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Distinguishing factors that influence attendance and behaviour change in family-based treatment of childhood obesity: A qualitative study

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Objectives. For the effective treatment of childhood obesity, intervention attendance and behaviour change at home are both important. The purpose of this study was to qualitatively explore influences on attendance and behaviour change during a family-based intervention to treat childhood obesity in the North West of England (Getting Our Active Lifestyles Started (GOALS)).

Design. Focus groups with children and parents/carers as part of a broader mixed-methods evaluation.

Methods. Eighteen focus groups were conducted with children ($n = 39$, 19 boys) and parents/carers ($n = 34$, 5 male) to explore their experiences of GOALS after 6 weeks of attendance (/18 weeks). Data were analysed thematically to identify influences on attendance and behaviour change.

Results. Initial attendance came about through targeted referral (from health care professionals and letters in school) and was influenced by motivations for a brighter future. Once at GOALS, it was the fun, non-judgemental healthy lifestyle approach that encouraged continued attendance. Factors that facilitated behaviour change included participatory learning as a family, being accountable and gradual realistic goal setting,

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whilst challenges focussed on fears about the intervention ending and a lack of support from non-attending significant others.

Conclusions. Factors that influence attendance and behaviour change are distinct and may be important at different stages of the family's change process. Practitioners are encouraged to tailor strategies to support both attendance and behaviour change, with a focus on whole family participation within and outside the intervention.

Statement of contribution

What is already known on this subject?

The most effective interventions to treat childhood obesity are family-based and focus on changing physical activity and dietary behaviours. Common facilitators and barriers to the treatment of childhood obesity have been identified, but a distinction has not been made between factors that influence attendance and factors that influence behaviour change.

What does this study add?

- There are distinct influences on attendance and behaviour change.
- Both attendance and behaviour change can be influenced by modifiable intervention factors.
- Strategies to promote whole family participation may enhance sustained behaviour change.

Obesity in childhood adversely affects psychological and physical health, both during childhood and in later life (Fiorino & Brooks, 2009; Rankin *et al.*, 2016; Zimmermann *et al.*, 2017). Data from the National Child Measurement Programme (NHS Digital, 2019) show that in the 2018/2019 school year 34.3% of year 6 pupils (aged 10–11 years) in England had overweight or obesity. The link between obesity and socio-economic status continues to strengthen, with childhood obesity prevalence in the most deprived areas in England (26.9%) over twice as high as the least deprived areas (11.4%; NHS Digital, 2019). Effective approaches to address childhood obesity are urgently needed, particularly in areas of socio-economic deprivation.

It is recommended treatment of childhood obesity involves the family and focusses on physical activity (PA), diet, and behaviour change (National Institute for Health & Care Excellence, 2013). Whilst review data show positive effects of such interventions in the short term (Mead *et al.*, 2017), less is known about promoting behaviour change that is sustainable over time. For group-based interventions, investigating factors that influence attendance is a logical starting point, since attendance is necessary to access programme-related support. It follows that children with higher attendance are more likely to lose weight than children who attend irregularly or dropout (Nobles, Griffiths, Pringle, & Gately, 2016). Programme characteristics such as group size have been shown to be key predictors of attendance in treatment of childhood obesity (Nobles *et al.*, 2016), highlighting the importance of intervention design and delivery in determining how often families choose to attend. Facilitators to attendance include fun practical sessions, a family-centred approach, provision of social support, and good relationships with staff (Kelleher *et al.*, 2017). Notably, these facilitators are similar to factors associated with effective interventions for treating childhood obesity (Burchett, Sutcliffe, Melendez-Torres, Rees, & Thomas, 2018), thus suggesting efforts to enhance attendance might also enhance intervention effectiveness.

Attendance, however, does not guarantee behaviour change, which requires a commitment from participants to change their PA and diet outside of the intervention

sessions (which typically run for 10–18 weeks). Thus, there is a need to understand what factors facilitate PA and dietary change in (attending) children and families. Whilst quantitative systematic reviews have identified behaviour change techniques associated with intervention effectiveness (Golley, Hendrie, Slater, & Corsini, 2011; Martin, Chater, & Lorencatto, 2013), definitions of 'effectiveness' have been broad, with little attempt to isolate effects on children's dietary and PA change. Golley *et al.* (2011) did, however, make a useful observation that the greatest effects are seen when using behaviour change techniques that span the whole behaviour change process (i.e., from initiation through long-term maintenance). Qualitative studies exploring families' views of interventions to treat childhood obesity (Cason-Wilkerson, Goldberg, Albright, Allison, & Haemer, 2015; Schalkwijk *et al.*, 2015; Twiddy, Wilson, Bryant, & Rudolf, 2012; Watson, Baker, & Chadwick, 2016) point to common facilitators (e.g., fun, social support, good relationships with staff) and barriers (e.g., time, negative influences from other family members, challenges of maintaining changes post-intervention). In the majority of studies, however, data have been collected retrospectively and few studies have distinguished between attendance and behaviour change, with the majority of facilitators focussed on attendance.

