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Weight's up? Predictors of weight-related communication during primary care visits with overweight adolescents

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Abstract

Objective—Physicians' use of Motivational Interviewing (MI) techniques when discussing weight with adolescent patients is unknown.

Methods—We coded audio-recorded encounters between 49 primary care physicians and 180 overweight adolescent patients. During weight discussions, we used the MITI 3.0 to assess: Empathy, MI Spirit, open-ended questions, reflections, MI consistent behaviors (e.g., praising,) and MI inconsistent behaviors (e.g., confronting). We examined associations of patient and physician characteristics with 1) MI techniques, 2) time discussing weight, and 3) encounter time.

Results—Physicians used more MI consistent techniques with female patients (p=0.06) and with heavier patients (p=0.02). Physicians with prior MI training also used more MI consistent techniques (p=0.04) and asked more open-ended questions (p=0.05). Pediatricians had a higher MI Spirit score than family physicians (p=0.03). Older patient age was associated with physicians

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I confirm all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story.

spending *less* time discussing weight-related topics (p=0.04) and higher BMI percentile was associated with physicians spending more time discussing weight-related topics (p=0.01). Increased use of MI inconsistent techniques was associated with longer encounters (p=0.02).

Conclusion—Physicians' weight discussions vary based on adolescent and physician characteristics. Importantly, not using MI lengthened encounter time.

Practice implications—Physicians might consider using MI techniques more and attempt to use these equally with all adolescents.

1. Introduction

Patient-physician communication directly influences adult patient satisfaction and adherence to physician recommendations.[1-5] Physician counseling also can influence adult patients to change weight-related behaviors, such as physical activity and diet.[6, 7] Evidence suggest some counseling techniques effectively help patients change, namely Motivational Interviewing (MI). MI is a style physicians could use to enhance patient motivation and confidence to attain a healthy weight, improve nutrition, and increase physical activity.[8] MI, a patient-centered and guiding style, helps patients resolve ambivalence or resistance about behavior change. The MI approach includes: 1) reflecting back to patients what was heard; 2) praising patients for behavior changes (even small changes); 3) allowing patients to set their own goals; 4) asking permission before giving advice; 5) accepting patient's motivation or lack thereof to change (i.e., not confronting or judging); and 6) working collaboratively while supporting patient autonomy as the patient attempts to make changes. [9, 10]

MI may help even more when addressing a complex issue such as weight. Many overweight patients are ambivalent about changing weight-related behaviors, due in part to low self-efficacy and lack of skills. Using MI helps translate patient ambivalence into increased motivation through exploring the benefits and costs of change, which amplifies patients' state of ambivalence and motivates them to resolve that ambivalence. The MI approach has been successfully applied to help adult patients lose weight[11-15] and might be relevant to other types of patients in primary care settings. When physicians counsel about weight in an MI consistent way, such as collaborating with the patient and allowing patients to set their own goals and asking permission before giving advice, adult patients are more likely to lose weight.[16-18] This work also indicates that physician's use of MI techniques does not increase the overall time of the visit.

MI might be especially effective with adolescent patients because one central tenet of MI is acceptance that includes supporting patients' autonomy in making changes. Thus, when patients do not want to change, physicians acknowledge patients' lack of motivation without being judgmental. This does not mean condoning unhealthful behaviors; however, it acknowledges and emphasizes that the power to change lies with the patients themselves, not the clinician. Persuasion and confrontation, particularly with adolescents, tend to have the opposite effect than desired, causing patients to become even more set in their behaviors and promoting “sustain talk” (e.g., “I don't want to lose weight.” rather than “change talk” (e.g., “I think I can cut back on how much Koolaid I drink.”).[19]

However, to date no one has examined primary care physicians' use of MI when discussing weight among overweight and obese adolescent patients and whether using MI affects encounter time. Knowing what factors are associated with increased or decreased physician use of MI techniques and how it affects time spent may help when teaching physicians how to incorporate MI techniques when counseling adolescent patients to attain a healthy weight.

