

Provider Communication Behaviors that Predict Motivation to Change in Black Adolescents with Obesity

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ABSTRACT: *Objective:* The goal of this research was to identify communication behaviors used by weight loss counselors that mostly strongly predicted black adolescents' motivational statements. Three types of motivational statements were of interest: change talk (CT; statements describing their own desires, abilities, reasons, and need for adhering to weight loss recommendations), commitment language (CML; statements about their intentions or plans for adhering), and counterchange talk (CCT; amotivational statements against change and commitment). *Methods:* Thirty-seven black adolescents with obesity received a single motivational interviewing session targeting weight-related behaviors. The video-recorded transcribed sessions were coded using the Minority Youth Sequential Coding for Observing Process Exchanges generating a sequential chain of communication. Data were then subjected to sequential analysis to determine causal relationships between counselor and adolescent communication. *Results:* Asking open-ended questions to elicit adolescent CT and emphasizing adolescents' autonomy most often led to CT. Open-ended questions to elicit CML, reflecting adolescent CML, and emphasizing autonomy most often led to CML. In contrast, open-ended questions to elicit CCT, reflecting CCT, reflecting ambivalence, and neutral open-ended questions about the target behavior led to CCT. *Conclusions:* This study provides clinicians with insight into the most effective way to communicate with black adolescents with obesity about weight loss. Specifically, reflective statements and open questions focusing on their own desires, abilities, reasons, need, and commitment to weight loss recommendations are more likely to increase motivational statements, whereas other types of reflections and questions may be counterproductive. Finally, because adolescents have a strong need for autonomous decision making, emphasizing their autonomy may be particularly effective in evoking motivational statements.

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Rates of pediatric obesity have steadily risen over the past 30 years, particularly among minority children.¹ To illustrate, rates of overweight (≥ 85 th percentile body mass index [BMI]) black children (6–11 year olds) increased 5-fold (4–20%) from 1971 to 2002 compared with a 3-fold increase (4–13%) among white children.¹ Current estimates suggest that this disparity has persisted and is growing. In 2009 to 2010, 41.2% of black adoles-

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cents (12–19-year-olds) were overweight versus 30.0% of white adolescents.

Despite widespread knowledge of these rates and the disparity among ethnic groups, few interventions to treat obesity have targeted this high-risk group. Most clinical trials have focused on white and/or suburban samples, and when minorities have participated, they have been at high risk for dropout.² Community weight loss programs have demonstrated similar results.³ In general, ethnic minority youth underutilize services,^{4,5} terminate treatment prematurely,^{6–8} attend fewer sessions,⁹ and realize fewer clinical benefits.¹⁰ The few studies focusing on minority youth have not shown sustainable weight loss.^{11–14}

While there are likely many possible explanations for why interventions targeting black adolescents with obesity were unsuccessful, poor adherence to treatment recommendations is an important factor. Poor adherence with behavioral intervention components, such as monitoring food intake or activity level, has been repeatedly shown to predict poor outcomes in pediatric weight loss clinical trials^{15,16} and among black adolescents with obesity specifically. Germann et al¹⁷ demonstrated significantly greater weight loss among black adolescents in

families who more consistently monitored food intake than those who self-monitored less often. Similarly, retention in 1 arm of the Bright Bodies trial¹⁴ was so poor it was discontinued, primarily because families did not want to adhere to recommendations for using structured family meal planning. Furthermore, structured diets with reduced calorie intake were not included as part of the Go Girls weight loss program because early focus group data indicated that the target population opposed this recommendation.¹² Feasibility work for this study targeting the same urban minority population found initial youth motivation for engaging in weight loss behaviors, such as making changes to their diet and exercise, predicted treatment dose (number of sessions attended), which, in turn, predicted youth weight loss at the conclusion of the trial.¹⁸ These studies suggest that motivation to adhere to weight loss recommendations is an important barrier in adolescent obesity treatment.

