



## Exploring parent attitudes around using incentives to promote engagement in family-based weight management programs

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### ARTICLE INFO

#### Keywords:

Behavioral economics  
Family-based treatment  
Financial incentives  
Health incentives  
Childhood obesity

### ABSTRACT

Incentives can promote adult wellness. We sought to examine whether incentives might help overcome barriers to engagement in child weight management programs and the ideal value, type and recipient of incentives. In 2017, we conducted semi-structured phone interviews with parents of children  $\leq 17$  years old, formerly or currently affected by obesity, who had ( $n = 11$ ) or had never ( $n = 12$ ) participated in family-based behavioral treatment (FBT) for obesity. Interviews explored the range and type of incentives families would be willing to accept. Interview transcripts were coded and data were analyzed using a thematic analysis. We found that some parents were skeptical about receiving cash incentives. However, once treatment-related costs were identified, some became more interested in reimbursement for out of pocket expenditures. Most parents felt up to \$100/month would be adequate and that incentives should be tied to changing behaviors, not BMI. Some interviewees expressed preferences for non-cash incentives (e.g. a gift card) over cash incentives. Parents were willing to share incentives with adolescents, up to \$50/month, but there was concern about incentives affecting a child's intrinsic motivation for behavior change. All parents acknowledged that moderate incentives alone couldn't overcome the realities of structural and familial barriers to engaging in weight management programs. In summary, we identified aspects of an incentive program to promote engagement in FBT that would be desirable and feasible to implement. Future quantitative work can reveal the value and structure of incentives that are effective for improving obesogenic health behaviors and outcomes.

### 1. Introduction

Family-based behavioral treatment (FBT), encompassing dietary and physical activity modification as well as behavioral education and parenting strategies, is recommended for treating childhood obesity (U. S. Preventive Services Task Force et al., 2017). While these interventions can be effective for sustained child weight management (Epstein et al., 1994), barriers to program completion and participant success exist (Skelton and Beech, 2011). Scheduling conflicts, transportation issues, childcare for non-participating children, child motivation, and stigma have been cited as barriers to FBT initiation and reasons for program attrition (Grow et al., 2013; Kelleher et al., 2017; Skelton et al., 2016; Staiano et al., 2017).

Financial incentives could motivate families of children with obesity to initiate and continue to engage in FBT. The burden of traveling to in-person FBT or tracking a child's meals to achieve long-term, delayed, and uncertain health benefits could be reduced with tangible, proximal financial rewards (Giles et al., 2014; Loewenstein et al., 2007).

Incentives could also compensate for direct costs (e.g. physical activity equipment, higher food costs) and indirect costs (e.g. travel and leisure time) of participation in obesity treatment programs (Sonnevile et al., 2009).

Offering families incentives is supported by the U.S. private and public sector. Public payers can incentivize patients with in-kind rewards reasonably related to healthcare (2015). Private payers have flexibility in the incentives they offer; in 2016, 42% of large firms utilized payments up to \$2000 to encourage participation in a wellness program (Claxton et al., 2016; Giles et al., 2014).

Financial incentives are positively associated with near-term changes in adult weight and health behaviors (Madison et al., 2013; Patel et al., 2016; Purnell et al., 2014; Riis, 2013; Sutherland et al., 2008). However, the family-based nature of FBT and patient age raise theoretical, logistical, and ethical issues that may distinguish the type, value, and process by which incentives are earned for adult versus child obesity treatment. It is unclear whether the value of incentives tested to date could alleviate the burden of the barriers to FBT participation for

Abbreviations: (BMI), Body Mass Index; (FBT), family-based treatment; (TEP), Treatment Experienced Parents; (TNP), Treatment Naïve Parents

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<https://doi.org/10.1016/j.pmedr.2018.04.007>

Received 24 December 2017; Received in revised form 4 April 2018; Accepted 6 April 2018

Available online 07 April 2018

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children and families (Finkelstein et al., 2008; Kane et al., 2004; Mitchell et al., 2013; Patel et al., 2016; Purnell et al., 2014; Riis, 2013; Shin et al., 2017; Sutherland et al., 2008; Volpp et al., 2008). A better understanding of how incentives could and should be implemented for families can guide the development of effective incentive programs that can enhance engagement with FBT.