The aim of the current study was to qualitatively explore influences on attendance and behaviour change during a family-based intervention to treat childhood obesity in the North West of England (Getting Our Active Lifestyles Started (GOALS); Watson *et al.,* 2011; Watson, 2012; Watson, Dugdill, Murphy, Knowles, & Cable, 2013; Watson *et al.,* 2015). GOALS was a community-based group intervention underpinned by social cognitive theory (Bandura, 1986, 1997), which aimed to support gradual, sustainable changes to family PA and diet (see Watson (2012)) for details of the theoretical underpinning. Whilst outcome data suggest families that completed GOALS made positive PA and dietary changes (accompanied by reductions in children's BMI *z*-score (Watson *et al.*, 2015)), these quantitative data show little about how families achieved these changes. From a psychological viewpoint, these mechanisms of change are important to understand, since this vital 'how' information can inform the way practitioners support behaviour change. In this study, we employed qualitative focus groups to gather children's and parents/carers' perspectives on (1) factors that encouraged (or discouraged) attendance at GOALS; and (2) factors that facilitated (or hindered) behaviour change for children and parents/carers attending GOALS. The study adopted a pragmatic philosophy whereby knowledge was viewed as a 'tool for action' (Cornish & Gillespie, 2009, p. 802), with the aim of providing relevant insights for practitioners and policymakers working to address childhood obesity.

Methods

Design

Qualitative focus groups were conducted as part of the iterative development and evaluation of the GOALS intervention. The intervention was developed over a series of years (2003–2013), using a continuous improvement methodology that involved a reciprocal feedback loop between evidence and practice (Watson et al., 2013), with service user views feeding in to improve delivery on an ongoing basis. We perceived such embedded interactions with service users (both formal and informal) to be integral in shaping the quality and effectiveness of the intervention, which was ultimately grounded in the expectations of the user (Osborne, Radnor, & Strokosch, 2016).

GOALS was delivered in local community venues (school sites after hours) over three 6-week modules (18 sessions in total). Each session lasted 2 hr and included practical PA

sessions for the whole family, cooking and nutrition sessions, and behaviour change support (see Watson *et al.* (2015) for full intervention description and outcome data). It was decided to conduct focus groups during the week 6 intervention session (which fell at the end of the first module) for two reasons: (1) to provide a qualitative insight into the challenges and facilitators families were experiencing *whilst* they were attending the intervention; (2) to offer a formal opportunity for service users to feed into the ongoing development of the intervention. This 6-week time point allowed several weeks for families to 'settle in', yet sufficient time post-focus groups to address pragmatic areas for improvement (where necessary).

Participants

Families were eligible for GOALS if a child (aged 4–16 years) in the family had overweight or obesity (BMI ≥ 91st percentile according to the UK 1990 BMI reference charts (Cole, Freeman, & Preece, 1995)). Families participating in GOALS between November 2007 and March 2009 were invited to take part in the research study during their initial assessment (which involved an informal interview aimed at building rapport, providing information and reviewing families' current PA and dietary behaviours). Families who provided research consent and were in attendance during week 6 of the intervention took part in a focus group. Participants were 34 parents/carers and 39 children (19 boys), belonging to 36 different families (of whom 33 went on to complete the intervention). Parents/carers were 27 mothers, 5 fathers, 1 aunt, and 1 older sister. 25 families (69.4%) lived in neighbourhoods ranked in the 10% most deprived in England (Office for National Statistics, 2007). Of the 24 families for whom ethnicity was known, 22 were White British, 1 Asian, and 1 Mixed race. As the child focus groups were structured according to which intervention cohort they were in, age ranges of groups varied (youngest group 5–9 years; oldest group 11–16 years – see Appendix S1 for full details).

Focus groups

Separate focus groups were conducted for children and parents/carers, since formative research (Dugdill, Stratton & Watson, 2009) showed this approach led to more open discussion than combined child–parent/carer interviews. Eighteen focus groups took place (nine child and nine parent/carer), with 2–9 participants per group (Appendix S1). Child focus groups lasted 30–40 min, and parent/carer focus groups lasted 45–60 min. Focus groups were facilitated either by PW or by a GOALS staff member (including KP, JH and LS) at each intervention site. All facilitators were experienced in conducting group discussions and were trained by PW to ensure a standardized approach.

It is relevant to note that PW was known to participants as the GOALS project manager and all other focus group facilitators were known as session leaders. This established relationship between facilitators and participants was viewed as important in building trust, which may lead to deeper, more meaningful discussions (King, Horrocks & Brooks, 2018). We felt this to be particularly important for the child focus groups, as children may talk more freely in established groups conducted by familiar adults (Hill, 1997). In recognition that some participants may have felt uneasy about feeding back 'negative' issues directly to intervention staff, it was made clear prior to the start of each focus group that participants were free to express their opinions without this impacting on their

involvement in GOALS and that sharing negative experiences or points for improvement was important in helping improve the intervention for other families.

As focus groups were conducted as part of a broader evaluation of GOALS, the semi-structured topic guide (Appendix S2) consisted of open questions about experiences of GOALS, views of the programme content/structure, and behavioural changes that were occurring at home. These broad questions were supplemented with prompts to explore facilitators, challenges, and perceived areas for improvement. Topic guides were intended as a loose framework rather than a rigid question-by-question interview schedule, encouraging natural interaction and giving participants the opportunity to consider their own views in the context of those around them (Patton, 2002).

For the child focus groups, 'simple' and 'advanced' questions were used to account for the diversity of ages and group sizes, and two creative techniques (write and draw task, peer-to-peer 'television interview') were available to facilitators if they felt it would help younger children express themselves more easily (Hill, 1997). The majority of children attending GOALS were aged 9–12 years and interactive discussion worked well. Some focus groups, however, had larger age ranges (e.g., 11–16 years) or included younger children (e.g., 5–9 years). Within these groups, facilitators were encouraged to be flexible with their use of questions and creative techniques to enhance interaction within the group and encourage children to open up about their experiences.