The importance of patient-provider communication has long been highlighted in the chronic illness literature.¹⁹⁻²⁶ The Institute of Medicine²⁷ reports that communication is a key clinical skill, but few guidelines exist to help clinicians and health care systems communicate effectively with patients. Motivational interviewing (MI) provides a highly specified framework for improving patient-provider communication (Fig. 1).²⁸ MI is a method of communication using client-centered yet directive methods for enhancing intrinsic motivation and self-efficacy.²⁹ Pollak et al³⁰ demonstrated that adult patients whose physicians used MI communication behaviors during weight-related discussions lost weight 3 months after encounter and physicians who used MI-inconsistent techniques had patients who gained or maintained weight.

Use of MI is now included in the expert recommendations for pediatric obesity prevention and treatment.³¹

The principles of MI, including providing empathy, collaborating with clients, and supporting client autonomy, are consistent with the elements of patient-centered care³² and consensus recommendations for working with clients from different cultures in obesity treatment.³³ Two meta-analyses have indicated that MI was more effective with blacks compared with whites^{34,35} suggesting its relevance as a framework for patient-provider communication in health disparity populations.

Thus, to date, there has been limited focus on issues such as (1) how to identify client change talk (CT) and commitment language (CML) in adolescent minority samples and (2) whether provider communication behaviors thought to elicit patient CT and CML in an MI framework may differ for minority adolescents struggling with weight loss. This study uses an innovative methodology, sequential analysis, to identify the clinical care provider communication behaviors most strongly predictive of black adolescents' motivation for weight loss as indicated by their CT and CML language utterances. We also analyzed relationships between provider communication and counterchange talk.

METHODS

The goal of this research was to identify interventionist communication patterns that are most effective in promoting intrinsic motivation, that is, change talk (CT) and commitment language (CML), to adhere to weight loss recommendations. This study took place in the city of Detroit where the rates of obesity are consistent with national trends. Specifically, the 2009 CDC Youth Risk Behavior Surveillance System (YRBSS)³⁶ indicated that 40.4% of Detroit high school students were overweight or obese. Detroit also has one of the highest percentages of blacks of any major US city (76%), despite recent drops in overall population.³⁷

Participants

Participants were recruited primarily from the adolescent medicine, pediatric medicine, and endocrinology clinics at a large urban teaching hospital; a small number (<20%) were recruited from community-based sites including local health fairs and schools. Youth and their primary caregivers meeting the following inclusion criteria were eligible for the study: (1) body mass index (BMI; kg/m²) ≥95th percentile, (2) self-identified black, and (3) age 12.0 to 17.0 years. Exclusion criteria were (1) obesity secondary to medication used for another disorder, for example, steroids and antipsychotics, (2) comorbid medical condition that prevented participation in normal exercise, (3) pregnancy or a medical condition where weight loss is contraindicated, (4) comorbid thought disorders, that is, schizophrenia and autism, (5) moderate or severe mental retardation, and (6) psychosis or current suicidality.

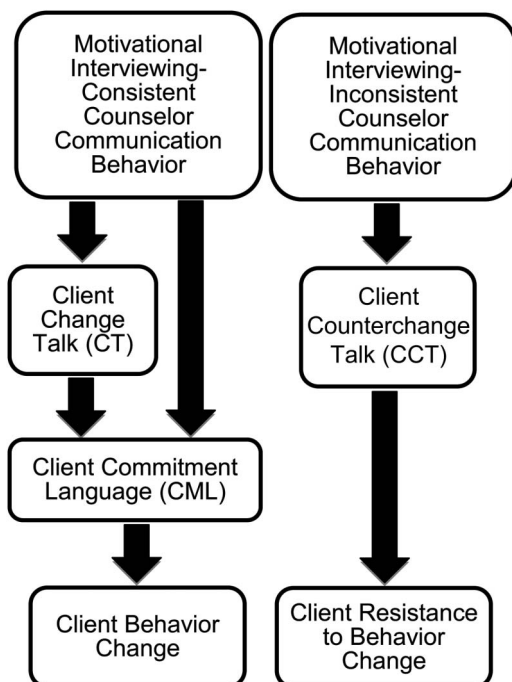


Figure 1. Mechanism of change in motivational interviewing.