This study aimed to qualitatively examine whether incentives might help overcome barriers to engagement in FBT for child weight management. Additionally, we sought to understand the ideal value, type, and recipient of potential incentives.

## 2. Methods

### 2.1. Study population

We conducted semi-structured interviews with parents of children aged 6–17 years who had previously participated in FBT for child weight management (Treatment Experienced Parents (TEP)) and parents who had never participated in FBT (Treatment Naïve Parents, (TNP)). FBT was defined as a structured program conducted over several months which included in-person contact, targeted both parents and children, assisted participants in setting and monitoring progress toward goals, and included behavioral counseling on healthful diets, feeding behaviors, screen time viewing, and physical activity (U. S. Preventive Services Task Force et al., 2017). To be study-eligible, children of TNP had to have a BMI  $\geq$  95th percentile; children of TEP did not have to currently meet this criterion. We interviewed TEP and TNP to understand heterogeneity in desired incentives based on parents' understanding and perceptions of FBT challenges.

Participants were recruited by mail (TEP) and via a screening survey promoted via the Seattle Children's Hospital Facebook page (TEP and TNP). The ad was targeted to parents in Seattle Children's catchment area with an interest in childhood obesity and/or weight loss. Of 82 parents who initiated our screening survey, 48 completed the survey and were found to be study-eligible based on child age and BMI. We followed-up with eligible parents via phone or email; 23 parents (11 TEP and 12 TNP) enrolled in the study. To capture a range of experiences and preferences, we purposefully recruited TEP participants who had previously participated in one of four different treatment programs, specific characteristics of which are described elsewhere (Nutrition and Fitness for Life, 2017; Saelens et al., 2017). Recruitment stopped when no new pertinent concepts were found, and thus thematic saturation was reached (Guest et al., 2006; Patton, 2002).

We obtained demographic data from our screening survey. Parents received an information sheet before the interview. Informed consent was obtained from all study participants. Parents received a \$20 Amazon.com gift card for participating. The study protocol was approved by the Seattle Children's Hospital Institutional Review Board.

### 2.2. Interview guide

We developed the semi-structured interview guide based on literature on health-promoting incentives and input from decision scientists, obesity researchers, and a qualitative researcher (Appendix A). The guide was tested with two qualitative researchers who were otherwise uninvolved in the study. Phone interviews lasted 40–60 min and were audio recorded. TEP were asked to describe their FBT program and TNP parents were asked what they thought a FBT program might encompass. Interview questions explored barriers and facilitators to FBT participation and the range of and rationale behind what cash and non-cash incentives families would be willing to accept. After completing 2–4 interviews, coders met and discussed responses using an iterative approach to adjust the interview guide and verify themes. Adjustments included adding questions about types and justifications for preferred non-cash incentives, rationale for receiving payments, how payments would be spent, sustaining cash incentives at home, previous attempts

**Table 1**

Characteristics of treatment experienced and treatment naïve parents.

	TEP (n = 11)	TNP (n = 12)
Female parent gender (%)	90	100
Female child gender (%)	50	58.3
Adolescent ( $\geq$ 13 years) (%)	72.7	41.7
Child age, years, mean (SD)	13.73 (1.6)	11.25 (3.0)
Child BMI z-score, mean (SD)	1.94 (0.71)	2.28 (0.60)

BMI: Body Mass Index; SD: Standard deviation; TEP: Treatment Experienced Parents; TNP: Treatment Naïve Parents.

to motivate children, and how preferences varied by child age.

### 2.3. Analysis

Interviews were de-identified to protect subject privacy and professionally transcribed. Two coders coded all transcripts within Dedoose software, and team discussions offered triangulation via thematic discrepancy consulting and codebook guidance (Dedoose, 2017; Manning, 1997). Coders met weekly to systematically review quotes and ensure codes were consistently and accurately applied. A targeted content analysis approach guided the identification of thematic concepts. A TNP or TEP descriptor code was assigned to each interview type, and emerging thematic concepts were compared between groups to assess similarities and differences. We kept behavior goals-related questions open-ended as conventional content analysis approach encourages participants-driven categories of behaviors, rather than placing pre-conceived researcher oriented categories onto participant experiences. This allows appropriate space for new thematic discoveries to surface (Hsieh and Shannon, 2005).

