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Teaching physicians Motivational Interviewing for discussing weight with overweight adolescents: The Teen CHAT Randomized Controlled Trial

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Implications and Contributions: Physicians can improve their MI techniques with a 60-minute tailored online intervention. None has tested this type of intervention before. Effects are enhanced when physicians do not have to assess behaviors but receive a guide for which behaviors to target. Patients benefit from physicians' use of MI.

Abstract

Purpose—We tested whether an online intervention combined with a patient feedback report improved physicians' use of Motivational Interviewing (MI) techniques when discussing weight with overweight and obese adolescents.

Methods—We randomized 46 pediatricians and family physicians and audio recorded 527 patient encounters. Half of the physicians received an individually-tailored, online intervention. Then, all physicians received a Summary Report detailing patient's weight-related behaviors. We coded MI techniques and used multilevel linear mixed-effects models to examine arm differences. We assessed patients' motivation to change and perceived empathy post-encounter.

Results—We found arm differences in the Intervention Phase and the Summary Report Phase: Empathy ($p<0.001$), MI Spirit ($p<0.001$), open questions ($p=0.02$), and MI consistent behaviors ($p=0.04$). Across all three Phases (Baseline, Intervention, and Summary Report), when physicians had higher Empathy scores, patients were more motivated to change diet ($p=0.03$) and physical activity ($p=0.03$). Also, patients rated physicians as more empathic when physicians used more MI consistent techniques ($p=.02$).

Conclusion—An individually-tailored, online intervention coupled with a Summary Report improved physicians' use of MI, which improved the patient experience.

Keywords

Motivational interviewing intervention; Physicians; Adolescents

Over 30% of American adolescents are overweight or obese[1]. Obesity in adolescence has been linked to adult obesity[2] and also contributes to chronic illnesses in adolescents, including hyperlipidemia, hypertension, and diabetes[3]. Adolescent obesity should be addressed on many levels, including physician counseling[4], which some have shown is effective in helping adults improve physical activity and nutrition[5· 6] Although some studies have examined counseling with adolescents[7· 8], only one small pilot study has assessed actual weight-related conversations[9].

The Expert Committee on Pediatric Obesity recommends physicians counsel about weight using Motivational Interviewing (MI)[10] MI is designed to explore patients' ambivalence about changing behavior and is a collaborative approach to help patients set and reach their own goals as well as accept patients' reluctance to change. MI includes understanding patients' perspectives, accepting their presence or lack of motivation for changing, collaborating to help them find their own solutions, evoking (e.g., asking patients rather than telling patients) to help patients understand their own motivation to change, eliciting “change talk” (e.g., “I need to exercise more”), and affirming their own freedom to change. MI-inconsistent behaviors include judging, confronting, and providing advice *without permission*. Before physicians can use MI to discuss weight, they first need to assess weight-related behaviors; however, assessing behaviors like physical activity and nutrition takes precious encounter time. Physicians might be more likely to be able to counsel about weight if they do not have to spend time assessing behaviors first.

Given the promise of MI, the challenge is how to efficiently and effectively teach physicians these skills. Most would not expect physicians to become fully trained MI counselors but rather would teach the principles and skills and how they can be incorporated into brief clinic encounters (e.g., “MI Lite”). Previous investigators have taught physicians MI using intensive in-person trainings [11–17]. Patient-provider communication studies indicate physicians can learn specific communication skills[18–20] that subsequently lead to improved health outcomes[20–21]. Our own work shows that physicians can improve how they respond to patient negative emotion that led to improvement in patient trust[22].

We developed an online intervention called Teen CHAT (Communicating Health: Analyzing Talk) to teach primary care physicians how to counsel overweight adolescents about attaining a healthy weight. In this randomized controlled trial, we tested both the effect of this online communication intervention and a written Summary Report to prompt physicians about which behaviors patients might need to change to improve their weight. The primary aim was to improve physicians' use of MI behaviors with the online intervention; we expected that the Summary Report would improve these MI behaviors further. We provided the Summary Report to all physicians to test the independent effects of the Summary Report. Secondarily, we also examined whether physician communication led to changes in patient behaviors and perceptions.

METHODS

Recruitment: Physicians

Teen CHAT was approved by the Duke University School of Medicine IRB. We approached primary care physicians from academically-affiliated and community-based practices and told them the study would examine how they address healthy weight with their adolescent patients. Only physicians who had at least two patients recruited in the Baseline Phase advanced to be randomized for the Intervention Phase of the study and continue through the Summary Report Phase in randomized arm (see Figure 1). Physicians gave written consent, completed a baseline survey, and provided an electronic signature for generating letters to their patients.

