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African American Adolescent-Caregiver Relationships in a Weight Loss Trial

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Introduction

Families provide an influential social context for improving eating and physical activity behaviors in youth (Dietz & Gortmacher, 2001; Golan & Crow, 2004). Family-based interventions have been found effective for weight loss in young children (Epstein, Pauluch, Roemmich, & Beecher, 2007) but results among adolescents are variable (McLean, Griffin, Toney & Hardeman, 2003; Sung-Chan, Sung, Zhao, & Brownson, 2013). It is hypothesized that parents enhance behavior change in youth through behavioral support, motivation, and role modeling (Golley, Hendrie, Slater, & Corsini, 2011; Gorin, Powers, Koestner, Wint, & Raynor, 2014; Zarychta, Mullan, & Luszczynska, 2016). Parents also control the home

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Compliance with Ethical Standards:
Ethical approval: All procedures performed in this study involving human participants were in accordance with the ethical standards of the Wayne State University Institutional Review Board and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.
Informed consent: Informed consent was obtained from all individual participants included in the study.

Author Contributions
KCV, KBH, PC designed the evaluation component of the original study, performed data analysis, and wrote the manuscript. AJT collaborated with the design and writing of the manuscript. DE, KCJ, SNK, as PIs of the original study, collaborated in the writing and editing of the final manuscript.

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environment and access to dietary and physical activity resources. However, during adolescence when youth are increasingly independent, the nature of parent-adolescent relationship and communication patterns that supports weight loss is not well understood (Boutelle, Feldman, & Newmark-Sztainer, 2012; Hadley, McCollough, Rancourt, Barker, & Jelalian, 2015; Kothandan, 2014). This is particularly relevant for African American adolescent families (Kitzman-Ulrich, et. al., 2010) who experience the highest rates of adolescent obesity (Ogden, et al., 2016) yet profit the least from weight loss interventions (Kumanyika, Obarzanek, Stevens, Hebert, & Whelton, 1991).

The FIT Families intervention was designed to apply basic behavioral and motivational science and evidence-based treatment guidelines (Barlow & Expert Committee, 2007) to increase the effectiveness of traditional behavioral weight loss interventions with African American adolescents (Jacques-Tiura, et al., 2015; MacDonell, Brogan, Naar-King, Ellis, & Marshall, 2012). The scientific evidence-base for the FIT Families trial is published elsewhere (Naar-King et al. 2016). The intervention was designed to minimize economic and logistical barriers (e.g., work-related barriers, limited transportation) by offering sessions in home or community clinical settings. FIT Families used internal (motivational interviewing) (Miller & Rollnick, 2013) and external (contingency management) (Godley, Godley, Wright, Funk, & Petry, 2008; Dutra, et al., 2008) motivational strategies to engage and activate change efforts. Cognitive behavioral skill training reinforced diet and physical activity self-monitoring, environmental management, and personal goal setting (Spear et al., 2007). All sessions were conducted by trained Community Health Workers (CHW) in partnership with the adolescent and caregiver, which is consistent with research supporting a family approach to adolescent weight loss (Kumanyika, Whitt-Glover, & Haire-Joshu, 2014).

FIT Families produced promising outcomes in terms of engaging minority families and achieving weight loss and health improvement (Naar-King, et al., 2015; Hartlieb, et al., 2015b). Additionally, post-intervention feedback from adolescents and caregivers on palatability of the intervention revealed substantive satisfaction with intervention content, delivery methods, and motivational strategies (Campbell-Voytal, et al., 2017). What is less clear is how African American families who participated in the trial experienced the science-based intervention and managed the process of change in daily life.

Therefore the purpose of this study was to 1) describe the perspectives of African American adolescents and caregivers on participating in an evidence-based weight loss trial; 2) explore experiential differences of adolescents-caregivers dyads who achieved adolescent weight loss compared to those who did not.

Method

Participants

The FIT Families trial was implemented from 2011 to 2013 in a large, U.S. Midwestern city. Caregivers and adolescents were recruited through pediatric clinics in an academic teaching hospital and community (Hartlieb, et al, 2015a). African American adolescents between the ages of 12–16 were eligible if they had a body mass index (BMI) at 95th percentile or more. Eligible primary caregivers were legal guardians (or had consent of guardian), resided within

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30 miles of the study offices and were willing to participate with their adolescent. Research protocols were approved by the university Institutional Review Board.