The organization of themes was primarily based on the social ecological framework (McLeroy et al., 1988). This approach can be used as a framework for understanding the interactive effects of individual, familial, and broader systemic factors that influence participation in a health intervention. De-identified transcripts are available from the corresponding author on reasonable request.

## 3. Results

Participant characteristics are presented in Table 1. Child age ranged from 6 to 16. Children of TNP were significantly younger than those of TEP ( $p = 0.02$ ) and there was no difference in BMI z-score between groups ( $p = 0.23$ ), although we may have been underpowered to detect differences in BMI z-score. Participants resided in rural, suburban, and urban areas.

We identified four themes: barriers to program engagement, parent cash incentives, child cash incentives, and non-cash incentives. Themes and sample quotations are presented in Tables 2–5, and additional quotations are provided in Appendix B.

### 3.1. Theme 1: barriers to program engagement

Both TEP and TNP parents reported that their child's perceived level of engagement with FBT was or would be influenced by two factors. First, poor health impeded the child's willingness or ability to engage in moderate to vigorous physical activity (Theme 1A). Second, typical adolescent attitudes were reflected in a child's willingness to engage in FBT. One TNP stated, "She is a teenager, and she wants to do things that are her idea, not somebody else's idea" (Theme 1B).

Parents, especially TEP, expressed logistical barriers to program engagement. Traveling time a deterrent and even led to program attrition for some TEPs, and some TNPs stated they would not consider enrolling unless the program was close to their home. (Theme 1C) Additionally, parents expressed having limited time for healthy meal preparation, especially on treatment days. Even TEP, who are well-

aware of the importance of healthy eating experienced this barrier (Theme 1D).

TNP parents frequently expressed concerns around the cost and/or inaccessibility of activities to keep their child active. “My younger daughter is in an elite sport and it’s insanely expensive...” (TNP) Other parents mentioned they did not feel it was safe to let their child run around outside in an urban area. Contrarily, parents in rural areas often said they lacked access to parks, sidewalks or activities (Theme 1E).

Both groups felt the structure of FBT influenced or would influence their child’s level of engagement with FBT. Incentive or no incentive, to keep their child engaged, the program content should be non-intimidating, fun, interactive, and include an engaging leader (Theme 1F).

participation and behavior change were identified (e.g. gas, parking, sports related costs, childcare for other children), some, especially TEP, became more interested in incentives to cover costs related to program participation and behavior change.

Of the parents who would be willing to accept a financial incentive, most felt a minimum of \$100/month or less would be adequate, but TEP often stated amounts closer to \$150–\$200/month. Desired incentive amounts varied greatly, often depending on the program’s proximity to the family’s home (Theme 2B).

Overwhelmingly, both groups of parents felt incentives should be tied to the child’s participation, not based on a change in BMI. They stated their children should not be rewarded just for showing up to FBT but rather for reaching participation milestones such as maintaining a food diary or limiting screen time (Theme 2C).

All parents agreed that incentives alone would likely not overcome structural and familial barriers (e.g. travel, scheduling, childcare,