A total of 40 adolescents and their primary caregivers participated. Three families were excluded from this analysis because they were accompanied to the intervention session by 2 caregivers and the communication code scheme was not designed to code intervention sessions that include more than 1 caregiver. The mean adolescent participant age was 14.7 (SD = 1.63) years and 27 were female. At study entry, the average adolescent participant BMI was 38.5 (SD = 8.33) kg/m², which corresponded to an average BMI percentile of 98.6% (SD = 1.99%). Most adolescents were accompanied to the intervention session by their biological mother (n = 33) and most lived in 2-parent homes (n = 25). The median family income was \$16,000 to \$21,999 and ranged from less than \$1,000 to \$50,000 to \$74,999. All guardians provided informed consent and adolescents provided assent. The research was approved by the institutional review board affiliated with the academic institution.

Motivational Interviewing Intervention for Adolescent Obesity

Each family participated in a single Motivational interviewing (MI) session provided by 1 of 3 weight loss counselors highly trained in MI and members of the Motivational Interviewing Network of Trainers (1 PhD psychologist, 1 PhD dietitian, and 1 Masters-level psychologist). This 60-minute session was adapted from a 4 session MI intervention found to be effective in changing weight-related behaviors in black youth.¹⁸ Weight loss counselors met with the adolescent separately for the first 30 minutes of the session (mean = 29:47 min, SD = 8:30 min). Counselors used MI skills to support adolescent autonomy and elicit and reinforce CT, discussed the patient's view of his/her weight status, delivered personalized BMI feedback, and guided the adolescent to set behavioral goals for nutrition and physical activity consistent with the his/her level of motivation for change. With permission, a written or oral change plan was completed by each participant and then shared with the caregiver at the end of the session. The counselor then met with the caregiver alone (20 minutes) to discuss their own weight loss goals and how they might support their child's weight loss goals. The session was concluded by bringing the adolescent and caregiver together (10 minutes) to discuss their respective plans together. Only the portion of the session where the counselor met with the adolescent alone was used in these analyses.

All sessions were video recorded using a video recording system featuring digital processing technology that allows simultaneous recording of the adolescent and provider resulting in a split-screen image on a single monitor format.³⁸ The system includes high-resolution digital video cameras with wide-angle lenses housed in custom enclosures with external microphones and remote monitoring and recording capabilities. Camera units, mounted within the walls of the consult room, are remotely monitored and controlled (real-time) from a private secure location.

Minority Youth Sequential Coding for Observing Process Exchanges

An interdisciplinary team consisting of a clinical psychologist and a nutrition scientist (both members of the Motivational Interviewing Network of Trainers), a communication scientist, a linguist, and a community health worker comprised the code scheme development team. The team was trained in the original Motivational Interviewing Sequential Code for Observing Process Exchanges (SCOPE)³⁹ originally developed for coding patient-provider communication sequences in adult substance abuse treatment. The team met regularly over the course of 1 year to qualitatively review transcripts of MI sessions with 4 black adolescents with obesity and their caregivers (2 of whom achieved successful weight loss and 2 who did not). During this process, the original SCOPE was adapted to include (1) culturally relevant examples of CT and CML specific to black adolescents with obesity and caregivers; (2) examples of CT and CML for the pertinent target behaviors (weight loss, healthy nutritional changes, increased physical activity); and (3) new codes for provider communication behaviors that had not been included in existing coding schemes (e.g., emphasizing autonomy, eliciting feedback). The result of this work was the Minority Youth Sequential Coding for Observing Process Exchanges (MY-SCOPE).

The MY-SCOPE was then applied to 10 of the single-session MI interventions conducted for this study. Two coders coded 1 intervention session each week for a total of 10 interviews. The team discussed all coding discrepancies (defined as codes that fell below 95% agreement) on a weekly basis. The MY-SCOPE manual was revised concurrently based on these discussions. The initial test of interrater reliability (IRR) was conducted by having both coders code the same 5 intervention sessions. The IRR, as assessed by Cohen's kappa, was good ($\kappa = .778$); thus, coding proceeded with the full data set.