Epstein[20] proposed a model of factors, including characteristics of both patients and physicians, that could explain physician use of MI techniques. Patient factors include: race, age, gender, BMI, socioeconomic status, motivation, and comfort discussing weight with physicians. Physician factors include: race, age, gender, BMI, specialty, prior MI training, confidence to counsel about weight, barriers, and comfort discussing weight with patients.

The aims of these analyses are first to 1) examine the length of time spent on weight-related discussion, then 2) describe physicians' use of MI techniques during weight-related discussions with adolescents, 3) determine which patient and physician factors may be related to use of MI in these discussions, and 4) explore the association of MI techniques with the total length of the encounter.

2. Methods

2.1. Recruitment: Physicians

Teen CHAT (Communicating Health: Analyzing Talk) was approved by Duke University Medical Center IRB. Briefly, we recruited 49 primary care physicians from 3 academic and 8 community-based practices. Physicians were told the study was about how they address weight with adolescent patients. Of the 183 encounters audio recorded, we include those encounters between physicians and 180 of their overweight and obese adolescent patients in which physicians discussed weight with the patient. Participating physicians gave written consent and gave study staff permission to send patients letters with their electronic signature, and completed baseline questionnaire that included demographic questions and questions about their beliefs about counseling about weight, nutrition, and physical activity (embedded among questions about smoking and alcohol to not make the focus on weight obvious). When audio recording encounters for physicians, we attempted to mask which encounters were actually being recorded by having the recorder case in every exam room in part to desensitize the physician to seeing it and also in hopes that they would not notice when an actual recorder was inside.

2.2. Recruitment: Patients

By reviewing patient electronic records, we identified adolescent patients who had a BMI z-score percentile of >= 85^{th} who had an annual check, physical exam, or well being visit appointment scheduled with one of the study physicians in the coming three weeks. We sent these patients and their parents a letter introducing the study, including a toll-free number to refuse contact. The letter stated the study was about how physicians addressed preventive health with adolescents because we wanted families to be blinded to the focus on weight. One week later, we called parents of adolescents to review eligibility and obtain verbal consent and request permission to contact the adolescent. Once we had obtained verbal assent from the adolescent, we administered a baseline questionnaire assessing demographic

factors and psychosocial factors related to attaining a healthy weight, nutrition, physical activity, embedded in questions about smoking, drug use, and sexual activity. Eligible patients were 12-18 years of age, English speaking, cognitively competent, not pregnant, and had an age-gender specific BMI percentile ≥ 85th. We first assessed self-reported BMI at the telephone screener and verified height and weight at the encounter to determine eligibility.

2.3. Audio-recording coding measures

2.3.1. Weight-related content—Two coders were trained to identify all occurrences and time elapse for six weight-related topics raised either by physicians, parents, and/or adolescents: nutrition, physical activity, sleep, breakfast, fast food and screen time. Training consisted of 30 hours over a three-week period. Once coders obtained a high level of agreement through training, they then coded all conversations. Twenty percent of the conversations were double coded for reliability. Cohen's Kappa was used to assess reliability. Any disagreements were discussed and final decisions made by consensus. Reliabilities for all 6 weight-related behaviors: fast food (Cohen's Kappa = 1.0, CI = 1.0); breakfast (Cohen's Kappa = .79, CI = .95, .62); sleep (Cohen's Kappa = .70, CI = .83, .55); physical Activity (Cohen's Kappa = .62, CI = .79, .45); diet (Cohen's Kappa = .58, CI = . 35, .80); and screen time (Cohen's Kappa = .56, CI = .83, .23).

2.3.2. Time spent with physician and time spent discussing weight-related topics—Additionally, we calculated the total time patients were in the room with their physician and then the time during the encounter spent discussing weight-related behaviors (nutrition, physical activity, sleep, breakfast, fast food and screen time).

2.3.3. Motivational Interviewing—Two independent coders were trained for 30 hours to use the Motivational Interview Treatment Integrity scale (MITI 3.0)[21] to assess use of MI techniques during weight-related segments. These MI techniques represent both general patient-centered techniques, such as expressing empathy and practicing reflective listening, and also include skills that used specifically to address patient ambivalence and deal with patient resistance. The coders double-coded 20% of the encounters to assess inter-rater reliability. They assessed global ratings of “Empathy” (1-5 scale, ICC= .53, CI = .35, .77) and “MI Spirit,” (1-5 scale, ICC= .73, CI = .56, .91), which included three components: *evocation* (eliciting patients' own reasons for change), *collaboration* (acting as partners) and *autonomy* (conveying that change comes only from patients).