**Table 2**  
Theme 1: barriers to program engagement.

Subtheme	Type of Parent	Quote
<b>Individual level</b>		
A) Health concerns (obesity & non-obesity related conditions affecting engagement)	TEP	...it’s much harder to get (my child with autism) to do any activity she’s not interested in doing... because of her autism... she’s not going to be a team sport kind of kid...but my observation of her peers, the ones that are fit are the ones that are participating in team sports.
	TNP	He’s got asthma as well, so running is pretty much non-existent. But he can walk; he can throw balls, we try to do that type of stuff just to keep him moving... it doesn’t matter what he does, he continues to gain. And it’s hard to get him to do anything just because it hurts his joints if he has to run... he does a lot of walking and he does have physical therapy at school... but he’s very limited on what he can do.
B) Child motivation, attitude	TEP	I think, in general, this is an unmotivated kid and so trying to find incentives in things to motivate him is really challenging.
	TNP	She, in her mind, doesn’t think that she’s overweight. She doesn’t mind the way she looks, so she doesn’t have the desire or the want, at this point, in her 12-year-old brain to want to change. So trying to figure out how to tell her, “Okay. This isn’t as healthy as you think it is and we need to change that,” that’s the tough part.
<b>Family level</b>		
C) Travel, traffic	TEP	It was a good experience... Other than trying to get to it. If they had offered it close to my home, I would not have dropped out of that program. Even with other stressors.
	TNP	... we’re such a busy family. It’s hard to get out and actually go someplace, because I have four kids and three of them are in different activities. So that is probably our number one thing.
D) Food planning & preparation	TEP	When I was in the program, I put more effort into (healthy meal preparation)... my job was closer to home at that time, and now, I have a longer commute. So I get home later, and everyone’s eaten by the time I get home... I have no time to cook when I get home. So that’s really been a challenge lately.
	TNP	As a family, it’s just the time to cook healthy. It’s easier not to cook healthy, or to go out and grab something to eat.
<b>Societal/systemic/programmatic</b>		
E) Sports or activities not accessible	TNP	When you get to be 12 and 13, pretty much every sport has a level of competition to either get in or to stay in.  ... [When] we lived in a really small town... I didn’t have to worry. It was safe. They could go for hikes... They could do things without me worrying about them.
F) Program content	TEP	The fun and excitement of going back and seeing her friends every week, that was cool, and meeting other kids that were her age. The fun and excitement of doing something out and about with Mom was fun. Having those goals, those non-food rewards that we set up, was good for her.
	TNP	I’m a single mom, and I think the benefit [of a program] would be having some voices whether they’re real or just part of a program of authority in addition to me.... Like a young person or woman in their college age, young adult who was encouraging her along...

TEP: Treatment Experienced Parents; TNP: Treatment Naïve Parents.

### 3.2. Theme 2: parent cash incentives

Parents, especially TNP, were often skeptical about receiving cash incentives for engaging in FBT as they felt it was, “being paid for something they should be doing anyways” (TNP). Some felt accepting money for FBT participation would send the wrong message to children. (Theme 2A) However, after potential out of pocket costs for treatment

child’s health conditions) to participation (Theme 2D). However, some parents shared that if the incentive was very generous (\$500 +/-month) they could overcome these challenges (Theme 2E). Given their familiarity with the high level of commitment needed for FBT success, TEP felt more comfortable than TNP with using generous monetary incentives to overcome participation barriers.