During the twenty-four months of the intervention 136 adolescent-caregiver dyads participated in exit interviews representing 75% of eligible participants. On average, adolescents were 13 years old, female, and were at the 98.9^{th} BMI percentile. Caregivers tended to be mothers, who did not work outside the home, with two other minor children in the home. Families participating in the exit interviews were not significantly different from non-participants, except that they had more minor children in the home ($M= 2.07$, $SD=1.19$) compared to nonparticipants ($M=1.58$, $SD=.97$); $t(179)=2.53$, $p=.012$). Participant characteristics are summarized in Table 1.

Procedures

Measures—All FIT Families participants were invited to complete a semi-structured, exit interview conducted by trained interviewers within 1 month of completing the intervention.. Caregivers and adolescents were interviewed separately in their home. Verbal informed consent was affirmed at the start of each interview. All interviews were audio recorded and professionally transcribed verbatim.

Three interviewers conducted all interviews, two were male, two were African American and one Caucasian. Training included two workshops that covered study protocol, interviewing technique, practice, and final demonstration. All interviewers were assessed prior to assignment and interview transcripts were monitored for protocol fidelity. An interviewer ‘tune-up’ session was conducted at the midpoint of data collection.

Structured interview guides explored participant perceptions of the program, including logistics, session topics, reward system, and reflections on working with their partner (adolescent or caregiver). Each guide consisted of fifteen questions and related probes. Both adolescent and caregiver were also asked to share their perspectives on how their respective partner experienced the program. Interview questions are summarized in Table 2.

Interviews with adolescents lasted on average 22 minutes ($SD=9$ minutes); caregiver interviews lasted an average of 28 minutes ($SD=11$ minutes).

Data Analyses—There were four phases of analysis, summarized as follows. All transcripts were content analyzed (Miles & Huberman, 2013) to identify African American adolescent (n=136) and caregiver (n=136) perspectives on the FIT intervention. Then codes were explored to identify differences in perspectives between groups who successfully lost weight (50 adolescents and their caregivers) and did not lose weight (86 adolescents and their caregivers) at the end of the six month intervention. All cases were accounted for in these two groups as there were no cases where weight did not change. Code comparisons were analyzed for differences in code distribution and content between weight loss groups. The next phase of interpretive analysis explored relationship themes within adolescent-caregiver dyads. Relationship themes were summarized into a model of ‘partnership types’ as expressed by adolescents and caregivers in shared experiences. According to the model, partnership types were specific, discrete but not exclusive, meaning that more than one

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partnership type could be used. A final phase of interpretive analysis examined partnership patterns in 'extreme-case' dyads at the top and bottom ten percent of the weight loss distribution (Patton, 1990). This phase is consistent with Taveras' et. al. (2015) analyses of "positive outliers" and was conducted to enhance detection of difference between weight loss groups. The analytic phases of this study are summarized in Table 3.

The original code lists for adolescents and caregivers were identified by an analysis team of three co-investigators who conducted an iterative series of co-coding and discussions using a random set of adolescent-caregiver dyad transcripts. Once code saturation was reached transcripts were assigned randomly to each member of the analytic team who entered codes using NVivo 10 qualitative software (QRS International). Twenty percent of the transcripts were randomly assigned for dual coding to monitor interrater agreement. Differences were discussed and reconciled by team consensus. Coders were blind to weight loss status during all phases of analysis. Comparison groups were constructed using the NVivo "sets" function linked to variables on a Master Attribute Table.

Results

Adolescent-Caregiver Partnerships

Initial content coding of exit interviews by study arm revealed no aggregate differences in adolescent and caregiver satisfaction with study components or topics by study arm or by weight loss outcomes. Secondary analysis of content codes revealed patterns within adolescents and caregivers partnerships that were organized into five relationship types experienced by families. These were reported similarly in both groups.

The five partnership 'types' were identified and characterized as 1) Adolescent and caregiver working together, 2) Caregiver asserting influence over the adolescent, 3) Adolescent working independently on self, 4) Caregiver and adolescent working against each other, and 5) Caregiver working independently on self. Adolescent-caregiver dyads typically acknowledged more than one type as typical to their partnership. There was a high level of concordance in perceptions within dyads.

Adolescent and caregiver working together—This partnership type was reflected in reports of adolescents and caregivers describing how they actively worked together as partners to achieve change. Reflections captured a shared commitment, for example to self-monitor, to set and work toward diet and physical activity goals, to practice new self-management skills. The most significant characteristic of this partnership type was "shared action".

> Adolescent: If she wasn't there I probably wouldn't do nothing, no exercise nothing, but she motivated me, like I might say- No, I'll start exercising, but she'll get on the treadmill, be like, Oh, I bet you can't beat the time I did- and I ended up doing it more than what she did.