The primary coder coded all 37 MI intervention sessions using the MY-SCOPE. A second coder coded 1 randomly selected session out of every 5 sessions to assess the IRR. Group consensus meetings, including the coders and a minimum of 2 investigators, occurred monthly throughout the coding process to discuss discrepancies. IRR was calculated periodically on the sample, and if needed (i.e., IRR fell below 0.6), a booster training was initiated and transcripts were recoded until an adequate IRR was reached. One booster training was required during this process and reliability across all 7 co-coded sessions yielded an IRR coefficient of $\kappa = .696$.

Once coded, the expected joint frequencies of the adolescent and counselor communication behaviors were examined to determine if each cell of the contingency table met the test assumption of a minimum of 5 joint behaviors expected per cell. Several code combinations failed to meet this assumption resulting in a number of individual codes being merged together, for

example, adolescents' "other statements." Table 1 describes the final MY-SCOPE codes used in the analysis.

Data Analysis

To address the causal question of which counselor communication behaviors elicited statements indicative of adolescent intrinsic motivation, the data were analyzed using sequential analysis.^{40,41} Sequential analysis is a well-established method of organizing and analyzing observed behavioral data in an attempt to understand the sequence in which behaviors occur.⁴² Sequential analysis uses traditional statistical analyses to determine the statistical significance of the pattern of observed behavioral sequences, for example, χ^2 test of association. It also generates a number of unique indexes of sequential patterning, for example, transition probabilities, that can be used as variables in appropriate statistical procedures.

The Generalized Sequential Querier (GESQ; <http://www2.gsu.edu/~psyrab/gseq/index.html>) was used to generate sequential statistics for this analysis. Of primary interest were the transition probabilities between counselor communication behaviors and adolescent statements of intrinsic motivation. A transition probability is a conditional probability relating the state of a system (i.e., an intervention session) at some time (t1) to its state at another time (t2), where the difference between t1 and t2 is termed the lag. In this analysis, we examined the transition probabilities at Lag 1 that corresponds to the adolescent statements immediately after any given counselor communication within a given treatment session. In this way, the analysis identifies the provider communication behaviors that significantly predict the occurrence of CT or CML in the next adolescent utterance. To determine the statistical significance of the transition probabilities, the adjusted residuals and their associated probability values were examined to evaluate the extent to which the transition probabilities were more or less probable than expected by chance.⁴¹

RESULTS

Table 2 presents the transition and marginal frequencies for the adolescent and counselor communication behaviors. The counselor utterances are considered, for this study, the antecedent events and, therefore, are presented in rows and the subsequent adolescent utterances are presented in columns. There were 2694 transitional events coded across the 37 sessions or an average of 73 (SD = 23.7) counselor-to-adolescent communication sequences per session. The most common adolescent utterance observed was the "other" utterance, and the most common counselor utterances were open-ended questions to elicit change talk (CT). The least common adolescent and counselor utterances were counterchange talk (CCT) and action reflections, respectively.

To answer the sequential question of which counselor communication behaviors were most strongly predictive of adolescent motivational statements, the transition

probabilities for the adolescent and counselor communication behaviors at Lag 1 were generated. Table 3 presents these results. Similar to Table 2, the antecedent counselor utterances are presented in rows and the subsequent adolescent utterances are presented in columns. To illustrate, the probability that an adolescent's utterance will be CT after a counselor asks an open-ended question to elicit CT is 0.62. This means that 62% of the time a counselor's open-ended question to elicit CT was followed by an adolescent uttering CT. Thus, transition probabilities can be directly interpreted as the percentage of time a counselor utterance results in a particular adolescent utterance. Therefore, according to Table 3, when a counselor asks an open-ended question to elicit CT, 62% of the time an adolescent will respond with CT and 10% of the time with commitment language (CML).

The χ^2 test of association for the transition probability matrix suggested that the pattern of results was significant, $\chi^2(48) = 975.744, p \leq .001$. An examination of the probabilities associated with the transitions identified the counselor communication behaviors most often leading to CT: asking open-ended questions to elicit adolescent CT and statements emphasizing adolescents' autonomy. Other types of open-ended questions did not significantly elicit CT.