Recruitment: Patients

For each of the 3 Phases, patient recruitment procedures were the same. We reviewed physicians' schedules to identify eligible patients: English-speaking, BMI ≥ 85th percentile for age and gender, age 12–18, not pregnant, and preventive or return visit scheduled. We sent patients and their parents letters signed by the patient's physician, including a toll-free number for refusal. We obtained both parents' and patients' verbal consent/assent and asked the adolescent to complete a baseline telephone survey. Research staff then met patients in clinic, obtained written assent and consent, and followed patients to the exam room to audio record their visits. Each exam room had an audio recorder case; only when we were audio recording, did we unobtrusively place the audio recorder in the case to blind physicians about which encounters were audio recorded. Immediately after the visit and three months later, we surveyed patients and obtained vital signs including patient height and weight on a

calibrated scale. We chose three months to allow some time for change but not be too far from the clinic encounter to attribute it to physician communication.

Interventions

We have described intervention details in another manuscript[23]. Briefly, we delivered two interventions: an online communication Intervention and a Summary Report. Randomized physicians were assigned to view a 60-minute individually tailored, online intervention that contained clips from their own audio-recorded patient encounters. Physicians spent on average 54 minutes viewing this intervention (range: 31–115 minutes). The intervention contained four modules explaining the value of addressing weight and weight-related behaviors, MI techniques, the 5 A's (Ask, Advice, Assess, Assist, and Arrange, being addressed in a separate manuscript), and techniques for communicating with adolescents. The intervention contained didactic information. We also created exemplar videos showing physician actors trying standard non-MI techniques with patient actors. We then filmed “direct to camera” interviews with the physician or patient actor to show the inner dialogue of why the technique did not work. Finally, we showed the physician actor using the MI technique. Physician participants were also asked to set goals for the techniques they would try; the system emailed physicians weekly to remind them of their goals.

In addition to the online intervention, we tested a Summary Report providing physicians with baseline survey data on six of patients' modifiable factors, namely sweetened beverages, fast food, breakfast, physical activity, screen time, and sleep. We expected physicians to use the Summary Report to guide the conversation and save time spent assessing these behaviors.

Coding audio recordings: Modifiable factors

Two independent coders blinded to study arm were trained to mark all discussions of the six modifiable factors. Training consisted of 30 hours over a three-week period. Coders double coded 20% of the conversations and resolved disagreements by consensus.

Coding audio recordings: MI

The coders received an additional 30 hours of training to use the validated and reliable Motivational Interview Treatment Integrity scale (MITI) [24–26]. They coded discussions between physicians and adolescent patients, both when parents were present and also when they were asked to leave. Coders assessed global ratings of “Empathy” (1–5 scale, ICC=0.53, CI=0.35, 0.77) and “MI Spirit,” (1–5 scale, ICC=0.73, CI=0.56), which included three components: *evocation* (e.g., eliciting patients' own reasons for change), *collaboration* (e.g., collaboratively setting agenda), and *autonomy* (e.g., conveying that patient decides when to change). Coders also counted *closed questions* (“yes”/ “no” questions), *open questions* (requires more than “yes”/ “no” responses), *simple reflections* (conveys understanding, but adds no meaning to what the patient said), Kappa=0.85, CI=0.78, .91; *complex reflections* (conveys understanding and adds substantial meaning), Cohen's Kappa=0.67, CI=0.01, 1.0; *MI consistent behaviors* (e.g., affirming, providing supportive statements), Kappa=0.60, CI=0.51, .69; and *MI inconsistent behaviors* (e.g., advising without permission, confronting, and directing, Kappa=0.62, CI=0.54, 0.70).

Physician and adolescent patient characteristics collected from baseline surveys

Patient: gender, age, race, mother's education, attending school or not, average grades, and owned house or not. *Physician:* gender, race (African American vs. Other), years since medical school, specialty (pediatrics vs. family medicine), self-reported BMI, and prior MI training.

Primary outcome measures: MI

The primary outcomes were MI Spirit and the percentage of MI inconsistent behaviors (MIIC%) defined as MI inconsistent behaviors/ (total MI consistent + MI inconsistent behaviors) in the Intervention Phase.