> Caregiver: Him and I working together as a team, doing everything together, counting the calories together, mostly working together. I think it made things a

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> whole lot easier when two people are trying to lose weight together than just one person. [Then] it just don't seem like it works, yeah.

Caregiver asserting influence over the adolescent—A second partnership type, one of the most common, was the caregiver using his/her influence to encourage change in the adolescent. Influence involved reminding, supporting, encouraging, questioning, cajoling, or supervising adolescent behavior without joining the adolescent personally in changing personal diet and physical activity behavior. This type also included caregiver efforts to manage food availability in the home.

> Caregivers: Oh, keeping up. Making sure that she is doing, you know, making sure that she was doing what she was supposed to do.
>
> I try and keep her motivated and try to fix the meals that she can eat or buy things that she can keep her weight down and make sure she weighs herself in the morning.

Adolescent working independently on self—This partnership type is characterized by comments involving an adolescent's personal, internal effort to adopt new thinking and behavior. Beyond parental support, positive behavioral change also involves adolescent's self-awareness and effort to understand personal motivations and struggles associated with change.

> Adolescent: I'll say the easiest part was actually committing to the program and whatever. After the first few sessions understanding what it's about, sticking to it, and changing the way I eat, changing different lifestyle habits that I have had.
>
> Caregiver: She's pretty much on her own, but she's been doing, she walks a lot, and she does the stairs. She's in a little dance program.

Adolescent and caregiver working against each other—This partnership type captured statements of conflict, frustration, and resistance experienced by adolescents and caregivers. The focus of irritation frequently involved upset or disappointment with the other's level of commitment to the program, not meeting each other's expectations. Comments in this area were made most often by caregivers adjusting to an increasingly independent adolescent.

> Caregivers: The hardest part of the program was getting my daughter to listen to me sometimes. I was pushing her, you know, like I would see her going astray and then I would try to tell her, but you know she's an adolescent so what does that tell you? She got a, got a lip.
>
> [In terms of helping your teen?] I had to keep fighting, fighting, fighting.
>
> Adolescent: Yeah, it's like my Mom, for example. She did not hide the chips, which she usually does. She hides them and I'm like, where'd she put them? And then that's like part of the environment, so I'm going to get tipped to touch those things and eat them.

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Caregiver working independently on self—The final partnership type is characterized by caregiver comments about concern with their focus on personal goals for eating and physical activity. Comments centered on personal struggles with managing food cravings or role demands for planning, purchasing, and preparing healthier meals for the family.

> Caregivers: Learning that food is not a crutch [was the easiest]. We had some things that happened in the past week that I know over this weekend I was eating a lot. I just have to learn that food is not my comfort. I can't use food for comfort because I don't want to be a bad influence on her…I don't want to teach that to her.

> Managing thoughts [was a helpful skill]. [It taught me] what to do when you are having cravings and you're thinking about, God, I wish I could get a piece of pizza or something, a slice of pizza or some fries or some chips, you know? Well, let me change that up. Let me go do something and maybe drink some water because maybe I'm just really thirsty and not hungry…

Adolescent-Caregiver Partnership Patterns: Extreme Case Comparison

Comparison of aggregate responses of adolescents-caregivers dyads identified at the top (N=13; lost on average 10.4 pounds) and bottom 10% (N=13; gained on average 9.8 pounds) of the weight loss distribution revealed the following differences. Families who were most successful at weight loss more often commented on how the adolescent was were personally committed to or motivated for change (adolescent working on self). Adolescent self-perceived levels of motivation were consistently confirmed by their caregivers. Additionally, families who were most successful at weight loss were more likely to describe how they "worked with" each other, that they mutually adopted new behaviors, celebrated each other's efforts. These families less commonly referred to interpersonal conflict or "working against" each other.

In families who were least successful in attaining weight loss, partnership patterns tended to involve caregivers trying to influence change rather than "working with" adolescents. There was much less report of teen self-focus. Often in this group one or the other partner was not engaged in the intervention, e.g. was too busy, too tired, not interested, inconsistent, or distracted. When caregivers discussed their efforts to influence they described how they had to motivate through force or pushing or to "do for" their adolescent.

In both groups when there was adolescent-caregiver conflict it involved issues regarding perceived effort, attendance, completing logs, sticking to diet behaviors. The presence of conflict was not different between weight loss groups, but differed by extent of conflict and the family's response.