Counselor: I'm not really here to tell you what to do or to tell you how to do things, but really, to figure out what it is that you want and the best way to make that happen. (EA)

Teen: Okay. Starting by how to lose weight. (CT)

In addition to emphasizing autonomy, the counselor communication behavior most often leading to CML were open-ended questions to elicit CML, and again other types of open-ended questions did not elicit CML.

C: How are you able to do that, when you're over there (family member's house)? (OQ-ECML)

T: I just, there's cake right there. And then take my, like, her house is right here. There's a park, like, right across the street from her. So, I usually take the kids over there and they play. I just play with them. Like, I see the cake and I want it, but I'm not going to do it. (CML)

Counselors' reflections of CML led to further adolescent CML.

Counselor: So, you're doing, again, stuff that's active now. But in your head, it does sound like it's, you know, that the exercise thing, doing a little bit more is kind of where you're moving towards a bit. (R-CML)

Teen: Yeah. And I told her, I said that I was going to cut down on the greasy stuff, like fried chicken and hamburgers. I haven't had none of that in a while. (CML)

The counselor communication behaviors most often leading to CCT were open-ended questions to elicit CCT, neutral open-ended questions about the target behavior, and reflections of ambivalence.

Table 1. Minority-Youth Sequential Coding for Observing Process Exchanges Codes

Code	Description
Adolescent communication behaviors	
Change talk (CT)	A statement describing the precursors to effecting change toward the target behavior, such as the adolescent's current desire, ability, reasons, and need for change.
Commitment language (CML)	A statement describing a current or future agreement, intention, or obligation to take action toward the target behavior; examples of adolescent CML include "going to," "stick (with)," "focus," and "keep," see Amrhein ⁴³ for a comparison with adult CML.
Counterchange talk (CCT)	Statements describing a current or future agreement, intention, or obligation to avoid or take action against the target behavior (negative CML) or statements describing the precursors to not changing the target behavior, such as the adolescent's desire, ability, reasons, and need to not change (negative CT).
Other statements (O)	Includes all other adolescent statements: 69% were low uptake statements (brief statements that do not develop the topic of conversation but allows it to continue, e.g., "ok," "yeah," "mmm-hmm"), 30% were high uptake statements (statements that may develop the topic of the conversation by recounting past actions of commitment, CT, and ambivalence that may be related or unrelated to the target behavior), and 1% were blunting (statements that end topic development, often in response to threatening information, by refusing to continue or deflecting the development of the topic, usually by changing the topic).
Motivational interviewing-consistent counselor communication behaviors	
Structure session (SS)	Statements that describe what will happen in the current or subsequent sessions, transition to another part of the session, or refocus a straying conversation back to weight loss.
Positive information (INFO+)	Statements that provide advice, make suggestions, offer solutions/possible action, give feedback, express a concern, or offer educational information delivered in a productive way, i.e., seeking permission, giving the option to reject the information before providing the information, offering a menu of options, and expressing genuine concern.
Emphasize autonomy (EA)	Statements that directly acknowledge, honor, or emphasize the client's freedom of choice, autonomy, personal responsibility, and so forth.
Elicit feedback (EF)	Statements that solicit the adolescent's thoughts, ideas, or feelings about a specific recommendation or piece of information.
Affirmation (AF)	Positive or complimentary statements that express appreciation, confidence, or reinforce the adolescent's strengths or efforts.
Reflections of CT (R-CT)	A reflective listening statement that captures and returns an adolescent's statement or behavior from the current or a previous session that describes the adolescent's desire, ability, reasons, or need for change or past action or barriers to change.
Reflections of CML (R-CML)	A reflective listening statement that captures and returns an adolescent's statement or behavior from the current or a previous session that describes current or future action or references barriers to changing.
Reflections of ambivalence (RA)	A reflective listening statement that captures and returns an adolescent's utterance or behavior from the current or previous session that describes simultaneous contradictory attitudes or feelings toward change, i.e., utterances or behaviors that are both for and against the target behavior.
Action reflection (AR)	Statements that reflect back the adolescent's statement(s) while at the same time embedding a solution to a barrier or an action plan.
Summary (SUM)	A reflective listening statement that captures and returns at least 2 different ideas from an adolescent's utterance or behavior from the current session.
Open questions to elicit CT (OQ-ECT)	Open-ended questions, i.e., those that allow a wide range of possible answers, that ask about the adolescent's desire, ability, reasons, or need for change or that reference past action toward behavior change or barriers to change.
Open questions to elicit CML (Q-ECML)	Open-ended questions, i.e., those that allow a wide range of possible answers, that ask about current or future action toward behavior change or reference barriers to change.

