated how many times they re-watched their content in their T3 follow-up survey.

2.3.6. Child interview moderator fidelity

All children's interviews (T1, T2 and T3) were audio recorded to assess moderator's adherence to and competency in delivering the child interviews across each timepoint. The adherence checklist aligned directly with the child interview protocol. Moderators were rated on seven dimensions of competency (e.g., organisation, communication and expression, friendliness) on a 10-point scale, with higher scores reflecting greater competency. Adherence was determined by how closely the moderator followed the protocol (expressed as a percentage), and competency was calculated by a mean score for each competency dimension. As outlined in the protocol paper, 10 % of all interviews were selected to undergo fidelity assessment (totalling 114 interviews). However, due to adherence and competency consistently being scored highly, and no indication of deviations to the child interview protocol raised during data collection days, the number of fidelity assessments was reduced to 5 % of all interviews (totalling 57 interviews).

Fidelity assessments were completed by two fidelity assessors (the second and third authors). Twenty sessions were double assessed to facilitate inter-rater reliability via intraclass correlation coefficient (ICC).

2.4. Procedure

Ethical approval was obtained from the College of Health, Science and Society, at the University of the West of England CHSS.23.09.021 and the trial was registered with Clinical Trial.gov Ref number: NCT06146647.

Recruitment for the internal pilot and fully powered RCT was conducted by a research agency (We Are Family) who have 25 + years of experience conducting research with children and their families. Study information was sent out to potential parents. Parents were told this study was about the role of children's media, wellbeing and self-esteem and were informed that they would be asked to attend two sessions with their child. The information sheet detailed an outline of the two sessions and specified they and their child will be asked to watch a piece of children's media and that their child will be interviewed 1:1 with a trained moderator. Parents were not told they would be watching Blippi. Similarly, Moonbug Entertainment was not mentioned on the parent information sheet (see [supplementary materials](#) for a copy).

Parents of eligible children were recruited based on three quotas: (i) an equal number of girls and boys, (ii) an equal number of children in Reception and Year 1, and (iii) at least 20 % of children belonging to ethnic minority groups. Interested parents were asked to complete a brief screener questionnaire including demographic information (e.g., age, ethnicity, employment status, socio-economic status) and eligibility criteria. If eligibility criteria were met, digital informed consent for them and their child to take part was sought. Once consented, they were enrolled and randomised into one of four conditions by We Are Family using a spreadsheet detailing block allocation.

Prior to the pilot, and again for the fully powered RCT, all moderators were trained in delivering the child interview protocol by the first and second authors.

2.4.1. Internal pilot

An internal pilot study was conducted in a single venue in London over two weekends in November and December 2023. The aim of the pilot was to assess the feasibility and acceptability of the research methodology, including recruitment strategy, and identify ways of optimising research processes and logistics. Based on our internal evaluation of the pilot, we determined the trial was feasible and acceptable. We made minor refinements to the moderator protocol (e.g., reduced redundant repetition and clarified instructions for the moderators). For more detail, see [Smith et al. \(2024\)](#).

2.4.2. Main RCT

Enrolled parents were given a 60-min Day 1 timeslot for them and their child. Day 1 data collection spanned four weekdays over a half-term school holiday and one weekend date. Day 2 data collection sessions took place in the same venues as the Day 1 sessions, were approximately 15–20 min in length, and were held over three weekend dates. Day 2 dates ranged from being seven to 12 days after Day 1 sessions.

Day 1 sessions were conducted in groups of 12, where 12 children and their accompanying parent were invited to attend at the same time. Day 1 sessions began with a short ice-breaker activity involving all 12 children. This was led by a member of We Are Family, who also explained what will happen during the rest of the session. Then, children were paired with their moderator (1 child to 1 moderator) and taken to their allocated booth. Parents were encouraged to sit where they could observe but not influence their child's responses. Moderators introduced themselves to their child, engaged them in an informal conversation to put them at ease and gained verbal consent, before playing a one-to-one ice-breaker game using the sand timer (e.g., tell me how many animals you can think of in 60 s). Moderators then carried out the T1 assessment with the child. Following the protocol, the moderator asked the child to play three 'games' in order: 'a pictures game' (weight bias), 'a circles game' (body appreciation), and 'a timer game' (functionality

appreciation). The child's responses were noted on a reporting sheet.

After the T1 assessment, the moderator asked the child to fetch their parent to join them while they set up the allocated media content on the tablet for the child and parent to watch together, both were given headphones to reduce distraction. While the child and parent were watching the content, the moderator stood or sat away to give the participants space but were able to observe the child's engagement. Children allocated to the intervention and control music video conditions were shown an 11-min filler episode of *Numberblocks* (a number-based spot-the-difference animated game) before their allocated content to ensure the total duration was consistent across all four conditions. When the media content was finished, the moderator collected the tablet and gave the parent a short paper and pen survey to complete. Parents were asked to sit outside the booth to complete this while the moderator completed the T2 interview assessment with the child. This was very similar to the T1 assessment with the addition of some acceptability questions. The filler questions in the body appreciation section were changed to help keep the child's attention. Once the T2 assessment was finished, the moderator thanked the child, emphasised how valuable their contribution was, and invited them to choose a packet of fun stickers as a thank you gift. The child then returned to the parent and the moderator gave the parent a QR code (containing a direct link to their assigned content) so their child could rewatch the media content before the Day 2 session.