Relationship Themes

Three themes emerged in the analysis of adolescent- caregiver partnerships which differentiate caregiver and adolescents who successfully lost weight from those who did not.

Support—The first theme, Support, is expressed as "We are together in this struggle". This was the most elaborated theme, with reflections on support being expressed throughout the

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interview. Families who were successful at weight loss, more often described a commitment to helping each other than families who did not lose weight. Families supported by "making sure she had everything she needed"; "tried not to force her"; "helped get back on track"; "kept the routine"; "being with him every step of the way". Families who did not experience weight loss reported difficulty with support, "I tried it (to use portion size) a couple of time, they did not like it"; "I (adolescent) don't think it was too much for me, I think it was too much for my Mom"; or conflict "she (adolescent) makes everything hard", "teenagers do what they want to do".

Motivation (Adolescent Autonomy)—The theme of adolescent Motivation was expressed as "My job is to do it" and captured the teen's sense that change was up to him/her, it was within his/her autonomous control. This theme was most explicit in the responses of families who were successful at weight loss and absent from the narratives of adolescents unable to achieve weight loss. Successful adolescents stated, "I saw I was losing weight and I wanted to keep losing it. This is actually working, so I pushed myself to lose the weight."; "It opened my horizon on things, because before I didn't see the purpose of counting calories."; "(I learned) stuff like judgement, what I can improve on and what I can do on my own to stay fit"; "I had to sit myself down and think about 'Why are you really eating, you know?". These quotes capture the growing self-awareness and internal motivation of the adolescents who successfully lost weight in the FIT Families intervention that distinguished them from adolescents that failed to lose weight.

Persistence—The last theme, Persistence, was embodied in the expression, "Stick with it; It gets easier". This was expressed as the ability to continue efforts long enough for new behaviors to replace old behaviors and was noted repeatedly among family dyads that were successful at weight loss. Despite feeling frustrated or experiencing tension within the adolescent-caregiver relationship, the ability to persist and to keep on going in the face of challenge was present in the narratives of those successfully meeting weight loss goals. "Those things (the hardest) became easier and more natural"; "At first at the beginning it was hard to change my diet, … but it got easier in the end"; "I worked out, I felt better, I wanted to do more"; "…when you do all of them together (logging, monitoring, portion control), it just works really well".

Discussion

The relationships between minority adolescents and caregivers supportive of youth weight loss are not well understood. This qualitative study is the first to report the experiences of African American caregivers and their extremely overweight adolescents as they participated in a six-month weight loss trial. These results contribute to the research literature on the dynamics of family weight loss support and motivation during adolescence and suggest important considerations for future weight loss interventions.

Adolescents and caregivers relationship patterns clustered differently among adolescents who were most and least successful in losing weight. Adolescent-caregiver dyads experiencing weight loss success were more likely mutually engaged in the weight loss effort (working together) and adolescents expressed responsibility (me working on myself)

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which was affirmed in caregivers who recognized adolescent accountability (adolescent self-focus) for setting and ultimately achieving personal weight loss goals. Among those who were successful at weight loss, caregiver support (influencing teen) enabled adolescent autonomy and supported by providing access to healthy food and exercise resources. These patterns of family support and motivation sustained adolescent persistence in adopting new and challenging changes in eating and activity until new habits became slowly became easier and the rewards of feeling better were experienced.

Conversely, caregivers of adolescents who were less successful with weight loss more often referenced ‘doing for’ (logging; counting calories) or initiating change effort in their adolescent. These parental support behaviors could be a natural response to a distracted or unmotivated adolescent. This assumption is reinforced by the relative lack of associated references to adolescent self-control of healthy behavior. The patterns of support and motivation in this study are consistent with theorized relationship between autonomous and intrinsically motivated effort and improved uptake and maintenance of new behaviors (Koestner, Powers, Milyavskaya, Carbonneau, & Hope, 2015; Gorin et al., 2014; Jensen, et. al., 2014).

Parenting strategies tailored to usual parenting practices have successfully supported adolescent weight loss (Holt et al. 2015). While other efforts targeting parent-adolescent communication quality have produced less positive effects (Hadley, et. al., 2015). Interventions that address a broader target involving parenting style, skill, and child management have achieved a moderate to large effect on obesity reduction in adolescents (Kitzman-Ulrich et al, 2010). The exploratory findings among African American families in this study are consistent with these broader outlines of inquiry and highlight the need for further study in African American families who have received less attention (Barr-Anderson, Adams-Wynn, DiSantis, & Kumanyika, 2013; Brown et al., 2016).