Secondary outcome measures: Other MI behaviors (both phases), patient self-report behaviors, psychosocial behaviors, and perceptions

MI behaviors: Empathy and open questions.

Patient behaviors: We assessed the six modifiable factors prior to the encounter and again 3-months post-encounter for patients in each Phase: *sweetened beverages* using the Block Kids Food Screener Questionnaire[27] assessing frequency and quantity of patient-consumed sweetened beverages; *fast food* using the frequency of fast food restaurant use (FFRU)[28]; *breakfast* using a single item measure of frequency with number of days from 1–7; *screen time*, *physical activity*, and *sleep* were assessed from the Previous Day Physical Activity Recall (PDPAR)[29–30] We also *weighed* patients at their visit and 3-months later using a calibrated scale, measured height using a stadiometer and calculated their BMI percentile.

Patient-reported psychosocial variables and perceptions of communication: We assessed psychosocial variables prior to encounter and then immediately post-encounter and perceptions only immediately post-encounter. *Motivation* for losing weight, improving nutrition and physical activity was assessed using three single items (e.g., “With 1 being ‘not at all,’ and 5 being ‘very much,’ how much do you want to lose weight at this time?”). *Confidence* for losing weight, improving nutrition and physical activity was assessed with three single items (e.g., “With 1 being ‘not at all,’ and 5 being ‘extremely,’ how confident are you that you can lose weight at this time?”). *Perceived empathy:* Patients reported their perceived physician empathy with a summed 10-item scale ($\alpha=0.95$; e.g., “Thinking about your visit with your doctor, how was your doctor at fully understanding your concerns?” (1=Not at all good to 5=Extremely good)) [31]. *Perceived autonomy support:* Patients responded to a 15-item scale to assess how well physicians supported their autonomy (e.g., “I feel that my physician has provided me choices and options” (1=Strongly disagree to 5=Strongly agree; $\alpha=0.94$; dichotomized at <75) [32].

Analyses

Sample Size—Power calculations were based on the Intervention Phase assuming a sample size of 50 physicians (25 intervention; 25 control) and 200 patients (approximately 4 patients per physician). We tested the null hypotheses of no between-arm differences in MI Spirit or percentage of MI inconsistencies (MIIC%) in the Intervention Phase. For 80% power, with $\alpha=0.05$ (two-sided), standard deviations (SD) of 1.5 and 24%, for MI Spirit and

MIC%, respectively and, an Intraclass Correlation Coefficient (ICC) of 0.15 to adjust for clustering of patients within physicians we can detect a difference in MI Spirit of 0.73 points and in MIIC% of approximately 12% between intervention and control physicians[6–33].

We used SAS for Windows (Version 9.2; SAS Institute, Cary, NC) to fit multilevel linear mixed models (LMM) with random effects for physician to account for clustering of patients within physician and for Phase nested within physician to account for the correlation of physicians across phases[34–36]. Primary predictors included indicator variables for the Intervention and Summary Report Phases and interaction variables for treatment arm by Phase. For examining behaviors and psychosocial outcomes, we followed a similar modeling strategy with the addition of an unstructured covariance structure for the repeated measures over time (baseline and 3-month follow-up for healthy behaviors and baseline and post-encounter for mental behaviors) and indicator variable for follow-up time and associated interactions. To examine the association of MI techniques with post-encounter motivation and confidence, patient perceived empathy and autonomy support, multilevel mixed models were used including the outcome (from coded encounters in Baseline Phase), treatment arm, patient covariates (age, gender, race, mother's education, motivation and confidence to lose weight, comfort discussion weight) and physician covariates (race, gender, specialty, years since medical school and prior MI training status).

RESULTS

Sample characteristics

See CONSORT diagram for recruitment and retention data (Figure 2). Table 1 shows demographic characteristics of physicians and patients. Physicians in the intervention arm were younger, and more were pediatricians than those in the control arm. The mean total time of the encounters was 21.9 minutes, of which physicians and patients spent a mean of 4.2 (19%) minutes discussing weight-related topics.

Primary Outcomes

In the Baseline Phase encounters, mean use for these MI techniques was moderate: MI Spirit score: 2.1(SD=0.9); and MIIC%: (62% (37%)). In the Intervention Phase, estimated mean MI Spirit score was 0.4 points higher in the intervention arm than in the control arm ($p=0.02$; Table 2); no arm difference was found for MIIC% ($p=0.30$). The intraclass correlation coefficient (ICC) for MI Spirit was 0.29 and for MIIC% was 0.23 which represents the similarity in these outcomes for physicians within a Phase (clustering effect).