Analysis

Focus groups were audio-recorded, transcribed verbatim, and imported into NVivo version 9.2. A thematic analysis was undertaken by PW to extract data related to research objectives 1 (influences on attendance) and 2 (influences on behaviour change). Key principles of focus group analysis (Kidd & Parshall, 2000; Kitzinger, 1994) were followed to ensure the conversational context was taken into account throughout the coding process. A broad-brushed approach (coding interactive discussion between group members) was combined with a fine-grained coding of content (to identify individual utterances with meaning), thus a 'meaningful discourse unit' ranged from a single line uttered by an individual to an exchange between a number of participants in the group. Once transcripts were read, reread, and meaningful discourse units identified, data were categorized as either 'GOALS-related', 'family-related', or 'external' influences. Each category was then reviewed as a whole to look for themes and subthemes related to each research objective.

In keeping with a pragmatic philosophy, the aim was to interrogate participant accounts of their experiences at GOALS and interpret these in terms of their broader meanings and implications for enhancing practice. We drew on the recommendations of Yardley (2000) to ensure the analysis process was rigorous, sensitive to context and took into account researcher influences when extracting and interpreting data. Pragmatic philosophy recognizes multiple interpretations of external realities (Yardley & Bishop, 2008), and it was important to acknowledge the potential influence of researcher experiences (many of whom were also intervention deliverers) on the analysis process. Therefore, an independent critical friend (LJ, who had no prior involvement in GOALS) also read and coded the transcripts as a means of exploring alternative interpretations and encouraging dialogue to reach a plausible representation of the phenomenon under study (Smith & McGannon, 2017). Analysis was viewed as a dynamic process throughout, with regular meetings between PW, RM, ZK and NC to recode units, rename subthemes, and

reshape the thematic structure to extract the factors perceived to be most important in relation to the research objectives.

Ethical approval

Ethical approval was obtained from Liverpool NHS Paediatric Research Ethics Committee [05/Q1502/28]. Informed parent/carer consent and child assent were collected in writing from all participants.

Results

Table 1 summarizes the factors identified to influence attendance and behaviour change, organized into GOALS-related, family-related, and external sources of influence. Since there was some overlap in children's and parents/carers' views, data were combined within the final thematic structure. There were, however, several themes reported by parents/carers only (see Table 1). The narrative description that follows addresses each research objective in turn, separated into encouraging/discouraging (research objective 1 – attendance) and facilitating/hindering factors (research objective 2 – behaviour change). Illustrative quotes are attributed to participants by their relationship to the referred child (e.g., child, mother), intervention cohort (A-K – see Appendix S1), and participant number within that group.

Factors influencing attendance

Factors reported to influence attendance fell into two broad themes: those that influenced the initial decision to attend GOALS and those that influenced continuous attendance at GOALS (see Table 1). Initial attendance was encouraged by family and external sources, but discouraged by negative expectations of the intervention, whereas continuous attendance was influenced mostly by GOALS-related factors, with personal family barriers also playing a part.

Factors encouraging initial attendance

Brighter future (family-related).   Parents/carers' accounts of what had motivated them to attend GOALS initially were focussed around creating a brighter future for their children. For some parents/carers, this was prompted through the weight-related challenges they had observed their child facing (e.g., struggling to walk in the heat on holiday) and a fear of the negative impact this might have on their child's future if nothing was done. For other parents/carers, there was a desire to prevent their child going through the same turmoil they had: 'I've been on the other end of it when I was a teenager… and do you know what it's overtaken my life…I'm not having [my daughter] going through what I've gone through' (mother A1).

Targeted referral (external).   The majority of families were referred to GOALS either via the *Sports* Linx project (Boddy, Hackett, & Stratton, 2010), where they were sent a letter after their child was weighed and measured in school, or via a health care professional (e.g., school nurse, general practitioner, paediatrician). Whilst referral from health care

Table 1. Factors influencing attendance and behaviour change at GOALS

Source of influence	Attendance				Behaviour change	
	Initial		Continued			
	Encouraging	Discouraging	Encouraging	Discouraging	Facilitating	Hindering
GOALS-related		Negative expectations (c/p)	Fun, healthy lifestyle approach (c/p) Feeling accepted (c/p)	Heterogeneous groups (c/p)	Participatory learning (c/p) Being accountable (c/p) Gradual, realistic goals (p)	Support ending (c/p)
Family-related	Brighter future (p)			Personal barriers (p)	Doing it together (c/p)	Personal challenges (p) Non-attending significant others (p)
External	Targeted referral (p)				Supportive environment (p)	Unsupportive environment (p)

c/p = theme present in both child and parent/carer groups; *p* = theme present in parent/carer groups only.

professionals had prompted several parents/carers to attend GOALS, their experiences differed depending on how information had been communicated. When health care professionals were friendly, clearly explained the intervention and focussed on health rather than weight, parents/carers and children felt at ease about attending.

> and the consultant [at the hospital] was fantastic. . . he said to me 'have you ever heard of GOALS' and he gave us a leaflet. . .he said to [my son] 'I'm not concerned about what you weigh at all, I just want to get you healthy inside'. . . [my son] felt fab when he came out (mother E4)

Conversely, if information was directive and focussed on losing weight, this led to feelings of anger and an 'I'll show you' attitude.

> that doctor in [hospital] done my head in to be honest with you he was very dictatorial. . .he wasn't very nice with [my daughter]. . .it was like. . .'if you can't lose weight then your asthma is not gonna get any better'. . .I thought 'right you I'll show you'. . .and that's where it started (mother B2)

For parents/carers who received referral letters from school, the referral process involved a mixture of emotions. Some parents/carers felt letters were written in a manner that assigned blame and made them feel inadequate as parents/carers, leading to anger and feelings of guilt that they were letting their children down: 'it's like a dig at you isn't it. . . as if you're not bringing your child up properly or something' (mother D2). Such feelings did not, however, deter parents/carers in the study from attending GOALS, as they perceived the fact they were being offered help as positive.