**Table 3**  
Theme 2: parent cash incentives.

Subtheme	Type of Parent	Quote
A) Skeptical about financial incentives	TEP	No, I think I'm glad that I wasn't distracted by a financial incentive because I think that would have monetized my feelings and my energy levels... (Also, if you are teaching somebody over time to take care of themselves and make healthy changes but you at the very same time are encouraging them with money, when they money goes away, I'm just wondering what type of connection they've made in their head toward receiving an outside benefit and not an intrinsic benefit...
	TNP	My first priority is my kids. I don't have a need for a reward. I'd be very, very grateful for any sort of help that was helping the kids (with their health).
B) Rationale for accepting cash incentives	TEP	\$200 a month would be the golden amount, because you're thinking about, hey, you go there one week and [they] pay you \$50 every time you go, you can't really knock that. Even though I may spend 10 or \$15 in gas and the traffic may be heavy, I may adjust something else to make it work.
	TNP	It's hard to quantify ... because you're getting the benefits of better health, losing weight, and of doing more things with your family... For 6 months we got \$75, which I thought was great. But when you take \$75 and you break it down over 6 months, that doesn't seem like very much... I don't know, \$30 a month? I honestly wasn't even looking to get paid to tell you the truth...If the program were here, \$100 a month would be huge, because I'm not spending much in gas and I have a home to stay in. I mean, obviously, if they go up higher, that's fine too. But definitely, \$100 is huge. (If it were 4 h away) I wouldn't ever miss it if it were \$500 [laughter].
C) Incentives should be tied to health behaviors, not weight loss or just showing up.	TEP	I would not do it based on weight loss. I think that would be psychologically damaging because it's so out of her— it feels out of her control to me, you know? There's so many factors. She's got so many challenges.... I would reward the effort more than the results. And so, rewarding her for tracking her eating plan.... Especially with teenagers, I don't think you have to do that for your 12-year-olds and under. They'll participate because it's fun to participate, and they want to. But getting a teenager motivated to do anything is complicated, and so I would say I would reward the effort for the teens.
	TNP	For my (7 year old) son, \$5 per goal, maybe would be motivating enough to participate... so not necessarily per week. That seems a lot to me. When you reach a milestone or something... rewards shouldn't be based so heavily on losing weight but maybe changing behaviors instead.  To me, she would have to complete something (like increased physical activity)... She has to actually put in some effort to be paid. You don't get paid at work just for showing up. You actually have to produce something or your job ends pretty quickly. So yeah, I would think that she would have to do something, produce something, hit some milestone or goal, some personal goal or something, and then (the reward) is an incentive for doing that thing.
D) Structural, familial barriers may not be overcome by incentives alone	TEP	I don't think participation was really possible because (I was taking care of) my father with his stroke. I guess potentially if the program offered... an option to come down on Saturdays, but then it would be my day off, so I would probably want money, but at the same time, I think I would have done it too, just as long as they paid for parking or whatever.... If there was a time that it wasn't during the work week that I could get my daughter down here.... Potentially I could have had someone else bring her down if there was an incentive for them. So maybe if it was \$50 a trip, so \$200 to \$250 (a month)...
	TNP	(Payment wouldn't help) if (the class) took a long time (more than an hour), I don't think she would care how much she got paid.... If it's too long, then she's just not going to do it.
E) Larger incentive may encourage program participation	TEP	I think what would probably be most helpful (even more than money) would be to somehow place (families) with transportation if there was a transportation issue. The thing is that is huge for me, is having a child picked up or brought home from something... I think, as a family, if there was even just the lowest amount like \$100. ... \$100 might say, "Okay, that's actually could go toward my grocery bill to make some healthier choices on foods."... probably \$300–\$400 a month would be like, "Whoa, what is this thing going on [laughter]!!" — If I were to be swayed by money, it would have to be something pretty substantial.
	TNP	I would say, that perhaps maybe like say \$2000 a month would be a number that would have convinced me, "Whatever, this is my job. I'm going to make it happen." But it would have to be something that would like literally was paying me for a job. Maybe \$200–\$250 a month is an amount that would make me never miss the class... by living in Alaska we do pay a lot more than down south for healthier foods.  If the program was in (her town) \$100 would be huge because I wouldn't have to spend much on gas or lodging... if program was in (the city, 4 h away) I wouldn't ever miss it if the incentive was \$500/month.

TEP: Treatment Experienced Parents; TNP: Treatment Naïve Parents.

### 3.3. Theme 3: child cash incentives

Some parents remained skeptical about the effectiveness or messaging behind children receiving financial incentives, fearing that the child would associate getting paid with making healthy choices (Theme 3A). For example, one mother would be comfortable with her child receiving \$10 per class if the child understood the “real reasons for

participating.” Most parents were more open to their child receiving payment than themselves, especially parents of adolescents (Theme 3B). Overall, a reasonable amount for the child to receive ranged from \$10–\$50/month. Both TEP and TNP stated that no matter what incentive the child received from the program, the parent would still share a portion of their incentive with their child.