The Day 2 time slot was coordinated by We Are Family and conducted in the same manner as Day 1, but with smaller groups of six children at a time. The child was introduced to their moderator who was sometimes, but not always, the same moderator they had on Day 1. After some informal conversation to relax the child, and a warm-up game similar to Day 1, the moderator carried out the T3 assessment which comprised the three 'games' (measures) the children played previously. While the child was being interviewed, their accompanying parent was given a second short paper and pen survey to complete. Once the T3 assessment was complete, the child was presented with a certificate and gifted a second packet of stickers. The moderator emphasised how important and valuable the child's opinions were. Parents were informed that We Are Family would be in touch to organise their incentive; a total of £ 130 which could be received as a bank transfer, shopping vouchers, or donation to their chosen charity.

2.5. Statistical analyses

2.5.1. Statistical power and sample size

A proposed sample comprising 440 children aged 4–6 years and a corresponding parent was sought as detailed in the protocol paper (Smith et al., 2024). In brief, the study was powered for immediate post intervention effects to be assessed using repeated measures analysis of covariance with the commensurate baseline measure as the covariate. For a two-sided test ($\alpha = 0.05$), a sample size of $n = 103$ per condition will have 90 % power for an assumed standardised effect of Cohen's $\delta = 0.3$, with pre-post-correlation of 0.75. To achieve sample size, the target recruitment was inflated to $n = 110$ per condition to compensate for any missing data.

Statistical analyses were undertaken using an Intention-to-Treat (ITT) analysis set inclusive of all randomised participants who provided some outcome data either immediate post-intervention (T2) or at follow-up (T3). The primary outcome measure was body appreciation post intervention (T2) and the primary analysis was an analysis of covariance comprising randomised condition with body appreciation at T1 as a covariate. Underpinning assumptions were assessed, and no remedial action was needed. These analyses of covariance models were used to compare (i) music video intervention and music video control using the data from the two appropriate conditions, and (ii) episode intervention and episode control using the data from the two appropriate conditions. Paired samples t-tests were used to help better understand any statistically significant between groups differences.

The above analyses were extended to secondary outcome measures of functionality appreciation and weight bias, and to assess any moderating effects by gender and by year group.

Between groups differences on the ordered categorical self-reported engagement post T2 were assessed using the chi-square test of association. The change in outcomes between T2 and T3 was correlated with self-reported engagement using the Terpstra-Jonckheere test within each condition.

2.5.2. Acceptability analysis

Children's acceptability was calculated by the percentage (%) of 'yes' and 'no' responses. The 4-point item question was calculated as a mean. Similarly, parent's acceptability was calculated by the percentage (%) of 'yes', 'no' and 'unsure' responses, and mean scores for the scale item questions.

3. Results

3.1. Withdrawal and dropouts

Fig. 1 shows the study consort diagram. A total of 58 children dropped out between enrolment and T1, by not attending the first data collection session. Reasons included illness ($n = 7$), conflicts in scheduling ($n = 3$), transport issues ($n = 1$) or a miscommunication between the parent and research agency ($n = 1$). For the remainder 47 participants that dropped out, no reason was given. All children who completed T1 also completed T2 which took place approximately 20 min later in the same venue. A total of four children dropped out between T2 and T3 by not returning for the second data collection session due to illness on the day ($n = 2$) or did not provide a reason ($n = 2$). Finally, four children's T3 data could not be matched due to errors in recording their participant ID. No child was officially withdrawn from the study by their parent.

3.2. Baseline descriptives

For body appreciation, 62 children (16.3 %) reported not loving their body and 72 (18.9 %) said no, they did not think their body was amazing at baseline. A total of 33 children (8.7 %) said no to both body appreciation questions, and so had the lowest body appreciation score. Conversely, 165 children (43.3 %) answered "yes – a lot" to both questions, and as such were at the 'ceiling' of how body appreciation was assessed. For baseline functionality appreciation, children said an average of 5.4 examples of the amazing things they could do with their bodies. Example responses include: "Eyes are amazing because I can see", "hug mummy and daddy", "amazing at eating", "ride a bike because of my arms and legs", "painting" "dancing", "hair is amazing because it grows". For more on functionality appreciation, see (Craddock et al., 2025). Finally, weight bias was evident at baseline with children giving the smaller character an average rating of 1.5 across the five items, and the larger character and average rating of 2.3, where 1 = *favourable attributes* and 3 = *unfavourable attributes*. A paired-sample t-test showed these scores significantly differed, $t(378) = -22.26$, $p < .001$, $d = 1.27$.