Secondary Outcomes

MI techniques—In the Summary Report Phase, estimated mean MI Spirit score was 0.7 points higher ($p=0.0001$; Table 2) and MIIC% was 12% lower in the intervention arm compared to control ($p=0.06$) meaning that intervention physicians used less MI inconsistent behaviors than control physicians. In both the Intervention and Summary Report Phases, Empathy and number of open questions were higher in the intervention than control arm ($p=0.02$ and $p=0.0006$ Intervention Phase; $p=0.0003$ and $p=0.02$ Summary Report Phase). In

addition, in the Summary Report Phase, the mean number of MI consistent behaviors was higher in the intervention arm ($p=0.04$).

Patient behavior outcomes—In the Intervention Phase, BMI percentile was 0.9 points higher in the intervention arm compared to control at 3-months (95% CI (0.2,1.6); $p=0.01$). No other differences were found in any of the modifiable behaviors for either Phase (results not shown).

Patient psychosocial and perception outcomes—No arm differences were found in any psychosocial outcomes (motivation and confidence to lose weight, to improve diet or physical activity, perceived empathy, or autonomy support; data not shown).

Exploratory analyses: Relationships between MI skills and patient outcomes across arms

In exploratory analysis combining data across all phases, including physician and patient level covariates, and adjusting for clustering of patients within physician and across phases, MI was linked to improvements in patient psychosocial factors and their perceptions of physician communication. Patients reported higher motivation for improving diet and physical activity when their physician had a higher mean score for Empathy ($p=0.03$ and $p=0.03$); patient reported higher motivation for improving physical activity when their physician had a higher mean MI Spirit score ($p=0.04$; Table 3). Patients reported higher perceived empathy scores when their physician had a higher mean number of MI consistent behaviors ($p=0.02$).

DISCUSSION

This is the first randomized controlled trial teaching physicians MI techniques using an online platform. We found that the 60-minute intervention improved pediatricians and family physicians' use of MI techniques. The results are promising especially given how little time physicians spent viewing the program; others who have taught MI have used a face-to-face format that was more intensive and less disseminable[11–17].

The effect of the online intervention was most pronounced when we gave physicians a Summary Report to guide their weight-related discussions. The Summary Report might have led those trained in MI to offer the patient choices (e.g., “Of these three behaviors that are shown as ‘red’ which one would you like to work on?”) and conversely might have led those not trained to rely more heavily on their MI inconsistent behaviors and be directive (e.g., “You need to decrease your screen time as you have three hours a day and it should be two hours a day.”). Physicians might also have saved time typically used assessing patient behaviors. Further, the Summary Report provided objective feedback to both patient and physician, simultaneously rather than the physician having to deliver the feedback. Those trained in MI likely used the Summary Report more non-judgmentally and objectively, merely providing data whereas those not trained in MI might have used the Report to show disapproval of patient unhealthful choices.

Similar to other randomized controlled trials that have improved physician communication[37], we were unable to show arm differences in patient behaviors. There are several possible explanations for this. First, we only allowed three months between the physician encounter and the follow-up patient survey which might not have been enough time to change these difficult behaviors. Second, although physician counseling is an important part of the process, in and of itself, it might not be enough to promote behavior change among adolescents, particularly as adolescents tend to go to the doctor annually. Even though adolescents are attempting to be autonomous, many of their behaviors are still not completely under their control. Future interventions, therefore, should include parents and possibly more intensive interventions. Although we did not formally apply any multiple comparisons procedures to the secondary analyses, due to the number of secondary outcomes evaluated it is not surprising to find a p-value (BMI percentile) that crosses the 0.05 boundary due to random chance. Furthermore, not all values in the 95% confidence interval of the difference in change in BMI percentile between baseline and 3-months between arms are clinically significant. This result should be interpreted with caution.

Even though we did not find arm differences, MI behaviors were related to patient motivation and perceived empathy. Particularly, patients responded positively to physician empathy and MI Spirit. This is important as it can serve to “prime” patients to be receptive to other behavior change counseling. These findings are particularly important as patient perceptions typically have ceiling effects and truncated ranges,[38] Thus, it is difficult to find differences in these perceptions that have little variability. This result shows the strength of the MI approach in moving these hard to improve perceptions. Further, these findings likely are robust as they replicate those found in our previous work with adults[39- 40].