Factors discouraging initial attendance

Negative expectations (GOALS-related).   Although all families in the study had decided to attend GOALS, many participants described negative expectations that had made them fearful of attending initially. Children had feared not making friends, and both children and parents/carers said they had expected GOALS to be like a 'boot camp', where they would be told 'don't eat this, don't eat that, do more exercise' (mother K3). One mother said she feared telling her child how long the intervention was, noting 'if you say 18 weeks to someone they think "I'm not sticking at that"' (mother B2).

Factors encouraging continued attendance

Fun, healthy lifestyle approach (GOALS-related).   In contrast to their negative expectations, children and parents/carers described how much they enjoyed attending GOALS. Children described GOALS as 'fun', and parents/carers highlighted how GOALS differed from commercial weight-loss programmes through its focus on making sustainable lifestyle changes (rather than going on a 'diet'). Participants particularly enjoyed the practical cooking sessions and the non-competitive, fun, and inclusive approach to PA. The following exchange shows how initial fears of a regimented 'boot camp' were dispelled by the focus on healthy lifestyles.

> Mother C1: I was expecting it to emphasise more on the weight and it hasn't, it's shown you it as being healthy. . .it doesn't really matter what you weigh – well it does obviously – but if you're healthy that's more important

Mother C6: the fun aspect of it

Mother C1: yeah, not to be regimental with your exercise and just play

Some parents/carers said they would be less likely to attend if GOALS were more focussed on weight, expressing concern about the psychological impact this might have on children.

Feeling accepted (GOALS-related).   Children and parents/carers consistently referred to the group approach as a positive motivator to attend. Mixing with others 'in the same boat' allowed parents/carers to share experiences and created a safe environment where children felt accepted as a person beyond their weight: 'People from GOALS don't care if you're overweight, obese, tall, thin, small, midgy' (child G1). Staff were described as 'kind', 'easy to approach', and 'genuine', and parents/carers reported how the inclusive, non-judgemental environment gave children confidence to be themselves and to join in with sporting activities they would not take part in elsewhere.

> I think it was the second week when [my son] said 'the first time I'd ever been with other children who have not said anything nasty about or laughed at me or said anything nasty about my weight' and you know I think he felt safe and good. . .I think that was a positive thing for him and making him feel good about coming (mother E4)

Factors discouraging continued attendance

Heterogeneous groups (GOALS-related).   Whilst parents/carers acknowledged the challenges of meeting individual needs in a group setting (with mixed ages, preferences, and abilities), some noted their children were discouraged from attending because they felt different from others in the group. For example, one mother described how her son felt self-conscious being the only boy in the group, and another father said his son felt much older than the other children:

> I think the problem once you put people in a group is you've got real mixed ability you've got mixed ages. . .[my son] said to me a few weeks ago 'this is for babies', I said 'no you're gonna do it you're gonna crack on with it' and I know what he meant. . .but I understood that you've got to put something on that will appeal to everyone and it's not easy to personalise it (father J2)

Another perceived challenge was combining parents/carers and children together in one group, particularly where sessions involved discussion of sensitive topics. Children noted how the discussion would be better left to the parents/carers because 'the adults are better at it' (child K2) and some children felt uncomfortable opening up in front of adults they did not know.

Personal barriers (family-related).   Families who attended GOALS often led busy lives and some parents/carers noted the challenge of fitting in the weekly sessions amongst work, childcare, and other commitments (e.g., caring for older family members or taking their other children to clubs). Other personal barriers that were mentioned included poor health, injury, and the difficulty of 'getting off your backside to come' (mother C1) instead of relaxing at home in front of the television.

Factors influencing behaviour change

After 6 weeks of attending GOALS, children and parents/carers reported a number of changes to their diet (e.g., more water, healthier snacking, reduced portion sizes) and PA (e.g., active transport, structured sport and exercise, improved awareness of PA benefits). Factors perceived to influence these changes were related to GOALS, family, and the external environment (see Table 1).

Factors facilitating behaviour change

Participatory learning (GOALS-related).   Both children and parents/carers spoke positively of the family nature of GOALS and the benefits of learning about healthy lifestyles together. The participation of staff and parents/carers within PA and cooking sessions was perceived to be helpful in showing children 'how' to do things, whilst also giving parents/carers an opportunity to be with their children in a situation they had not previously seen them in. Seeing their children have fun, utilize skills, and be confident around others gave parents/carers a window into their children's strengths, of which some parents/carers were previously unaware. One mother, whose daughter had a rare genetic condition, described the moment she realized she had been underestimating her daughter's capabilities:

> I had an eye opener with [my daughter] because of [her genetic condition] I don't really let [her] in the kitchen and I was pleased to see her included with the children and having a little play you know with the food. . .I think I'd put her in a little bubble really (mother J1)

Some parents/carers felt the participatory learning at GOALS eased the process of reinforcing healthy messages at home, as they were able to refer to GOALS as a 'backup' during challenging conversations (and neither child nor parent/carer could dispute the message as both knew what the GOALS sessions had involved).

> if you try and turn round and say to [my daughter] 'don't have that' she used to like get upset but if you say to her now 'don't have that. . .just think about GOALS', she'll go 'ok' and put it back (mother E5)

Being accountable (GOALS-related).   Participants felt attending a regular weekly session helped with behaviour change, noting that having 'somewhere to come' gave them structure and reduced the chances of falling back into old habits. Both children and parents/carers described feeling motivated by knowing someone was regularly checking their progress, although for some children this was driven by self-preservation: 'I only mostly do my goals because I know I'm coming here and if you've failed it. . .it makes you look stupid' (child D1). Some children also noted that attending GOALS was helpful as it got them out of the house and took their mind off eating, which is what they would otherwise have been doing at home.