3.3. Mean differences in study outcomes

Table 2 provides mean outcome values at T1 (baseline), T2 (immediate post intervention) and T3 (follow-up). To test randomisation at baseline (T1), we found that mean body appreciation ($p = .152$), mean functionality appreciation ($p = .639$), and mean weight bias ($p = .438$) did not significantly differ between episode intervention and episode control. Similarly, at T1, mean functionality appreciation ($p = .265$), mean body appreciation ($p = .963$) and mean weight bias ($p = .567$) did not significantly differ between music video intervention and music video control.

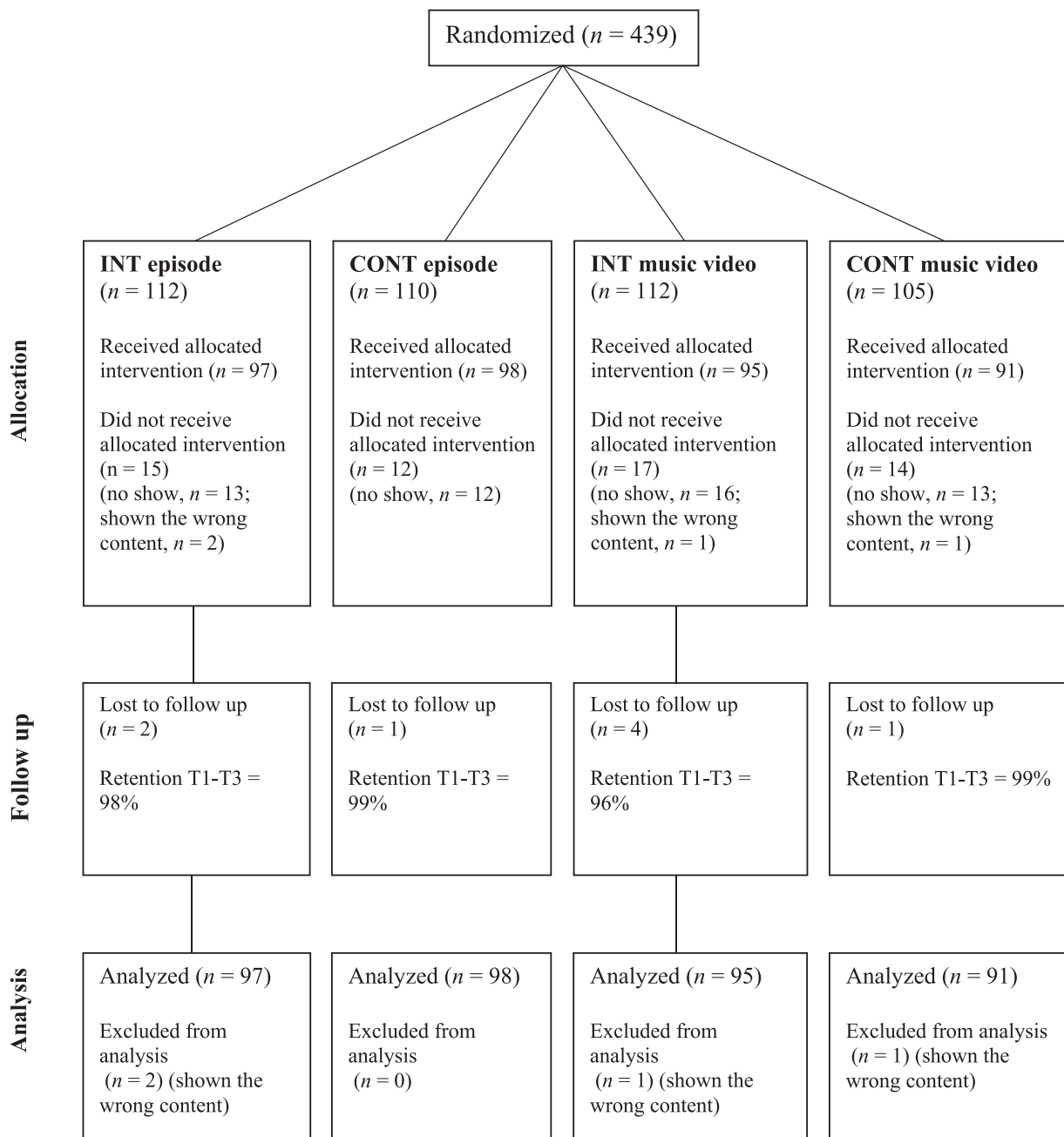


Fig. 1. Study CONSORT diagram.

Table 2
Means and SDs for all measures by randomised condition and time.