Coders also counted closed questions (“yes”/ “no” questions, Cohen's Kappa for inter-rater reliability = .55, CI = .50, .60; actual example: *MD: Do you eat breakfast?*), open questions (requires more than “yes”/ “no” responses, Cohen's Kappa = .52, CI = .40, .65; actual example: *MD: What is keeping you from exercising?*), simple reflections (conveys understanding, but adds no meaning to what the patient said), Kappa = .85, CI = .78, .91; actual example: *MD: You like your video games*.), complex reflections (conveys understanding and adds substantial meaning, Cohen's Kappa = .67, CI = .01, 1.0; actual example: *MD: It sounds like you want to eat what your friends are eating.*), MI consistent behaviors (asking permission, affirming, providing supportive statements, and emphasizing

control, Kappa = .60, CI = .51, .69; actual example: *MD: You've done a great job not drinking sweet tea!)* and MI inconsistent behaviors (advising without permission, confronting, and directing, Kappa = .62, CI = .54, .70; actual example: *MD: If you keep eating French fries for lunch, you're not going to get your weight down.)*.

2.4. Primary outcome measure and covariates

The outcomes for MI techniques were: 1) Empathy, 2) MI Spirit, 3) Open questions, 4) MI consistent behaviors, and 5) MI inconsistent behaviors. We did not model simple or complex reflections due to low prevalence. The time outcomes were time spent with physician and time spent discussing weight related topics.

2.4.1. Patient-level predictors (7 included)—We included patient demographics gender, age, race (White vs. Non-white), BMI percentile, and mother's education (high school or less vs. more than high school). We also assessed whether patients were motivated to lose weight (yes/no) and whether they were comfortable discussing weight with their physician (yes/no).

2.4.2. Physician-level predictors (8 included)—Physician demographic variables were gender, race (White/Asian vs. African American), and physician BMI. We included years since medical school graduation, physician specialty (pediatrician vs. family physician), physician self-efficacy to counsel about weight assessed with 5 items (e.g., “With your adolescent patients, how confident are you that you can ask about weight?” 1=Not at all confident to 5=Extremely confident; $\alpha = .81$), barriers to counsel about weight assessed with 6 items (e.g., “How likely is it that your adolescent patients will become upset when you counsel them to attain a healthy weight?” 1=Not at all likely to 5= Extremely likely; $\alpha = .75$), and prior MI training (yes/no).

2.5. Analyses

Analyses were performed using SAS software version 9.2 (SAS Institute, Inc.). Descriptive statistics were used to describe the sample of patients and physicians as well as summarize time physician spent during encounter, and time spent discussing weight related behaviors, and use of MI techniques. To examine the relationship of MI techniques with physician and patient factors, we used general linear mixed models (GLM) to account for clustering of patients within physician. We fit separate models for each MI technique outcome that included 1) Empathy score, 2) MI Spirit score, 3) count of open-ended questions, 4) count of MI consistent behaviors, and 5) count of MI inconsistent behaviors and included covariates for physician and patient factors. As a sensitivity analysis, we fit generalized linear mixed models with a Poisson distribution for the MI technique outcomes that are counts. We also fit a GLM to examine the relationship of time spent discussing weight related behaviors with physician and patient factors. Separate GLMs were fit with each MI technique as a predictor to examine the association with total time of visit with physician; models were adjusted for physician and patient factors.

3. Results

3.1. Quantity and quality characteristics

Table 1 shows the demographic characteristics of the adolescents and physicians. The sample of patients was relatively diverse; most of the physicians were pediatricians, some of whom had had prior MI training. Physicians and adolescents discussed weight-related topics during most encounters. They addressed weight in 88%, nutrition in 87%, physical activity in 92%, breakfast in 27%, fast food in 16%, sleep in 32%, and screen time in 24% of encounters. All physicians addressed weight with at least one of their adolescents; 69% (n=34) of physicians addressed it with all of their patients. The mean total time of the encounters was 21.9 minutes, of which physicians and patients spent a mean of 4.3 (20%) minutes discussing weight-related topics (Table 2).