(Table continues)

Table 1. Continued

Code	Description
Closed questions to elicit CML or CT (CQ-ECMLCT+)	Closed-ended questions, i.e., those that imply a short answer such as yes or no, a specific fact or number, or when a restricted range of expected responses is provided, that ask about the adolescent's desire, ability, reasons, or need for change or that reference past action toward behavior change or barriers to change or current or future action toward behavior change or reference barriers to change.
Neutral open question about the target behavior (OQ-TBN)	Open-ended questions, i.e., those that allow a wide range of possible answers, that ask about the target behavior without a specific slant toward eliciting CT or CCT.
Motivational interviewing-inconsistent counselor communication behaviors	
Reflections of CCT (RCCT)	Reflective listening statements that capture and return an adolescent's statement or behavior from the current or a previous session that describes the current or future action against change or references barriers to changing (negative commitment) or that describes the adolescent's desire, ability, reasons, or need against change or past actions against change or barriers to change (negative CT).
Other reflections (RO)	A reflective listening statement that captures and returns an adolescent's utterance or behavior from the current or previous session that is unrelated to the target behavior.
Open questions to elicit CCT (OQ-CCT)	Open-ended questions, i.e., those that allow a wide range of possible answers, that ask about the adolescent's current or future action against change or references barriers to changing (negative commitment) or that describes the adolescent's desire, ability, reasons, or need against change or past actions against change or barriers to change (negative commitment)
Other questions (OQ)	Open- or close-ended questions unrelated to the target behavior.
Other statements (OS)	Any other counselor statement unrelated to the target behavior.

Counselor: You know you mentioned a few times that you would like to add in some more vegetables in there, and that there are some that you do like but there are some that you don't like. (RA)

Teen: Green peas. Don't like them. (CCT)

Reflections of adolescent CCT also led to further CCT.

Counselor: She's kind of bugging you about it and it makes you not want to do it. (R-CCT)

Teen: I don't like when people keep bugging me about stuff. I would be about to do it and they keep on saying it, so I don't. (CCT)

DISCUSSION

Sequential analysis methods yield important information about the specific counselor communication behaviors that promote motivation. Sequential communication research to date has typically focused on adults, mostly in substance abuse settings. This study is the first to examine communication exchanges in minority adolescents participating in a weight loss intervention. The number of counselor-to-adolescent communication transitions was consistent with previous sequential communication research in adult populations. To illustrate, Moyers and Martin⁴⁴ observed an average of 120 counselor-to-client communication transitions in 1-hour sessions with adults with alcoholism as compared with the 73 counselor-to-adolescent communication sequences per 0.5-hour session in this study.

Mostly previous Motivational interviewing (MI) research has focused on the use of open-ended questions versus closed-ended questions and the use of reflections versus questions.⁴⁴⁻⁴⁶ In fact, the most common measure of MI fidelity relies on a count of all open questions and reflections regardless of content.⁴⁷ However, this study suggests that the content of the reflections and questions may be even more important than the type of statement as both reflections and open questions about change talk (CT) and commitment language (CML) were more likely to elicit CT and CML than other types of reflections and questions. In fact, open questions about counterchange talk (CCT), neutral open questions, and reflections of ambivalence were more likely to elicit CCT. Thus, not only is the specific type of questions important, that is, open questions, but the selective reinforcement of CT versus CCT or CT with reflective statements seems to be critical to building motivation in this population. These findings are consistent with the few sequential analyses of adult MI sessions that focused on the content or specificity of counselor utterances^{44,48} and suggest that MI training and fidelity measures should focus on the content of reflections and questions and not just the count or ratio of these utterances to other statements.