**Table 4**  
Theme 3: child cash incentives.

Subtheme	Type of Parent	Quote
A) Parent skeptical about child receiving financial incentive	TEP	I try to (incentivize good grades) with money... But that doesn't seem to be motivating him, so I guess that's a little bit of negative feedback.
	TNP	I feel like if there's a reward (for losing weight) that says, "I'm going to pay you money because I don't think you can do it all by yourself so how about if I give you \$10, will you do it then?" I feel like I am sending her the message that I don't think she can do it.
B) Parent more open to child receiving payment	TEP	[Money] was literally my only way to convince him to do the program
	TNP	[She's] right at that in between age now where she can't really get a job... being able to make her own money is a huge thing especially with her just starting to drive... (even if I got paid too), I would turn it into something for her because she would be the one doing the work.... And if she works hard and doesn't drop out, she gets an extra incentive for every two months... She's 13, so ... she only gets money for babysitting... so yeah, she would probably do just about anything for money [laughter].

TEP: Treatment Experienced Parents; TNP: Treatment Naïve Parents.

**3.4. Theme 4: non-cash incentives**

Many participants, especially TNP, preferred that compensation beyond reimbursement for out of pocket expenditures be non-financial, especially incentives that promote healthy and active living including coupons/vouchers for exercise facilities, sports, and other fun family outings or experiences. Some parents expressed preferences for non-cash incentives to prevent their child from purchasing goods of which the parent disapproved (Theme 4A). Some parents desired gift cards, which they wanted to be used toward healthy foods, or for flexible spending (e.g. Visa, Amazon.com). One TNP stated, "... it's more the value of what can we get from a gift card that's going to give us just as much enjoyment (as cash)." If cash was unavailable, TEP preferred flexible spending gift cards over non-financial incentives to cover participation-related expenses (Theme 4B).

**Table 5**  
Theme 4: non-cash incentives.

Subtheme	Type of Parent	Quote
A) Non-cash incentives that promote active lifestyles	TEP	I would have probably taken (a membership to an athletic club for my daughter) over money just because that's sometimes a tough thing to pay out of pocket and yet, it would be adding to the goals... that could be an incentive for my child, especially if it's a club like YMCA where they can participate in sports.
	TNP	Technology is [also] a good currency. You get a new cell phone, or you get a tablet to...use an app or something for logging our food and exercise .... I think that would be another good incentive for them. Or for us too as parents. Any tools that would help make managing this kind of thing easier. I would be participating for other benefits that are much more important than money.... I think that kids, if they got a gift card for some outdoor activity.... I think it's a great idea to pay for kid's sporting costs. I think that is way better than giving anybody money, to pay for their participation in the sport. And I don't have any money. I'm totally poor...
	TNP	(If the program) gives her too much money, she'd buy mods for Minecraft... I'd put it in her savings account.... An experience would mean more than money for me... she's the kid that has to have a big carrot on the end of a stick.... As long as (the activity) wouldn't make her self-conscious. Like I said, being a 13-year-old girl is hard enough.
B) Gift cards, coupons, or vouchers	TEP	Money is a good idea (for a reward to me, but so are) gift certificates to a grocery store or something that you can buy fresh vegetables and stuff like that.
	TNP	Gift cards are always incentives.... Like Barnes and Noble—we are avid book readers. We both like to do puzzles.

TEP: Treatment Experienced Parents; TNP: Treatment Naïve Parents.

**4. Discussion**

These findings offer insight into how to promote engagement with FBT for child weight management by explaining parents' most salient program- and incentive-related values. By talking to parents of younger children and adolescents, we were able to explore variability in preferences by child age. From the parent perspective, the most appealing package of incentives would include reimbursement for program-

related costs (e.g. travel, exercise equipment), a small monetary payment to incentivize adolescent engagement, and non-cash rewards for family experiences or goods that promote program goals for families of younger children. Parents expressed that incentives may not help them overcome some barriers to program participation, but extremely generous incentives would facilitate program adherence. Most parents felt that incentives should be tied to effort and behaviors (e.g. tracking meals, engaging in physical activity), not outcomes (e.g. change in BMI). However, while the prevalence of wearable fitness trackers makes measuring physical activity possible, it is more difficult to objectively measure behaviors such as parent feeding behaviors.