Physicians had moderate use of MI techniques (Table 2). They almost never made a reflective statement. They had adequate scores for MI Spirit (M=2.5, SD = 1.0) and Empathy (M=2.1, SD = 0.9). The mean counts for MI inconsistent behaviors were almost 2 times greater than mean counts for MI consistent behaviors.

3.2. Predictors of MI techniques

In the GLM models examining associations of patient and physician factors with MI techniques (see Table 3), pediatricians had a mean MI Spirit scores a little over a half a point higher than family physicians (p=0.03). Physicians who had prior MI training had higher mean counts of MI consistent techniques and of open questions, 1.5 (p=0.04) and 1.1 (p=0.05), respectively, compared to those with no prior training. Physicians had higher mean counts of MI consistent behaviors of 0.7 with female compared to male patients (p=0.06) and had increased mean counts of MI consistent behaviors with patients with higher BMI percentiles (p=0.02). The intraclass correlation (ICC) from these models, which represents the similarity of MI technique scores and counts among different patients who had encounters with the same physician (e.g., clustering effect), ranged from a low of 0.17 (MI inconsistent) to a high of 0.47 (MI consistent).

In the GLM model examining the association of patient and physician factors with time spent discussing weight (see Table 4), increased time discussing weight was associated with higher BMI percentiles and younger aged patients, p=0.01 and p =0.04, respectively. For each percentile increase in weight mean time spent discussing weight increased by 10.4 seconds, and for each year increase in age time spent discussing weight decreased by 15.1 seconds. The intraclass correlation (ICC) from this model of 0.23 represents the similarity of time spent discussing weight among different patients who had encounters with the same physician.

3.3. Relationship of MI techniques and time

In GLM models examining the association of MI techniques with total time spent with physician (see Table 5), higher mean MI inconsistent counts was associated with longer total visit time (p=0.02). A unit increase in MI inconsistent count was associated with an increase in mean total visit time with physician of 24.3 seconds. The ICC from this model of 0.42

represents the similarity of time spent discussing weight among different patients who had encounters with the same physician.

4. Discussion and conclusion

4.1. Discussion

We made three key observations. First, physicians might alter how they discuss weight based on adolescents' gender and BMI. Second, prior training might have made a difference in use of MI techniques. Third, we found evidence that not using MI techniques was associated with longer total encounter time. We found that time spent discussing weight was longer and that the way physicians talked about weight was better with heavier patients than with less heavy adolescent patients. Physicians' spending more time with heavier adolescents might be related to heavier patients having higher risk of obesity-related consequences. Interestingly, physicians used more MI consistent techniques (e.g., praising, asking permission before giving advice, having patients set their own goals rather than physicians setting goals for patients) with heavier patients. Perhaps with heavier patients, physicians have already tried a more directive approach and found it was not working. Thus, they were trying strategies other than lecturing and scolding. Physicians also seemed to use more MI consistent techniques with female patients, which might be due in part to female adolescents being more talkative and open than male adolescents. It also could be that physicians rely on stereotypes that female patients will be more receptive to MI technique than male patients.

Some of the physicians had prior MI training. This training translated into relatively high MI scores, especially when compared to a prior study with untrained family physicians and internists.[22] Encouragingly, this training increased their use of MI consistent techniques and open questions. It is unknown where, the extent to which and how these physicians learned MI, but it is encouraging that those who have learned it were applying it in their encounters. Many studies that show the effects of MI training provide self-reported skills data only; these data can be biased. The objective results for our report indicate that physicians can learn MI techniques and that their discussions become more MI adherent when they have learned the techniques.

Finally, although some physicians believe that using MI techniques will lengthen their encounter time, this is the second study to question this belief. In fact, when physicians used MI inconsistent techniques (e.g., giving advice without permission, confronting, setting goals for patients), their total visit encounter was *longer*. Avoiding MI inconsistent techniques might decrease total visit time without the fear of adding time by using MI consistent techniques.