Beyond reflections and questions, certain provider behaviors were particularly relevant to predicting CT and CML in minority adolescents. Provider statements emphasizing adolescents' autonomy or personal choice in making health-related decisions (e.g., it is really up to you what changes you want to make; nobody can make these

Table 2. Transition and Marginal Frequencies of Adolescent and Counselor Communication Behaviors in the 37 Single Motivational Interviewing Sessions

Given: Counselor Communication Behavior	Target: Teen Communication Behavior				Total
	CT	CML	CCT	Other Statements	
Structure session	25	7	1	91	124
Positive information	26	11	8	80	125
Emphasize autonomy	127	66	18	125	336
Elicit feedback	26	9	12	87	134
Affirmation	23	20	8	69	120
Reflections of CT	107	17	26	180	330
Reflections of CML	19	47	4	80	150
Reflections of ambivalence	12	6	18	18	54
Reflections of CCT	14	8	23	37	82
Action reflection	11	3	5	31	50
Summary	14	5	11	53	83
Other reflections	13	10	16	68	107
Open-ended questions to elicit CT	233	37	34	73	377
Open-ended questions to elicit CML	38	112	11	27	188
Close-ended questions to elicit CML or CT	29	9	5	45	88
Neutral open-ended questions about target behavior	28	11	17	15	71
Open-ended questions to elicit CCT	16	6	42	16	80
Other questions	11	4	9	64	88
Other statements	26	13	16	52	107
Total	798	401	284	1211	2694

$\chi^2 (48) = 975.744, p \leq .001$. CT, change talk; CCT, counterchange talk; CML, commitment change language.

decisions for you) were highly predictive of adolescent CT. This finding is consistent with both previous MI research⁴⁵ and the adolescent development literature. The negotiation of autonomy during adolescence is an opportune time for health care providers to actively engage adolescents in their own health care decision making.⁴⁹ Rather than asserting their autonomy through engaging in risk-taking behaviors, clinicians can encourage adolescent autonomy through engaging in health-promoting behaviors. Improved patient-provider relationships might lead to better treatment retention and outcomes among ethnic minority youth who typically attend fewer sessions,⁹ terminate treatment prematurely,⁶⁻⁸ and realize fewer clinical benefits¹⁰ than their majority peers.

The importance of autonomy is also consistent with the growing theoretical literature describing the mechanisms by which MI works and contributes specifically to understanding how MI might work with adolescents. An emphasis on autonomy for effecting behavior change is a principle tenet of self-determination theory (SDT), the theoretical model underpinning MI.⁵⁰ According to SDT, individuals have an innate need to experience one's behavior as self-regulated and self-endorsed,⁵¹ a need that is particularly pronounced during adolescence when establishing autonomy is of primary concern. Hence, supporting adolescents' autonomy may be associated in intrinsic motivation to

engage in a behavior,⁵² which, in turn, has been linked to more positive outcomes.⁵³

However, certain MI-consistent behaviors were unexpectedly unrelated to CT and CML. Affirming statements were not effective in eliciting CT and CML. While affirming statements may have other purposes, such as increasing therapeutic alliance, it is possible that in black adolescents, they are unlikely to increase motivation for change. It is possible that affirming statements are perceived as praise and are not taken seriously from a provider who is new to the family. Others have noted that adolescents may perceive affirming statements as provider enthusiasm about the change that the adolescent may not be prepared to make.⁵⁴ Similarly, summaries, a key MI communication skill, were not associated with motivational statements. Adolescents may be more affected by communication in the moment rather than statements that link communication over the course of the session. Finally, information, even when provided in an MI style, had low probability of eliciting CT and CML. However, information may still be necessary to promote behavior change among a population with potentially low levels of knowledge about weight loss behaviors. And, when provided in an MI style (e.g., asking for permission, eliciting patient's reaction), information did not result in CCT in this high-risk group.