Measure	Time	Episode Intervention		Episode Control		Music Video Intervention		Music Video Control	
		N	Mean (SD)	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)
Body Appreciation	T1	97	3.14 (1.01)	98	2.93 (1.03)	95	3.23 (1.00)	90	3.23 (0.98)
	T2	96	2.94 (1.15)	98	2.82 (1.15)	95	3.23 (1.03)	90	2.87 (1.09)
	T3	95	3.10 (1.05)	97	3.11 (1.05)	91	3.21 (1.01)	90	2.99 (1.10)
Functionality Appreciation	T1	98	5.78 (3.69)	98	5.53 (3.66)	95	5.40 (3.28)	89	4.88 (3.05)
	T2	95	6.11 (3.60)	98	5.43 (3.95)	95	6.08 (3.67)	90	5.09 (2.58)
	T3	95	6.35 (3.95)	97	6.11 (3.26)	92	6.37 (3.55)	87	5.99 (3.21)
Weight Bias	T1	96	0.79 (0.71)	97	0.71 (0.71)	95	0.91 (0.85)	91	0.98 (0.67)
	T2	96	0.83 (0.77)	97	0.80 (0.72)	95	0.89 (0.79)	90	0.91 (0.86)
	T3	95	0.85 (0.75)	97	0.86 (0.78)	91	0.90 (0.74)	90	1.01 (0.71)

3.4. Moderator fidelity

A total of 24 moderators interviewed children over the course of the main trial. Across the two fidelity assessors (authors 2 and 3), good interrater reliability was found for moderator adherence (ICC = .82). Four of the seven competency ratings reached acceptable interrater reliability (ICCs = .72–.79). The remaining three competency ratings did not meet adequate inter-rater reliability testing (ICCs = .42–.66) and were therefore removed from subsequent analysis.

Mean interview duration was 10.89 min ($SD = 2.77$). Adherence to the interview schedule was excellent, with moderators closely following instructions for, on average, 92 % of the interview schedule. Broken down by measure, moderators completed on average 3.84 out of 4 instructions in relation to body appreciation ($SD = 0.37$), 2.65 out of 3 instructions for functionality appreciation ($SD = 0.64$), and 4.47 out of 5 instructions in relation to the weight bias measure ($SD = 0.68$). Moderators occasionally missed detailed instructions, the most frequent of which were (1) not checking whether the child remembered how to complete each measure for T2 and T3 (occurred in 19 out of the 57 assessments), and (2) not remaining completely silent during the functionality appreciation recall section (occurred in 9 out of the 57 assessments). Additionally, there were several occasions where it was not clear to assessors whether the two characters used in the weight bias measure were shown as a pair to participants prior to them starting this measure (occurred in 12 out of the 57 assessments). Overall, moderators were rated as ‘excellent’ across all four competency domains: gave clear instructions ($M = 9.35, SD = .81$), were prepared and organised ($M = 9.39, SD = .82$), were friendly ($M = 9.56, SD = .76$) and sounded confident in their delivery ($M = 9.53, SD = .63$).

3.5. Intent To Treat (ITT) analysis

Table 2 presents the means and SDs for all the measures by randomised condition for each time point and Table 3 summarises the ANCOVA analyses at each of T2 and T3 after controlling for the commensurate baseline variable at T1.

3.5.1. Primary outcome: body appreciation

The observed differences for mean body appreciation between the episode intervention and episode control were not statistically significant at either T2 ($p = .792$) or T3 ($p = .244$).

Conversely, at T2, mean body appreciation was significantly higher in the music video intervention condition than in the corresponding control condition ($p = .008$). A post hoc analysis using the paired samples *t*-test indicated a statistically significant decrease in mean body appreciation between T1 and T2 in the music video control group ($p < .001$) but with no mean change in music video intervention ($p = 1.000$). At T3 mean body appreciation did not significantly differ between the two music video conditions ($p = .092$).

3.5.2. Secondary outcomes: functionality appreciation & weight bias

Mean differences for functionality appreciation and weight bias between episode intervention and episode control were not statistically

Table 3
Analysis of Covariance summary of main effects for each measure and timepoint (T2, T3) controlling for baseline. Partial eta squared η_p^2 quantifies effect size.

Measure	Time	Episode			Video		
		F	p	η_p^2	F	p	η_p^2
Body Appreciation	T2	2.287	.132	0.012	3.441	.065	0.019
	T3	0.347	.557	0.002	0.095	.758	0.001
Functionality Appreciation	T2	0.070	.792	0.000	7.231	.008	0.038
	T3	0.630	.428	0.003	0.158	.692	0.001
Weight Bias	T2	0.018	.893	0.000	0.003	.960	0.000
	T3	0.360	.549	0.002	0.506	.478	0.003

significant at T2 ($p = .132, p = .893$ respectively) or T3 ($p = .557, p = .549$ respectively).

The observed differences for mean functionality appreciation and weight bias between the music video intervention and music video control were neither statistically significant at T2 ($p = .065, p = .960$ respectively) nor at T3 ($p = .758, p = .478$ respectively).

3.6. Moderation analyses

Neither effects for body appreciation, functionality appreciation nor weight bias were moderated by gender at T2 or T3.