Gradual, realistic goals (GOALS-related).   Parents/carers spoke positively of the gradual, realistic approach to goal setting, which they felt facilitated their behaviour change process. Parents/carers noted how focussing on small changes that were realistic, such as working towards eating breakfast daily, was important as they could be sustained in the long term. One mother described how if you attempt to change

everything at once 'you'd fall flat on your face' (mother H1), but with the GOALS approach (small steps that you build on gradually) 'it creeps on each week and before you know it you're doing four different things' (mother H1). Parents/carers referred to other aspects of the intervention that were helpful in this behaviour change process. This included completion of PA and food diaries at the start of the intervention (which allowed them to see their current lifestyle 'in black and white' and increased their self-awareness of what they needed to change) and rewarding children with small prizes such as water bottles and T-shirts (which served as a positive motivator for children to complete their weekly goals).

Doing it together (family-related).   Parents/carers spoke of the positive effects of changing PA and eating behaviours as a family. Parents/carers described how their children were positively influenced by watching them eat healthily, and one mother noted the responsibility she felt to be a positive role-model: 'how can I tell her 'this is what you need to do' if she's not seeing me do it?' (mother H4). Examples were also provided of mutual parent/carer–child support, such as children sharing ideas from the GOALS handbook and family outings to be physically active together. Several parents/carers noted their responsibility for the food environment at home, and children described how changes their parents/carers had made were helping them eat more healthily.

> we've had different fruit in our house in our fruit bowl, and we've had less chocolate. . .my mum used to buy big boxes of chocolate and they used to be out where you could see them – and when you can see them you tend to eat them don't you? (child A1)

Supportive environment (external).   Facilitative factors external to GOALS and the family were only discussed in a small number of groups. One parent/carer described a fitness facility whereby different members of the family could take part in different activities simultaneously, and a few parents talked favourably of steps their child's school had taken to support healthy eating.

Factors hindering behaviour change

Personal challenges (family-related).   Parents/carers discussed how it was not always easy to put what they were learning at GOALS into practice, particularly when it came to changing engrained dietary habits. One mother noted she hated doing the cooking 'with a passion' (mother K4) and some parents/carers expressed emotional challenges when controlling their child's food intake, as they felt like they were 'punishing' their child by restricting certain desirable foods (e.g., those high in saturated fat and refined sugars). The following exchange highlights the challenges faced by parents in trying to limit 'junk food', whilst preventing it being perceived as a reward.

> Mother H1: I say 'just have one of them [e.g. chocolate bar] then you don't have nothing else as a treat for that day then the next day you just have one and then you work it off'
>
> Mother H4: (overlapping) but then do you not find that you get well 'I've been good' and then they want it and I'm thinking 'do I treat it as a treat' do you know what I mean

Non-attending significant others (family-related).   Many parents/carers were frustrated by the challenges of engaging non-attending family members in the behaviour

change process. They described how ex-partners, grandparents, and childminders would take children to fast food outlets, feed them 'junk food', or behave in ways that undermined their good efforts to help their children.

> [my daughter] was getting to the point where she was wanting a weigh every day and I thought 'oh we can't have this', she gets to her nan's last weekend and her nan let her get on the scales...she said 'me nan's shown me I've got to lose a stone' and I thought 'oh we're doing all this good work here'...and then her nan turns round and says something like that (mother A1)

Parents/carers also noted how difficult it was for children when they had 'skinny' friends and siblings, who appeared to be able to 'eat what they like'. Some parents/carers admitted to finding it challenging to implement 'one rule for all' when it came to healthy eating at home, and one mother feared her daughter (who did not have obesity) might suffer later if she also did not make changes to her eating habits.

Unsupportive environment (external).   Parents/carers described challenges related to their children's social and physical environments. Many of the children attending GOALS had experienced bullying, and felt a constant fear of judgement from others, which in turn contributed to difficult relationships with food and low perceptions of physical self-worth. Activities that drew attention to body size (e.g., physical education, buying clothes) were perceived a 'nightmare', which heightened children's feelings of 'being different' and deterred them from wanting to take part in activities such as swimming.

> [my daughter's] had some comments from school made and then [she] wouldn't eat...she was coming in and...not eating her packed lunch, not eating her tea, not eating this, not eating that and it's devastating to watch... (mother A1)

Some parents/carers felt there was a lack of supportive action for healthy lifestyles from schools (such as continuing to provide unhealthy dinners or replacing physical education with other lessons) and there were not enough low-cost physical activities available for children in their local area. Several parents/carers described instances where activities were available (e.g., local council leisure facilities), but their children were ineligible to take part through being too young or not tall enough. Many families were living in areas of socio-economic deprivation with high levels of crime, and one child described how his safest option was to exercise at home: 'one night I ran up and down the stairs for ten minutes...because I can't get out the house because of all the people with guns and that' (child E4).

Support ending (GOALS-related).   Several parents/carers expressed anxiety about the weekly support ending. Parents/carers were concerned about losing momentum when the sessions ceased over the school holidays, and showed little confidence in keeping up their changes after the 18-week intervention finished. Whilst some children were hopeful about maintaining their changes in the long term, other children said they would like GOALS to be longer, noting that 'whatever you do in four months you can easily undo in one month' (child D1).