These results should be viewed with some caution as it is based on an observational study design. Physicians knew the study was about weight, so the amount of time they spent on weight might have been longer than if they had not known. We did attempt to mask when we were audio recording visits; however, by having a recorder case in every exam room rather than just in the exam rooms in which we were audio recording. It also is possible that encounters when physicians did not use MI techniques were longer because they addressed

different topics than they did in encounters in which they used MI techniques. Two notable strengths of the study are that this sample is based on the largest dataset of overweight adolescent audio-recorded encounters to date, and the study sample is racially diverse.

4.2. Conclusion

Our results show promise for incorporating MI techniques into primary care visits with adolescents. Physicians who have learned the techniques talk differently than those who have not learned them. Not using the recommended techniques might actually increase encounter time.

4.3. Practice implications

It seems prudent to provide more opportunities for physicians to learn MI techniques and use them during encounters with all adolescent patients.

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Table 1

Sample characteristics (n = 180).

Patient characteristics (n=178)	**M (SD) or %**
Race (missing 1)	
White	40%
Non-white	59%
Male	45%
Age	14.5 (1.9)
Mom's education (missing=12)	
High School Education or Less	22%
Post High School Education	71%
BMI Percentile	94.5 (4.0)
Patient very motivated to lose weight vs. somewhat to not at all	28%
Motivation to lose weight[1] (scale 1-5)	3.4 (1.4)
Patient very confident can lose weight vs. somewhat to not at all confident	38%
Self-efficacy to lose weight[2] (scale 1-5) −	4.0 (1.1)
Patient very comfortable discussing weight with physician vs. somewhat to not at all	42%
Comfort discussing weight with physician[3] (scale 1-5) − (missing=2)	3.8 (1.2)
Physician characteristics (n=49)	
Race	
White/Asian	90 %
African American	10%
Male	35%
BMI (missing=1)	23.2 (3.9)
Years since med school graduation	22.1 (8.0)
Specialty	
Pediatrics	82%
Family Medicine	18%
Self-efficacy to address weight	3.7 (0.8)
Physician very comfortable discussing weight with patient vs. somewhat to not at all	33%
Comfort discussing weight with patient[3]	4.0 (1.0)
Barriers to discussing weight with patients	2.8 (0.7)

[1] Motivation to lose weight/address weight assessed on a 5-point scale (1=Not at all to 5 = Very much)

[2] Self-efficacy to lose weight/address weight assessed on a 5-point scale (1=Not at all confident to 5 = Very confident)

[3] Comfort discussing weight assessed on a 5-point scale (1=Not at all comfortable to 5 = Very comfortable)

[4] Barriers assess on a 5-point scale (1=Strongly disagree to 5 = Strongly agree)

Table 2

Summary descriptives of quantity and quality of weight-related discussions.

	M (SD);	Median (25^{th},75^{th})
Quantity: Time in minutes		
Total visit time	21.9 (9.0)	20.9 (14.7, 27.0)
Total time discussing weight related topics	4.3 (3.2)	3.6 (1.9, 6.3)
Time discussing individual weight related topics		
Physical activity	1.3 (1.3)	1.0 (0.3, 1.8)
Breakfast	0.1 (0.4)	0.0 (0.0, 0.0)
Nutrition	1.8 (1.9)	1.3 (0.3, 2.6)
Fast Food	0.1 (0.7)	0.0 (0.0,0.0)
Screen time	0.2 (0.5)	0.0 (0.0,0.0)
Sleep	0.2 (0.4)	0.0 (0.0, 0.1)
Quality: MI skill		
Empathy – scale (1-5)	2.5 (1.0)	3.0 (2.0, 3.0)
MI Spirit – scale (1-5)	2.1 (0.9)	2.0 (1.0, 3.0)
Open questions count	1.6 (2.0)	1.0 (0.0, 2.0)
Simple reflections count	0.0 (0.4)	0.0 (0.0, 0.0)
MI consistent behaviors count	1.6 (2.4)	1.0 (0.0, 2.0)
MI inconsistent behaviors count	3.1 (3.7)	2.0 (0.0, 4.5)

Table 3

Results from mixed models examining association of patient and physician factors with each of the MI outcomes separately (n=164; 14 observations deleted due to missing covariates).