Year group significantly moderated the effect of the music video intervention on body appreciation scores at T3 ($p = .004$), but not at T2. Mean body appreciation scores did not differ between Reception and Year 1 children ($p = .134$) within the music video intervention condition. However, within the music video control there was a significant difference attributable to year group. This was driven by a significant fall in mean body appreciation for Reception children ($p = .036$) and no change for Year 1 ($p = .829$) at T3 when compared with T1. No other moderating effects were significant for functionality appreciation and weight bias at either time point.

3.7. Dosage effects between T2 and T3

Re-watch data is summarised in Table 4. The reported frequency of re-watching did not differ between the intervention or control for either the episode ($p = .345$) or music video ($p = .326$) conditions. Analysis using the non-parametric Jonckheere-Terpstra test for trend, indicated that changes in body appreciation scores, changes in functionality appreciation scores, and changes in weight bias scores between T2 and T3 did not correlate with re-watch frequency in episode intervention ($p = .274, p = .176, p = .644$ respectively for each outcome), in episode control ($p = .704, p = .874, p = .098$ respectively), in the music video intervention ($p = .533, p = .972, p = .849$), and in the music video control ($p = .837, p = .718, p = .444$).

3.8. Acceptability analysis

3.8.1. Child acceptability

Most children liked the content they watched. On a four-point scale where 1 = ‘no, did not like’ and 4 = ‘yes, liked it a lot’, the mean score was 3.33 ($SD = 1.04$) for the intervention episode, 3.49 ($SD = 0.79$) for the control episode, 3.20 ($SD = 1.12$) for the intervention music video, and 3.18 ($SD = 1.08$) for the control music video. There were no significant differences in children’s ratings across all four conditions, $F(3, 374) = 1.983, p = .116$. Similarly, there were no significant differences by condition in moderators’ observation scores of children’s engagement when they watched their allocated content, $F(3, 347) = 1.145, p = .331$, with mean scores ranging between 7.92 and 8.37 (range = 1–10). Together, results show all four pieces of digital content were highly and equally acceptable among this age group.

Table 5 details the main themes identified for children’s ‘likes’ and ‘dislikes’ for either the episode or music video intervention conditions based on their allocation and reports the number of responses for each theme. Illustrative quotes are presented in the supplementary online materials, Table S1.

Focusing on children who watched one of the two interventions, the most common response children gave about what they liked was related to the bright and colourful visuals, the singing and dancing, the costumes, the props, and/or the comedic elements – collectively categorised as the creative components of the videos. The theme of positive body image was the next most common response. A few children in both groups also said they liked something related to the characters and casting. Additionally, some children who watched the episode liked something to do with the storyline that was not related to body image, e. g., that it was about a talent show or learning and practicing a new skill.

Table 4
Randomised condition and re-watch frequency.

Content Format	Groups	Rewatch Times (between T2 and T3)						Total
		Zero	Once	Twice	Three times	Four times	More than four times	
Episode	Control Group	13 (14.1 %)	31 (33.7 %)	28 (30.4 %)	17 (18.5 %)	3 (3.3 %)	0 (0.0 %)	92 (100 %)
	Intervention Group	11 (11.7 %)	36 (38.3 %)	24 (25.5 %)	14 (14.9 %)	5 (5.3 %)	4 (4.3 %)	94 (100 %)
Music Video	Control Group	7 (7.9 %)	19 (21.3 %)	21 (23.6 %)	15 (16.9 %)	15 (16.9 %)	12 (13.5 %)	89 (100 %)
	Intervention Group	6 (6.6 %)	14 (15.4 %)	24 (26.4 %)	25 (27.5 %)	8 (8.8 %)	14 (15.4 %)	91 (100 %)

Table 5
Child acceptability themes (likes/dislikes) for the intervention episode and music video.

Episode (n = 97)		Music Video (n = 95)	
Likes	n	Likes	n
The creative components	67	The creative components	63
The positive body image content	20	The positive body image content	14
The storyline	10	The characters and casting	6
The characters and casting	7	No response/don't know	19
No response/don't know	21		
Dislikes	n	Dislikes	n
Outgrown/disliked Blippi	9	Outgrown/disliked Blippi	2
The singing and dancing	4	The singing	3
Miscellaneous	4	The production (e.g., length, speed)	3
No response/nothing didn't like	80	Boring/repetitive	3
		Miscellaneous	3
		No response/nothing didn't like	74

Considering dislikes, most children in the two interventions either said that there was nothing they did not like or did not give a verbal response. A small number of children said that they did not like the content they watched because they had outgrown Blippi (e.g., “Blippi is for babies”) or just did not like Blippi in general. A few children said that they did not like the singing. Further, a couple of children who watched the intervention music video said that they did not like the speed of the video or said it was boring or repetitive.

3.8.2. Parent acceptability

Most parents liked the allocated content they watched with their child. On a 5-point Likert scale, mean scores were 4.06 (SD = 0.80) for the intervention episode, 4.21 (SD = 0.74) for the control episode, 4.10 (SD = 0.78) for the intervention music video, and 3.92 (SD = 0.97) for the control music video. There were no significant differences in parents’ ratings across all four conditions, $F(3, 372) = 1.904, p = .128$.