Discussion

The aim of this study was to qualitatively explore influences on attendance and behaviour change during a family-based intervention to treat childhood obesity (GOALS), drawing on perspectives of children and parents/carers attending the intervention. Whilst the accountability that came with attendance was deemed a facilitator for behaviour change, the factors reported by families to influence attendance and behaviour change were distinct. Initial attendance was driven by family motivations and targeted referral strategies, whilst the way GOALS was delivered was important for continued attendance (e.g., non-judgemental, fun, lifestyle-focussed approach). In terms of behaviour change, many of the GOALS factors (e.g., participatory learning, gradual realistic goals) and family factors (e.g., doing it together) operated to influence behaviour change by enhancing efficacy beliefs about PA and healthy eating. Negative influences on behaviour change included lack of support from non-attending significant others, factors in the external environment (e.g., limited PA opportunities), and fears of the intervention support ending.

Factors influencing attendance

For participants in this study, the initial decision to attend GOALS was influenced by a desire for a brighter future for the child and by targeted referral strategies (either from health care professionals or via letters from school). Prior to attending, however, families held negative preconceptions about what the intervention might entail and some parents/carers described feeling 'judged', guilty, and angry at the way information was put across during the referral process. Similar parental responses were reported in online discussions about child weight-related feedback letters (Kovacs, Gillison, & Barnett, 2018) and can be interpreted within the context of self-determination theory (SDT, Ryan & Deci, 2000). SDT focusses on interactions between the basic human psychological needs (i.e., autonomy, competence, and relatedness), the motivational climate (i.e., the extent to which behaviours of others are thwarting or supportive of the psychological needs), and motivation regulation (i.e., the quality of motivation). Parents/carers described how when the referring information was perceived to be autonomy-supportive (e.g., portraying empathy and offering clear explanations), they felt autonomously motivated to attend GOALS (i.e., motivation characterized by volition and choice). Yet when the information was perceived to be controlling (e.g., directive and judgemental), this evoked negative emotions, and parents/carers' motivation was more introjected in nature (i.e., motivation characterized by guilt or wanting to prove something to others). Discussing child weight issues can present many barriers for health care professionals (Bradbury *et al.*, 2018), and it is possible the controlling communication described in this study reflected a lack of training, perceived competence, or confidence on the part of the referring practitioners (Turner, Owen, & Watson, 2016). Whilst it could be argued that for our sample, both autonomous and controlling communication strategies led to initial attendance at GOALS (i.e., despite being upset, parents/carers still chose to attend), it is possible the controlling strategies further exacerbated the negative preconceptions often held about interventions to treat childhood obesity (Newson, Pavey, Casson, & Grogan, 2013). It is therefore important health care professionals are trained to deliver in a non-judgemental manner that fosters autonomous motivation in parents/carers, which in turn will promote adherence and positive psychosocial well-being (Ryan & Deci, 2000). Such training might involve activities to develop empathy, counselling skills, and a focus on seeing the child as a whole person (i.e., not defined by their weight).

The factors we found to influence continued attendance were aligned with previous qualitative literature exploring families' experiences of treatment of childhood obesity (Kelleher *et al.*, 2017; Staniford, Breckon, Copeland, & Hutchison, 2011). Despite negative prior expectations, once children were at GOALS it was the fun, non-judgemental group environment that was perceived to be key in building their confidence and motivating them to attend. This motivation appeared to be drawn both from a feeling of 'belonging' (which plays an important role in autonomous motivation (Ryan & Deci, 2000)) and from the opportunity for vicarious learning from similar others (which is an important influence on self-efficacy (Bandura, 1997)). Given the social torment experienced by children who have obesity in everyday life (Murtagh, Dixey, & Rudolf, 2006), it is understandable group support from similar others has been highlighted as critical in the treatment of childhood obesity (Burchett *et al.*, 2018). Our data did, however, highlight the negative effects social comparison might have when a child perceives themselves to be different from the group. Similar experiences have been noted elsewhere, whereby families who perceive their child's obesity to be less extreme than others may be less likely to attend (due to a fear their child may think 'Do I look like that?' (Newson *et al.*, 2013, p. 1297)), or may conclude their child's weight issue is not that serious (Staniford, Copeland, & Breckon, 2019).

Factors influencing behaviour change

Whilst it is acknowledged treatment of childhood obesity should involve the whole family (Burchett *et al.*, 2018; National Institute for Health & Care Excellence, 2013), there is some debate around the optimal level of parent/carer and child involvement (Faith *et al.*, 2012). In the majority of interventions, children exercise whilst parents/carers talk (Kelleher *et al.*, 2017). At GOALS, however, the focus was on behaviour change for the whole family and parents/carers and children took part in PA sessions, cooking sessions, and discussion sessions together (although in response to the focus group findings, the majority of discussion sessions were later separated). The data in this study not only supported the importance of a whole family focus, but provided a novel insight into the mechanisms through which the family focus was working to influence lifestyle change.

GOALS was theoretically underpinned by social cognitive theory (Bandura, 1986, 1997), within which self-efficacy (i.e., situation-specific confidence) is an important psychological construct. The facilitators reported by children and parents/carers in our study showed how tackling behaviour change together as a family played a part in enhancing self-efficacy through mastery experiences (i.e., opportunities to try things out and succeed), vicarious learning (i.e., modelling from others), and social influence (i.e., positive influence of others around them). This commitment for parents/carers and children to 'do it together' was perceived to be important both during the GOALS sessions themselves, which provided structured observation opportunities and laid the foundations for parents/carers to relay messages at home, and outside the weekly sessions, where changes were easier to action if others at home were doing the same. We previously found child and parent/carer weight loss to be positively correlated (Watson *et al.*, 2011), thus suggesting families who engaged with this collaborative process of change were more likely to experience success. This notion is further supported by data from families who dropped out of GOALS, whereby a common reason for attrition was lack of perceived effort from the child or parent/carer at home (Staniford *et al.*, 2019). Whilst parent/carer involvement has already been shown to be important for effective child weight-related interventions (Golley *et al.*, 2011), our data suggest that for behaviour change to occur at

home, there are benefits in both the children and parents/carers attending intervention sessions together.