The Teen CHAT trial can be easily disseminated. Physicians could audio record their own encounters and upload them to a Teen CHAT site, where coders or even a computer would analyze the data. We could then send physicians their tailored intervention that takes one hour to view. Further, it is feasible to produce Summary Reports remotely by asking patients to report their behaviors via a smartphone app transmitting the information to the physician prior to the encounter.

Limitations and strengths

The primary outcome, MIIC%, was missing for 52 encounters across all phases due to no MI consistent or inconsistent communication occurring which potentially impacted the power of this comparison between arms. It was impossible to blind physicians to being audio recorded in the Summary Report Phase once they saw the Summary Report. Because we blinded the adolescent to the aim of the study, we were unable to assess physical activity and nutrition using gold standard measures (i.e., accelerometers and 24-hour dietary recall). We assessed behaviors only three-months after the visit as we wanted to link physician communication to patient behaviors.

Conclusions

These findings are promising. Physicians can improve their MI techniques with a brief, tailored, easily disseminable intervention. The effects are enhanced by allowing physicians

time to counsel by removing the burden of assessing behaviors and guiding them to behaviors that patients need to improve. Finally, when physicians used MI techniques, patients left the encounter more motivated to change and felt the physician was more empathic; this is the main purpose of MI. These findings together show the importance and ease of physicians learning how to counsel using MI techniques. To change patient behaviors, including physicians as one of the agents of change is important. Teaching physicians to use MI techniques might help promote behavior change.

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Figure 1.
Study Flowchart

Figure 2.
CONSORT Diagram

Table 1

Physician and Patient Characteristics

Characteristic ^{a,b}	Physician Characteristics				Patient Characteristics*			
	Overall (n=46)		Interv (n=22)		Control (n=24)		Baseline Phase (46 physicians)	
	Overall (n=46)	Interv (n=22)	Control (n=24)	Overall (n=176)	Interv (n=102)	Control (n=100)	Interv (n=77)	Control (n=72)
Age (M, SD)	40.8 (8.6)	38.9 (8.5)	42.5 (8.7)	14.6 (1.9)	14.5 (2.0)	14.9 (2.0)	14.6 (1.9)	14.6 (2.0)
BMI/BMI percentile	23.9 (3.9)	23.7 (4.2)	24.1 (3.7)	94.4 (4.0)	95.6 (3.7)	94.7 (4.1)	95.4 (3.8)	94.6 (4.0)
White race (%)	91	91	92	39	32	44	32	32
Female (%)	65	68	63	56	58	61	61	49
Years since med school (M, SD)	11.7 (8.9)	9.3 (8.5)	13.8 (8.9)					
Specialty pediatrics (%)	83	95	71					
Prior MI training (%)	24	23	25					
Mother high school and above education (%)				76	80	79	70	79
In school (%)				97	98	96	99	99
Housing (%)								
Bought house				64	64	66	64	77
Rented house				16	24	14	16	11
Apartment				12	9	14	15	4
Public housing				2	2	1	0	3
Other				5	1	4	5	4
Trying to lose weight (%)				75	87	82	78	82
Motivated to lose weight ³ (%)				28	38	33	31	38
Confidence to lose weight ³ (%)				38	43	41	36	39
Comfort discussing weight ³ (%)				43	53	54	57	56

^aPhysician missing data: 5 missing age^{*}Different set of patients in each Phase; 46 physicians randomized; 1 physician had no eligible patients in Intervention Phase; 7 physicians had no eligible patients in Summary Report Phase.

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^q
Patient missing data: 3 missing race (1 Baseline, 2 Intervention), 31 missing mother's education (11 Baseline, 20 Summary Report), 18 missing housing (5 Baseline, 8 Intervention, 5 Summary Report), 1 missing trying to lose weight (Intervention), 2 missing comfort discussing weight (Baseline).
^z
Proportion answer "very much" on a 5-point Likert scale measure (5=very much, 1=not at all).