Table 6 presents the categorisations of how parents who watched one of the intervention videos responded to open-ended questions on what they liked and did not like about the video they watched with their child and the number of responses per theme. Illustrative quotes are presented in the supplementary online materials, Table S2.

Content analysis examining what parents allocated to the two intervention conditions liked about the video they watched generated similar themes to those identified in the children’s data. Starting with the intervention episode, over half of parents reported liking the positive body image messaging and almost a third liking the inclusive casting. Four in ten parents mentioned the creative components in their response, stating, for example, that they liked how bright, colourful, positive, and fun the video was, rendering it appealing to their child or young children in general. Additionally, some appreciated the educational and interactive components. Finally, approximately a quarter of parents complimented other non-body image messaging included in the episode.

Turning to parents who watched the music video, exactly a third of

Table 6
Parent acceptability themes (likes/dislikes) for the intervention episode and music video.

Episode (n = 96)		Music Video (n = 93)	
Likes	n	Likes	n
The positive body image content	55	The creative components	57
The creative components	39	The catchy, upbeat music	53
The inclusive casting	31	The positive body image content	31
Other (not body image related) messaging	24	Educational	31
Educational	14	The inclusive casting	29
Dislikes	n	Dislikes	n
Too long	22	Characters (e.g., annoying)	10
Characters (e.g., annoying)	13	Could be more inclusive	8
Could be more educational	3	Could be more educational	9
Could be more inclusive	3	Too busy or fast	9
Too young for their child	6	Too repetitive	9
Too American	3	Too American	2
Too repetitive	3	The topic – about bodies	2
Miscellaneous (location, YouTube content, mentioned a talent show but there wasn't one)	3	Miscellaneous (specific rhyme, slight buzz, not the original Blippi)	4
Nothing	38	Nothing	43

those who completed the survey mentioned the positive body image messaging, and almost a third included a comment about liking the inclusive casting. Other common responses were in relation to the catchy, upbeat music, or the creative or educational components of the video.

Across both intervention conditions, nearly half of parents found nothing they disliked. The most common dislike for those who watched the episode was that it was too long. More diverse objections were found for the music video, with some reporting it was overstimulating or too repetitive or that it could have been more educational and/or inclusive. For both videos, a minority of parents found the characters annoying, though most acknowledged that this was from their perspective as an adult and that the high energy style appealed to young children. A few parents in both intervention conditions shared their dislike of viewing American children’s programmes as their child copied the accents.

Finally, almost all parents across all conditions indicated that they thought the topic was important and most selected that they would recommend their allocated video to a parent with a child of a similar age to theirs.

Focusing just on parents allocated to one of the two intervention conditions, content analysis examining open-ended responses related to the importance of the topic revealed five main themes. First, parents shared that their child is already experiencing body image concerns or has been teased about their appearance. To illustrate, one mum disclosed, “my child has experienced body negativity from a young age, and I think children should learn from a young age that everyone doesn't look the same and why.” Second, parents expressed a more general response that body image concerns are relevant to the target age group. For example, one mum wrote, “[It's] very easy for children to feel negative about themselves and their bodies. It's nice for them to watch something that

reminds them that they are amazing.”

Third, parents made a general comment about appearance-based teasing being common in the target age group. One mum wrote “at this age kids are impressionable, my son has started coming out with names he has heard at school i.e., porky, fat etc. It is important to instil at an early age to be kind and love themselves.” Fourth, some parents felt the topic of positive body image was important to protect against future appearance pressures. One mum wrote, “I think body and self-confidence is important to learn about at this age as she gets older, maybe seeing certain things on social media will knock her down/her confidence. I want her to know as early as possible that she is great just how she is.” Fifth, some parents shared concerns regarding how children’s media often portrayed unrealistic appearance ideals. For example, one mum wrote, “I want my kids to have positive role models on TV with realistic bodies. I’m sick of them watching programmes (Disney particularly) where characters have completely unrealistic bodies and faces.”

4. Discussion

This study tested two novel media micro-interventions designed to improve young children’s positive body image. While results showed no significant improvement in mean body appreciation scores for the music video intervention group (which were high at baseline), there was a significant decline in body appreciation in the corresponding control condition. This suggests the intervention had an in-the-moment protective effect on our primary outcome. There were no significant differences on secondary outcomes (functionality appreciation and weight bias) between the intervention and control music video. Further, there were no significant differences in the study outcomes between the intervention and control episodes. Acceptability for the two interventions was high among children and their parents, and parents supported a need for more positive body image-focused children’s media.

Findings contribute to the nascent work testing positive body image interventions for very young children. Like other studies testing a book, theatre show or feature film (Dohnt & Tiggemann, 2008; Swami et al., 2022; Granfield et al., 2024), our study shows that passive and brief exposure to positive body image messaging has some immediate protective benefit to very young children. Our results indicated that focusing on body appreciation seemed to resonate most while shifting weight bias was the most resistant to change.