Understanding families' perceived challenges and successes with obesity treatment programs provides context for their perspectives on their preferred incentives. Barriers raised in this sample reflect previously published themes: limited child motivation or interest, a lack of

connection with program facilitators, a lack of time, and travel (Bentley et al., 2012; Grow et al., 2013; Staiano et al., 2017). Parents expressed that child illness, access to active play opportunities, and program content were barriers, and incentives may not be able to overcome these obstacles.

Parents in this and two other studies identified cost as a barrier to enrolling children in organized sports and buying healthful foods (Bentley et al., 2012; Staiano et al., 2017). Cost was not an identified

barrier in Grow et al. because the program offered was free, although parents may not have considered out of pocket costs. Although many parents in this sample did not explicitly identify cost as a FBT barrier, parent responses focused more on reimbursement for program-related expenses than actual incentives to motivate program adherence and near-term engagement. Time was an issue for parents, and parents made statements about “making it work” or never missing a meeting if the incentive were extremely high. In addition to incentivizing health behaviors and program participation, incentives could help reduce structural barriers. For instance, money or vouchers toward healthy meal-kits or grocery delivery services could ease barriers around grocery shopping and meal planning, although this may not be cost-effective in the long-term.

Child motivation was a problem and many parents expressed that a reward would motivate their adolescent in the short-term. But parents did not want to incentivize to undermine their child's intrinsic motivation; as observed elsewhere (Deci et al., 1999). One meta-analysis suggests that rewards do not have pervasive negative effects on intrinsic motivation (Cameron et al., 2001), another finds the value of an incentive is positively correlated with a decline in intrinsic motivation (Moller et al., 2012), so small child rewards are ideal. For those reluctant to incentivize their child with money or goods, another solution may be to reward the child with badges or privileges for meeting milestones, with education about the relationship between milestones and health to avoid promotion of extrinsic motivation for behavior change. Parents have reported using food or monetary incentives to promote healthy child behaviors (Staiano et al., 2017), although experts recommend against using food as a reward or punishment.

Curiously, some parents preferred non-cash incentives (e.g. vouchers or gift cards) to cash incentives, even though cash incentives offer flexibility to pay for any goods or experiences the family might want. In addition to wanting to prevent their child or themselves from spending incentives on something that conflicts with program goals (e.g. unhealthy foods or sedentary-promoting electronics), parents may also want non-cash incentives to avoid spending incentives on something that is a household necessity (e.g. utility bill), but not a reward. Health promotion interventions that offer coupons (e.g. gym passes, department store gift certificate) have been as successful as those that offer cash, and more effective than those that offer gifts (e.g. jewelry, baby blanket) as a reward, possibly because coupons may offer more purchasing flexibility whereas goods or other gifts cannot be exchanged (Kane et al., 2004). Moreover, it may be the mere receipt of an incentive, not the economic value of an incentive, which matters (Kane et al., 2004). Receipt of vouchers has influenced positive health behavior change, even if recipients do not redeem vouchers (Kane et al., 2004).

Given restrictions placed on the incentives public payers can offer, family-oriented non-cash incentives like zoo memberships in which parents expressed interest may not be supported by Medicaid or accountable care organizations (2015). It may be impractical to offer families the amount desired by parents in this sample. Annual U.S. childhood obesity-related medical expenditures are only as high as \$400 (Wright and Prosser, 2014). Providing incentives at a minimum \$100 per month for a 5 to 6 month FBT intervention may make for a negative return on investment from the payer perspective. However, if society is willing to pay for health improvements, incentivizing engagement in weight management programs may still be cost-effective, especially when considering long-term health gains (Sanders et al., 2016). Incentives for adult obesity interventions are typically below \$100 per month. One study offered participants \$50 plus an additional \$10–25 per week depending on physical activity levels, with participants receiving an average \$70 monthly (Finkelstein et al., 2008). Another study utilizing pedometer counts as a process measure incentivized participants approximately \$40 per month, delivered in daily payments (Patel et al., 2016). Another study offered participants up to \$106 for meeting daily and weekly physical activity goals and \$176 for achieving 12-week weight loss targets, but the mean payout was only \$32 per month (Shin et al., 2017). A 2013 meta-analysis estimates participants in effective exercise-related interventions received \$11 to \$187 per month, finding larger incentives