One of the most compelling findings were expressions of sustaining change efforts through early difficulty (e.g. giving up favorite foods) until “it just got easier”. Behavior change can be uncomfortable, frustrating, and exhausting especially for caregivers, who will inevitably experience challenges in the form of adolescent negativity and opposition. All families acknowledged the inherent difficulty and frustration in getting adolescents to engage in behavior change, but in families whose adolescent successfully lost weight, caregivers were more likely to refer to persistence in parenting in the face of adolescent opposition. One such strategy, to aid persistence in the face of adolescent reactivity, suggested by one caregiver, is consistent with the clinical concept of *distress tolerance through emotional regulation.* Including aspects of moment-appropriate and effective parenting to assist caregivers with managing their own emotional reactivity may benefit future interventions.

Limitations

Despite the extensive sample of African American families with a seriously obese adolescent, this study has limitations. Family function data was derived from a single time point (post-intervention). Therefore, temporal associations with weight loss outcomes cannot be inferred. Present study participants may have had a more positive experience in the intervention and therefore their perspectives may not reflect the views of those who chose

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not to participate in the exit interviews. The gender distribution of adolescents in the exit interviews reflected the larger trial, however, adolescent boys and fathers were underrepresented which impacts generalizability. Gender-specific preferences and relationships may not be well represented in our findings. Finally, the purpose of the exit interview was to uncover individual perspectives and experiences during participation in the FIT Families trial. The interview guide specifically addressed the caregiver-adolescent partnership but did not specifically probe other important family relations and social interactions that could contribute to weight loss outcomes (e.g. peer, coaches, faith leaders and other supportive relationships). Also, the individual nature of the interview data and lack of direct observation limits the strength of the findings regarding the relationship patterns.

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Table 1

Adolescent-Caregiver Characteristics (N=136 dyads)

Characteristic	N (%)
Adolescent age	
• 12	33 (24.3)
• 13	33 (24.3)
• 14	24 (17.6)
• 15	28 (20.6)
• 16	18 (13.2)
Adolescent gender: Female	94 (69)
BMI Percentile, M(SD)	98.9 (1.02)
Caregiver	
• Mother	122 (89.7)
• Father	5 (3.6)
• Grandmother	7 (5.1)
• Other female family member (sister, aunt)	2 (1.4)
Caregiver age, M(SD)	43.3 (8.2)
Caregiver employed outside the home: No	70(52)
Minor Siblings in Home M(SD)	2.07 (1.19)

Table 2

Interview Questions explored for views on relationship: adolescents and caregivers

1	What were the good things about participating in the program? Bad things?
2	What were the things you liked? Disliked?
3	What was the hardest part for you? What was the hardest part for your teen; caregiver?
4	What was easy for you? What was easy for your teen; caregiver?
5	Which of these topics (list provided) were most helpful? How was it helpful?
6	Which of these topics (list provided) were least helpful? What made it difficult?
7	Were there other topics you would have liked? Tell me about them.
8	What do you think about your involvement with teen; caregiver in the weight loss program?
9	How do you think that the reward program affected your motivation? Affected your teen's; caregiver's motivation? [only if assigned to reward arm]
10	What else would you like us to know about the program that we haven't covered already?

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Table 3

Sequential Phases of Qualitative Analysis

Phase		N (N=136 dyads)	Analytic Approach
1.	Explore aggregate perspectives on the intervention	136 adolescents (A) 136 caregivers (CG)	Content analysis: Code summary of adolescent; caregiver perspectives on intervention, e.g. liked/disliked; easy/hard; topic preferences, program strategies, etc.
2.	Compare perspectives between weight loss group	Weight loss group 50 As; 50 CGs Weight gain group 86 As; 86 CGs	Content analysis: Adolescent and caregiver groups stratified into two groups, those who lost versus those who gained weight. Perspectives on intervention components compared.
3.	Explore dyadic relationships	136 A-CG dyads	Secondary coding & pattern analysis: Dyad (A-CG) perspectives on their interactions; patterns organized into a five **types**.
4.	Compare dyadic relationships using “extreme case” comparison	13 A-CG dyads (top 10%- ‘biggest losers’)[±] 13 A-CG dyads (bottom 10%- ‘biggest gainers’)[±±]	Interpretive cross-case analysis: Dyads stratified into top and bottom 10% of the sample for weight change; **themes** associated with success/lack of success for weight loss identified.

[±]Top = adolescents who lost the most weight (lost on average 10.4 pounds);

[±±]Bottom = adolescents who lost the least (gained on average 9.8 lbs.)

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