Our first hypothesis was partially met for the music video on the primary outcome measure body appreciation, though the change seen between conditions was not an improvement for the intervention, but the result of an immediate decline in the control. As we had a large proportion of children giving the highest possible mean body appreciation scores at T1 (over 40%), we had limited room to improve children’s body image. Considering literature that children’s media typically has a negative effect on body image (Anschutz et al., 2009; De Coen et al., 2021; Dohnt & Tiggemann, 2006), our findings suggest that the music video evaluated in this study disrupts this status quo. Given how central digital media is in many children’s lives, this is a valuable finding.

We cannot be certain why the intervention music video showed promise in relation to body appreciation while intervention episode did not. However, we can speculate, in part, based on the acceptability data. When children were asked what the content they watched was about, a greater proportion of children reported learning about positive body-related messages for the music video than the episode. The positive body image messaging in the intervention music video was explicit and very repetitive whereas the positive body image messaging in intervention episode was more diffused and there were competing messages for children to take away. Given repetition is a valuable learning tool for children (Neumann & Herodotou, 2020), this could have an important component of the music video’s success.

We did not observe a meaningful improvement in functionality

appreciation for either intervention videos compared with their matched controls. Additionally, we did not find any change in weight bias across conditions. These results may be a product of measurement reliability and sensitivity issues. It is possible that the messaging to disrupt weight bias was not sufficiently potent to yield a change after relatively passive consumption of shortform digital content. It could be that consistent exposure to subtle, positive content designed to disrupt weight bias like that seen in the intervention content may be effective over a more extended period. However, our research design did not allow us to test for this. Further, while we made every effort to keep the assessment periods short and engaging, we cannot ignore the fact that we asked very young children many of the same questions in close succession and children may have been bored or confused by the repeated questioning.

Our second hypothesis was supported as children and their participating parent indicated the two intervention pieces of content were acceptable. Overall, children and their parents liked the content. Children indicated the interventions were entertaining (e.g., fun) and parents expressed that the topics included were important and the content was generally age appropriate for their child. This is important as acceptability is linked with user engagement for digital health interventions (Perski & Short, 2021). Acceptability is particularly important with universal digital media interventions as they are competing in a saturated media landscape for users’ attention in order to gain good user engagement. Parents play an important role in guiding what young children watch (Nikken & Schols, 2015) and children have the agency to stop watching if they do not like the content. Therefore, the good acceptability findings among both children and their parents is encouraging.

Finally, our tentative hypotheses exploring moderating variables were not upheld. In contrast to previous literature (Pursey et al., 2021; Chua et al., 2020), we found no moderation effects by gender (H3). We also did not find that the intervention was more effective for children in Year 1 compared with Reception (H4). Further, we observed no evidence of sustained, or delayed, effects in study outcomes one week later for any of the study variables, and no evidence of dose effects (H5).

4.1. Strengths

Our study had six important methodological strengths. First, we used a randomised controlled trial with style- and time-matched active controls. Second, our sample was mixed gender and highly heterogeneous in terms of racialised group. Observing criticisms of prior intervention studies that the collection and reporting of socioeconomic status is typically vague (Pursey et al., 2021), we collected household income data from parents. Notably, our sample was also heterogeneous in terms of household income, bolstering the generalisability of our results. Third, the extensive stakeholder involvement work (with children, teachers, and parents) that contributed to the development of the moderator interview protocol and measures combined with a rigorous internal pilot to further optimise and finesse the research methodology such that we had a streamlined, efficient procedure meant the process was as clear and engaging as possible for children and their parents.

Fourth, our protocol working with young children was in line with many of the recommendations by Damiano et al. (2020) on how to ensure the conduct of safe body image research with children. For instance, we presented body related questions in positively worded manner, included distractor questions to lessen the focus on bodies and appearance, and highlighted to the child and their parents how valuable their participation was. In addition, at least one of the first three authors was present at each data collection session to be available to speak with parents if they had any concerns before or after participation. Fifth, our rigorous training protocol meant that we had excellent consistency across our moderators, which was demonstrated by the fidelity assessments.

Sixth, in response to recent calls to action within the field of body

image (Atkinson et al., 2020), a key strength of this work pertains to our multi-stakeholder partnership where implementation and dissemination was central from the stage of conception. These body image interventions were designed to be disseminated via YouTube on Blippi's channel as well as other streaming platforms including Netflix, allowing them to have the potential to reach large audiences in a relatively affordable, convenient, flexible, and acceptable way – all requirements identified by Kazdin (2018) for interventions to achieve broad impact. Further, the fact that the two intervention videos were comparable with the two control videos in terms of how much both children and parents liked the content is encouraging and gives an indication of the likelihood of how these videos will be watched and enjoyed following their launch. For reference, at time of writing, the control episode 'Blippi goes to the Dentist' has almost 5 million views (in 24 months) on YouTube and the control music video has approximately 8.5 million (in 12 months). This data also highlights how shorter content is more likely to have more views and thus reach.