Table 3. Transition Probabilities of the Joint Frequency of Adolescent and Counselor Communication Behaviors

Given: Counselor Communication Behavior	Target: Teen Communication Behavior			
	CT	CML	CCT	Other Statements
Structure session	0.20†	0.06††	0.01†††	0.73***
Positive information	0.21†	0.09†	0.06	0.64***
Emphasize autonomy	0.38***	0.20**	0.05††	0.37††
Elicit feedback	0.19†	0.07††	0.09	0.65***
Affirmation	0.19††	0.17	0.07	0.58**
Reflections of CT	0.32	0.05†††	0.08	0.55***
Reflections of CML	0.13†††	0.31***	0.03††	0.53*
Reflections of ambivalence	0.22	0.11	0.33***	0.33
Reflections of CCT	0.17†	0.10	0.28***	0.45
Action reflection	0.22	0.06	0.10	0.62*
Summary	0.17††	0.06†	0.13	0.64***
Other reflections	0.12†††	0.09	0.15	0.64***
Open-ended questions to elicit CT	0.62***	0.10††	0.09	0.19†††
Open-ended questions to elicit CML	0.20††	0.60***	0.06†	0.14†††
Close-ended questions to elicit CML or CT	0.33	0.10	0.06	0.51
Neutral open-ended questions about target behavior	0.39	0.16	0.24***	0.21†††
Open-ended questions to elicit CCT	0.20	0.08	0.53***	0.20†††
Other questions	0.16†††	0.05††	0.10	0.73***
Other statements	0.24	0.12	0.15	0.49

*More probable than expected by chance at $p \leq .05$. **More probable than expected by chance at $p \leq .01$. ***More probable than expected by chance at $p \leq .001$. †Less probable than expected by chance at $p \leq .05$. ††Less probable than expected by chance at $p \leq .01$. †††Less probable than expected by chance at $p \leq .001$. CT, change talk; CCT, counterchange talk; CML, commitment change language.

Regardless of the possible reasons for certain MI skills to be unrelated to motivational statements, the empirically based focus on particular MI skills relevant to increase motivation among black adolescents with obesity has significant training implications. Research suggests that MI is not easy to learn. Research is beginning to shed light on what training is necessary to obtain fidelity to MI. Two studies^{55,56} found that while an MI training workshop improved some components of MI, technical skills coded from audio recordings remained below competency. A recent review of 10 studies in health care settings⁵⁷ suggested that MI workshops significantly improved MI skills compared with controls; however, workshops were not sufficient for trainees to achieve competency. It is possible that focusing training on fewer skills in the same period of time may increase competency in those skills particularly relevant for black adolescents struggling with weight loss. For example, instead of training in the 4 key communication skills, open questions, affirmations, reflections, and summaries, a trainer can focus only on open questions and reflections and ensure that the content of those behaviors includes CT and CML. Future studies could compare a tailored training based on these types of analyses with a standard MI training and could assess the outcomes in terms of competency and patient outcomes.

The results of this research are limited by a convenience small sample, although observational coding yields

large amounts of data and sample size was similar to other MI studies using sequential analysis.^{44,45} A larger sample size may allow the full coding scheme to be examined, as fewer codes would need to be collapsed due to low frequency (e.g., separating codes within the other category such as blunting). Adolescents participated in a single MI session. Additional research is needed to determine if the patterns identified in this study are consistent over time as adolescents and counselors work together toward weight loss or if different patterns emerge as their relationship evolves and progress toward weight loss unfolds. Sessions were provided by MI experts, and few codes inconsistent with the MI framework had large enough frequencies to be included in analyses. Future research is needed to examine the patterns of adolescent communication with less experienced providers and with other provider types within health care settings. Given that much of weight loss treatment includes parents, future studies are necessary to determine the links between provider communication and parent motivation for supporting the adolescent. Finally, although the link between CT and CML and behavior change has been shown primarily in substance abuse settings, more studies are needed to link actual CT and CML with behavior change in adolescent obesity. Despite these limitations, this study provides a number of insights into how clinical care providers might increase motivation for changing weight-related behaviors in black adolescents.

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