Despite GOALS aiming to target the whole family, in the majority of cases it was only the mother and child who attended the weekly sessions. Whilst this is commonplace in interventions to treat childhood obesity (Lucas *et al*., 2014) and the maternal influence is important in the prevention and management of childhood obesity (Dhana *et al*., 2018), behaviour change can be challenging if wider interpersonal and environmental influences on children's PA and diet are not considered (Perry, Daniels, Bell, & Magarey, 2017). A consistently reported barrier to the treatment of childhood obesity is a lack of support from extended family (Cason-Wilkerson *et al*., 2015; Schalkwijk *et al*., 2015; Staniford *et al*., 2011). Parents/carers in our study expressed frustration when extended family (e.g., grandparents, fathers not living with the child) continued to feed children 'junk food', which they felt undermined their efforts to promote healthy living. For family members who do not see the child often, 'spoiling' the child may be seen as a privilege and a way of creating a closer bond, with responsibility for food 'rules' devolved to the main caregiver (Eli, Howell, Fisher, & Nowicka, 2016). This may then put strain on family relationships, and on the main caregiver's attempts to establish healthy habits for the child (since their own efforts may be viewed by the child as cruel, strict, or unfair). To help families overcome these frequently reported challenges, research is needed to explore ways in which the child's extended family can be better integrated within interventions to treat childhood obesity.

When participants in our study were asked about the intervention ending, the overwhelming response was that they wanted the support to go on for longer. Some children did express confidence in maintaining changes, but it must be noted these children were still early in the intervention and it has been reported elsewhere (Dixey, Rudolph, & Murtagh, 2006) that children may lose their motivation over time (when attendance becomes more of a social event). Parents/carers, however, feared they would relapse when the intervention finished. Despite health care professionals aspiring to 'create individuals who leave treatment with the confidence they can sustain healthy changes made independently' (Staniford *et al*., 2011, p. 235), fear of relapse is common in group-based treatment of childhood obesity (Dixey *et al*., 2006; Staniford *et al*., 2011). This fear is substantiated by follow-up evidence from an intervention delivered at scale in the UK that showed families found it challenging to maintain changes once the weekly sessions stopped (Lucas *et al*., 2014). This reliance on the weekly sessions suggests the factors perceived to be positive for *attendance* (e.g., fun, social support, non-judgemental environment) can present a challenge for maintaining *behaviour change* when these factors are no longer present (due to the intervention ending). Such barriers might be overcome by introducing strategies to promote ongoing social support, such as online parent/carer-led forums (Schalkwijk *et al*., 2015), phasing out intervention sessions over time (Staniford *et al*., 2019), and helping families develop coping plans for maintenance, including links into other community activities (Smith, Straker, McManus, & Fenner, 2014).

Implications for practice

This is the first known study to distinguish between factors that influence attendance and behaviour change during the early stages of an intervention to treat childhood obesity. Table 2 outlines recommended strategies for enhancing attendance and promoting behaviour change, based on our insight into families' facilitators, barriers, and factors

perceived to be influential whilst the intervention was being delivered. Our findings showed factors that influence attendance and behaviour change may be distinct, complementary, or even conflicting. And whilst attendance has a clear role to play in behaviour change, research with families who dropped out of GOALS (Staniford *et al.*, 2019) suggests behaviour change also has a key role to play in attendance. In Staniford *et al.*'s (2019)'s study, many of the reasons cited for dropout related to challenges associated with behaviour change (e.g., lack of initial success, lack of perceived competence, fear of failure, fear of changing the lifestyle they knew). Therefore, if family-based treatment of childhood obesity is to promote sustainable changes to PA and diet, strategies need to be in place to support initial attendance, continued attendance, initial behaviour change, and sustained behaviour change (see Table 2).

Strengths and limitations

This study investigated the views of children and parents/carers, whilst they were attending a family-based intervention to treat childhood obesity, and in doing so provided an insight into practical intervention strategies that might enhance (or hinder) family attendance and sustainable behaviour change. The sample was drawn from a socio-economically disadvantaged population, where health intervention is most needed (Nau *et al.*, 2015; Poulton *et al.*, 2002). A key strength of the study was the collection of data whilst families were part way through the intervention. Firstly, this allowed a novel insight into how parents/carers and children were feeling as they were going through the behaviour change process, thus overcoming the limitations of retrospective data. Secondly, by embedding focus groups within the intervention programme (week 6), we ensured service user views fed into ongoing intervention development and (where applicable) any concerns raised could be addressed to improve participant experiences for the remainder of the intervention. Whilst our qualitative methods do not allow conclusions to be drawn about the impact of the identified factors on actual behaviour change, it is noteworthy that our findings align with the factors associated with the most effective interventions for treating childhood obesity in Burchett *et al.*'s (2018) recent review (i.e., showing families how to change; ensuring all the family are on board; enabling social support).

Our study is not without limitations, however. Firstly, families in this study were in the minority who did decide to take action about their child's weight (approximately 10% parents/carers responded to targeted letters sent via schools during the course of the study). Whilst this motivated sample cannot be taken to represent the wider population, it was important to speak to families who were already attending in order to elucidate the factors that influenced attendance and behaviour change. In doing so, our data provided an insight into how intervention deliverers can support families to change their behaviour once families are in attendance (since attendance does not always lead to behaviour change). Conclusions cannot, however, be drawn about what prevented other families from attending GOALS and we acknowledge non-attenders may have made their own behavioural changes at home in response to targeted recruitment letters (as observed by Park *et al.*, 2014).