4.2. Limitations

Despite the thorough, detail-oriented work that went into developing the moderator interview protocol and research process, there are limitations worth consideration. First, it is important to acknowledge that there are challenges working with very young children to maintain engagement, focus, and comprehension (Davison et al., 2000). Second, there are no validated positive body image measures for this young cohort therefore the measures used were not validated. Having test-re-test reliability data with the target age group without any intervention would have been valuable. Third, in following a strict RCT design, we lost some aspects of ecological validity. For instance, children were in an unusual setting, speaking with an adult they did not know for the assessments. They were watching the media content on tablets in a setting that might be less comfortable than at home or their typical environment. Further, children attended the data collection session at different times of day. Although effort was made to meet parent requests for a preferred timeslot, time of participation may have affected children's focus and engagement. Indeed, some specialists in early childhood assess this age group in the mornings, when they tend to be most alert (Arens et al., 2016).

Fourth, the follow-up assessment also presented some challenges. Due to logistical constraints, our follow-up ranged between seven and 12 days later. This meant there was some variability in how long children had to re-watch the videos between T2 and T3. This is an important confound to our sixth hypothesis related to sustained effects. Finally, some parents may not let their children watch content on YouTube or other streaming platforms, thus affecting the ecological validity of the results.

4.3. Future directions

Consistent with prior work (Alleva et al., 2015), our results indicate that psychoeducation can be beneficial for body image outcomes. However, studies show that body image interventions that include active learning components tend to be more effective (Alleva et al., 2015). Therefore, future research should test interventions that incorporate interactive tasks to consolidate learning with young children. Particularly for weight bias, the present study findings indicate that more intensive and greater exposure to messaging that disrupts the internalisation of thin-ideal, and anti-fat, messaging is needed.

One way to add an interactive component with young children is to proactively incorporate parents. A systematic review has showed that body image interventions targeting children and adolescents that involve parents led to significant reductions in negative body image (Hart et al., 2015). In the present study, parents were included to an extent by being invited to co-view the content with their child and by being invited to have conversations with their child about the

intervention topic between T2 and T3. However, it was beyond the scope of the current work to engage parents more actively or to test parent-related outcomes – for example, parent self-efficacy to foster positive body image in their child. Future media-based body image interventions aimed at children may wish to include educational resources and discussion guides for parents to help reinforce and consolidate messages incorporated into the media content. That said, it is important to acknowledge that Hart et al.'s (2015) systematic review identifying the added value of including parents also highlighted that engaging parents can be challenging.

Another future direction for researchers aiming to work with young children, is to dedicate greater investment in measure development. Given the challenges with assessment during the target developmental period, closer examination and study of positive body image measurement would be a useful contribution to the field. Finally, it would be useful to test the effectiveness and acceptability of watching the full 'Blippi's Wonderful Talent Show' 75-min feature film (the combination of the four episodes) as well as the cumulative effect of watching all four episodes in succession. A recent study found a 75-min feature film has a positive impact on similar body image outcomes to the present trial (body appreciation, functionality appreciation, and self-compassion) in older children aged 9–15 years (Granfield et al., 2024).

4.4. Conclusion

This study contributes to the scarce body of literature on positive body image interventions designed for very young children. Furthermore, it responds to calls for body image interventions for children that aim to shift the focus from how their bodies look to what they can do and how they feel (Jongenelis & Pettigrew, 2020). We found promising protective effects of a music video, with 'sticky' lyrics reiterating that bodies are amazing from the bottom to the top. We encourage media creators to include positive body image messaging for young children and researchers to rigorously test their impact. Together, there is potential to change the media landscape aimed at children in a way that serves to protect body image throughout childhood.

Funding

This study was funded by the Dove Self-Esteem Project (Unilever). The funder has had no role in data analysis, decision to publish or manuscript preparation. The Dove Self-Esteem Project (Unilever) was permitted to review the manuscript and suggest changes, but the authors exclusively retained the final decision on content. The views expressed are those of the authors and not necessarily those of Unilever.

Declaration of Competing Interest

The authors declare no conflicts of interest in relation to this work.

Acknowledgements

We would like to extend our upmost thanks to all the children and their parents who took part in this research – data collection has never been so fun! On that note, data collection was a huge team effort, and we would like to thank our colleagues who joined us to interview the children. We appreciate their enthusiasm, expertise, and time: Latika Ahuja, Deborah Blaso Moreira, Mahira Budhraj, Alya Chafai El Alaoui, Sharon Haywood, Hannah Lewis, Abbi Mathews, Kieran Moulton, Lucy O'Donnell, Kat Schneider, Aline Tinoco, and Emma Waite. We would also like to thank We Are Family – our research agency who managed recruitment, randomisation, logistics, and participant relationships in addition to supporting with child interviews – all at speed, with good humour, close attention to detail, and high energy. Finally, we thank Moonbug Entertainment – the content creators, for their commitment to children's body confidence and the research process.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.bodyim.2025.101851](https://doi.org/10.1016/j.bodyim.2025.101851).

Data availability

Data will be made available on request.

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