Table 2Effect of Intervention on MI. Results of Multilevel LMM for MI^a

MI Construct	Baseline Phase N=176 <i>Estimated Mean, 95%CI</i>	Intervention Phase N=202			Summary Report Phase N=149		
		<i>Interven Estimated Mean</i>	<i>Control Estimated Mean</i>	<i>Mean Difference Between Arms (95% CI; p-value)</i>	<i>Interven Estimated Mean</i>	<i>Control Estimated Mean</i>	<i>Mean Difference Between Arms (95% CI; p-value)</i>
Global Scores							
MI Spirit	2.1 [1.9,2.3]	2.2	1.8	0.4 [0.1,0.7]; 0.02	2.6	1.9	0.7[0.4,1.1];0.0002
MIIC %	62 [56,69]	56	62	-6[-18,1];0.30	52	64	-12[-25,1];0.06
Empathy	2.5[2.3,2.6]	2.4	1.9	0.5[0.1,0.8];0.02	2.7	2.0	0.7[0.3,1.1];0.0006
Counts							
Open Questions	1.6[1.2,2.0]	3.1	1.6	1.5[0.7,2.3];0.0003	1.9	0.9	1.0[0.1,1.9];0.02
MI consistent	1.6[1.0,2.1]	2.6	2.4	0.3[-0.8,1.3];0.63	4.0	2.8	1.2[0.0,2.3];0.04
MI inconsistent	3.1[2.4,3.7]	3.3	3.5	-0.2,-1.5,1.0;0.73	4.5	4.9	-0.4[-1.8,1.0];0.58

^aMIIC% is missing for 52 subjects for encounters where no MI consistent or inconsistent communications occurred (22 Baseline; 24 Intervention Phase; 6 Summary Report Phase).

Table 3

Results of Multilevel LMM for MI constructs associations with Psychosocial Behaviors^{a,b}

	MI Spirit <i>Estimated Mean</i> (95% CI; <i>p-value</i>)	MIIC% <i>Estimated Mean</i> (95% CI; <i>p-value</i>)	Empathy <i>Estimated Mean</i> (95% CI; <i>p-value</i>)	Open questions <i>Estimated Mean</i> (95% CI; <i>p-value</i>)	MI Consistent <i>Estimated Mean</i> (95% CI; <i>p-value</i>)
Want Lose Weight					
Post-Visit	0.0[-0.1,0.1];0.69	0.1[-0.2,0.4];0.42	0.1[-0.0,0.2];0.10	0.0[-0.0,0.1];0.05	0.0[-0.0,0.0];0.30
Confident Lose Weight					
Post-Visit	0.0[-0.0,0.1];0.42	0.1[-0.2,0.3];0.49	0.0[-0.1,0.1];0.87	-0.0[-0.0,0.0];0.85	0.0[-0.0,0.0];0.98
Want Improve Diet					
Post-Visit	0.1[-0.0,0.2];0.11	0.2[-0.1,0.5];0.13	0.1[0.0,0.2];0.03	0.0[-0.0,0.1];0.06	0.0[-0.0,0.1];0.09
Confident Improve Diet					
Post-Visit	0.0[-0.0,0.1];0.35	0.1[-0.2,0.3];0.44	0.0[-0.0,0.1];0.40	-0.0[-0.0,0.0];0.75	-0.0[-0.0,0.0];0.63
Want PA					
Post-Visit	0.1[0.0,0.2];0.04	0.1[-0.2,0.4];0.48	0.1[0.0,0.2];0.03	0.0[-0.0,0.0];0.90	0.0[-0.0,0.1];0.16
Confident PA					
Post-Visit	0.0[-0.1,0.1];0.82	0.1[-0.1,0.4];0.36	0.0[-0.1,0.1];0.95	-0.0[-0.1,0.0];0.07	0.0[-0.0,0.0];0.35
Perceived Empathy					
Post-Visit	0.2[-0.3,0.7];0.37	-1.5[-2.8,-0.1];0.04	0.0[-0.4,0.5];0.83	0.1[-0.1,0.3];0.50	0.2[0.0,0.3];0.02
Autonomy Support					
Post-Visit	0.6[-0.2,1.4];0.13	-1.5[-4.2,1.3];0.30	0.2[-0.5,1.0];0.57	0.1[-0.2,0.5];0.46	0.3[0.0,0.6];0.03

^a Covariates included (Tx arm, patient covariates (baseline psychosocial behavior for motivation and confidence behaviors, age, gender, race, mother's education) and physician covariates (race, gender, specialty, years since medical school, BMI and prior MI training status) (n=527 physician/adolescent audio-recorded conversations

^b Missing data: 1 missing baseline Want Diet; n=377 for Autonomy support as was not collected in Baseline Phase, in addition 1 missing Autonomy Support; 52 patients dropped in MIIC% analysis due to missing MIIC%; 34 patients dropped due to missing covariates.