(> \$100) yielded larger effects (Mitchell et al., 2013). However, adult interventions that test financial incentives contingent on exercising may not require in-person contact characteristic of the most effective FBT for pediatric weight management, possibly requiring a lower investment of time and money. Further research is needed to identify the minimum incentive parents would be willing to accept for e obesity-related FBT and to evaluate whether incentives improve outcomes. The relationship between incentives and outcomes is not strictly monotonic, and experimental economics research suggests that providers would be better off not paying participants at all than paying them too little (Gneezy and Rustichini, 2000).

Finally, this manuscript describes incentives parents desire, but parent wants may not align with effective incentive designs. The way in which incentives are distributed and the value of incentives can affect outcomes (Kane et al., 2004; Mitchell et al., 2013; Patel et al., 2016). Loss-framed payments where participants are allocated a reward upfront and money is deducted when the goal is not achieved may work best for adults (Patel et al., 2016), but perhaps not children. All participants may need to receive some guaranteed incentive to minimize attrition (Volpp et al., 2008), and children may need counseling about resilience when the incentive target is missed. Families may benefit from cooperative team incentives where family members earn rewards together (Staiano et al., 2013). One trial found incentives had no effect on child weight loss (Luley et al., 2010), but more studies are needed to assess the effect of different types (e.g. gain-, loss-, and lottery-framed payments, deposit contracts, or cash vs. non-cash rewards) and values of incentives on obesity-related health behaviors and outcomes.

#### 4.1. Limitations

This analysis was subject to limitations. We did not collect data on family income or insurance status and were unable to assess variation across these subgroups. Private insurers may be able to offer different incentives than public insurers, and income may influence barriers to engagement (e.g. limited healthy food or transportation options) and incentive preferences. However, we captured geographic diversity by interviewing parents in urban, suburban, and rural areas. Furthermore, we only spoke with one father so could not examine variation in preferences by parent gender. However, since mothers do more childrearing than fathers, their perspective may better represent desired incentives (Bianchi et al., 2006).

Lastly, we only qualitatively assessed parent attitudes toward incentives and the sample size was small, limiting generalizability. While the present study supported hypothesis generation and our study aims, a more rigorous qualitative study and/or a quantitative study in a socioeconomically diverse sample could help determine which incentive designs could promote engagement in FBT for child weight management (Bridges et al., 2011). Future research should ask subjects about ways in which they try to motivate or incentive themselves or their children for actions other than weight-related behaviors as a way to help them think about using incentives to promote FBT engagement.

## 5. Conclusions

There is no one-size-fits-all approach to incentivizing health, but these data establish attributes of obesity-related incentives that matter to parents. Some parents were reluctant to accept incentives for themselves, although stated preferences may diverge from revealed preferences if incentives are offered. Structured quantitative work can further explore preferences for cash versus non-cash incentives and the structure of incentive payments, elicit the minimum value of incentives parents are willing to accept, and examine how family demographics and health characteristics influence preferences for incentives using (Bridges et al., 2011).

#### Contributor's statement

Elizabeth Jacob-Files: Ms. Jacob-Files contributed to the study design, collected data, analyzed and interpreted the data, drafted portions



of the manuscript, and critically reviewed and revised the manuscript.

**Jennifer Powell:** Ms. Powell recruited study participants, analyzed and interpreted the data, drafted portions of the manuscript, and critically reviewed and revised the manuscript.

**Davene Wright:** Dr. Wright contributed to the study design, interpreted the data, drafted portions of the manuscript, and critically reviewed and revised the manuscript.

All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

## Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

## Acknowledgments

This work was funded by the American Heart Association (16GRNT31390024). The research presented in this paper is that of the authors and does not reflect the official policy of the funders.

Thanks to Dr. Tara A. Lavelle for her review of the interview guide and Dr. Brian E. Saelens for his comments on the manuscript.

## COI

The authors have no conflicts of interest relevant to this article to disclose.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.pmedr.2018.04.007>.

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