To minimize participant burden and enable us to reach families across all intervention cohorts, we conducted focus groups during the intervention sessions themselves. Due to small intervention cohorts, six focus groups (three parent/carer and three child) were conducted with only two participants. Whilst every effort was made to collect data in these smaller groups in accordance with focus group principles (e.g., emphasizing

Table 2. Recommended strategies for enhancing attendance and promoting sustainable behaviour change during family-based childhood obesity treatment interventions

Phase of engagement	Primary goal	Potential strategy/ies
Initial attendance	To provide families with clear information so they can make an informed decision about attending, whilst ensuring the child's well-being is preserved	• View the child as a person first, not defined by their weight. • Communicate in a non-judgemental, empathic manner (whether face to face or via letter) with clear explanations to help parents/carers understand their child's weight status, the role of PA and diet, and what the intervention will involve (i.e., supporting healthy lifestyle change rather than a 'boot camp'). • Acknowledge some families may feel they are living healthily already, and they are the experts in their own lives. • Manage expectations about behaviour change from the start to help families understand the intervention sessions are there to equip families with the skills, knowledge, and support to change their lifestyles, but it is the changes families themselves make at home that are most important.
Continued attendance	To promote continued attendance so the family can benefit from intervention support	• Offer opportunities to mix with others 'in the same boat'. • Ensure sessions are fun, practical, and delivered in an inclusive manner that enables everyone to feel accepted. • Focus on healthy lifestyles rather than weight. • Support parents/carers to reflect on their personal motivations for attending.
Initial behaviour change	To support families to make some initial behavioural changes so they can experience early success	• Include both children and parents/carers in the intervention so they can 'do it together'. Keep the family together for practical sessions such as cooking and PA, but for sensitive topics (e.g., bullying, parent/carer role modelling) engagement may be improved by running separate child and parent/carer discussions. • Focus on showing families how they can implement changes at home (rather than telling them what to do). • Promote two-way role modelling between parents/carers and children. • Support families to set goals focussed on small, achievable changes.

Continued

Table 2. (*Continued*)

Phase of engagement	Primary goal	Potential strategy/ies
Sustained behaviour change	To support families to make behavioural changes that are sustainable so they can continue with their healthy lifestyles when the intervention ends	**During the intervention** • Involve non-attending family members (e.g., through information sheets, family open days) to help them understand their role in the child's change process. It is important they understand the benefits for the child of eating healthily and being active (and potential consequences of not doing so), and are supported to show love in ways other than the provision of 'junk foods'. • Encourage families to promote healthy lifestyle changes for all within the household, regardless of weight status or age. • Support families to set goals that are independent of attendance at the weekly sessions (e.g., making small dietary changes at home that can become habitual). • Help families to develop coping plans for when the intervention finishes. This might include ongoing social support, tailored coping strategies, and signposting to other community activities. **After the intervention** • Consider offering follow-up sessions for families, or a phased approach to completing the intervention (e.g., fortnightly, then monthly, etc.).

interaction between participants), it is recognized that both the focus group size and small intervention cohort may have influenced participant experiences. We must also consider the implications of focus groups being conducted by facilitators who were involved in delivering the intervention, as it is possible this familiarity could have led to socially desirable responses. We do, however, believe the existing rapport was important in helping participants feel at ease and share their honest views. Despite a rigorous analysis process (including involvement of an independent critical friend), we acknowledge the data were collected and interpreted through the lens of intervention deliverers and thus could be influenced by experiences beyond those reported in this study.

Finally, this study described some of the processes of change families were going through after six weeks of attending GOALS, but further research is required before conclusions can be drawn about the factors that influence long-term behavioural change. It is noteworthy that 33 of the 36 families in this study went on to complete the full 18-week intervention; thus, it might be inferred that the facilitators identified had a positive influence on later adherence.

Conclusion

This study aimed to qualitatively explore influences on attendance and behaviour change during a family-based intervention to treat childhood obesity. The study adopted a pragmatic philosophy whereby the research aim was underpinned by public health needs, with a focus on informing future practice. Our findings identified a number of modifiable facilitators for success linked to the intervention itself (e.g., fun, non-judgemental sessions, group support) and to family behaviours that might be supported through the intervention (e.g., two-way role modelling). Crucially, the study highlighted that intervention attendance is only a small part of the treatment of childhood obesity. To maximize the chances of behaviour change, consideration needs to be given to engaging the whole family within and outside of sessions and to developing strategies for sustaining PA and dietary changes when the intervention ends.

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Conflicts of interest

All authors declare no conflict of interest.

Author contribution

Paula M. Watson: (Conceptualization; Formal analysis; Investigation; Methodology; Project administration; Writing – original draft; Writing – review & editing). **Lindsey Dugdill:** (Conceptualization; Funding acquisition; Methodology; Supervision). **Katie

Pickering: (Investigation; Methodology; Writing – review & editing). **Jackie Hargreaves:** (Investigation; Methodology; Writing – review & editing). **Leanne J. Staniford:** (Investigation; Methodology; Writing – review & editing). **Stephanie Owen:** (Investigation; Methodology; Writing – review & editing). **Rebecca C. Murphy:** (Formal analysis; Methodology; Supervision; Writing – review & editing). **Zoe R. Knowles:** (Formal analysis; Methodology; Supervision; Writing – review & editing). **Laura J. Johnson:** (Formal analysis; Writing – review & editing). **N. Timothy Cable:** (Conceptualization; Formal analysis; Funding acquisition; Methodology; Supervision; Writing – review & editing).

Data availability statement

Focus group transcripts are available on request from the first author (p.m.watson@ljmu.ac.uk).

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Supporting Information

The following supporting information may be found in the online edition of the article:

Appendix S1. Focus group participation.

Appendix S2. Focus group guides.