	MI outcomes									
	Empathy		MI Spirit		Open Questions		MI Consistent		MI Inconsistent	
Patient factor	**Estimate [95% CI]**	**p-value**	**Estimate [95% CI]**	**p-value**	**Estimate [95% CI]**	**p-value**	**Estimate [95% CI]**	**p-value**	**Estimate [95% CI]**	**p-value**
Female Gender	-0.1[-0.4,0.3]	0.67	-0.1[-0.4, 0.2]	0.57	0.3[0.4,1.0]	0.35	0.7[-0.0,1.5]	0.06	0.3[-1.2,1.7]	0.71
Non-White race	-0.2[-0.6,0.1]	0.14	-0.1[-0.4, 0.2]	0.48	0.3[-0.3,0.9]	0.32	-0.3[-1.0,0.3]	0.33	0.8[-0.4,2.0]	0.20
Mother Post High School	0.1[-0.3, 0.5]	0.56	0.2[-0.1, 0.5]	0.25	0.6[-0.1, 1.3]	0.08	0.5[-0.2, 1.3]	0.16	-1.3[-2.8, 0.1]	0.07
Age	-0.0[-0.1, 0.1]	0.69	0.0 [-0.1, 0.1]	0.83	-0.1[-0.2,0.1]	0.39	0.1[-0.1, 0.3]	0.20	0.0[-0.3, 0.3]	0.83
BMI percentile	0.0[-0.0, 0.1]	0.47	-0.0[-0.1, 0.0]	0.49	0.1[-0.0, 0.1]	0.10	**0.1[0.0, 0.2]**	**0.02**	0.1[-0.1, 0.2]	0.54
Motivation to lose wt	0.0[-0.1, 0.2]	0.49	0.0[-0.1, 0.1]	0.49	0.0[-0.2, 0.3]	0.71	-0.1[-0.3, 0.2]	0.50	0.1[-0.4, 0.6]	0.71
Comfort discussing wt	-0.0[-0.2, 0.1]	0.78	0.1[-0.0, 0.2]	0.23	0.0[-0.2, 0.3]	0.72	0.1[-0.2, 0.4]	0.61	-0.1[-0.6, 0.4]	0.70
Physician factor										
Female Gender	0.3[-0.2, 0.8]	0.20	0.2[-0.3, 0.6]	0.39	-0.4[-1.4, 0.6]	0.41	-0.1[-1.4, 1.2]	0.92	**1.8[-0.0, 3.6]**	**0.05**
Family Medicine	-0.4[-1.0, 0.1]	0.10	**-0.6[-1.1,-0.1]**	**0.03**	0.0[-1.1, 1.1]	0.99	-0.8[-2.2, 0.7]	0.29	0.1[-1.9, 2.1]	0.93
Prior MI training	0.2[-0.3, 0.7]	0.41	0.2[-0.3, 0.6]	0.52	**1.1[0.0, 2.2]**	**0.05**	**1.5[0.1, 2.9]**	**0.04**	0.7[-1.2, 2.5]	0.49
African-American race	0.1[-0.7, 0.8]	0.88	0.2[-0.5, 0.9]	0.62	1.1[-0.5, 2.6]	0.17	0.5[-1.5, 2.5]	0.64	0.3[-2.4, 3.1]	0.82
Years since med school	-0.0[-0.0, 0.0]	0.16	-0.0[-0.0, 0.0]	0.39	**-0.1[-0.1, -0.0]**	**0.04**	-0.0[-0.1, 0.0]	0.55	-0.1[-0.1, 0.0]	0.23
BMI	-0.0[-0.1, 0.0]	0.62	-0.0[-0.1, 0.0]	0.17	-0.1[-0.2, 0.1]	0.28	-0.1[-0.3, 0.1]	0.23	0.2[-0.1, 0.4]	0.18
Efficacy discussing wt	0.1[-0.2, 0.3]	0.53	0.1[-0.1, 0.3]	0.42	0.2[-0.4, 0.7]	0.59	0.5[-0.3, 1.2]	0.22	0.3[-0.7, 1.2]	0.60
Barriers discussing wt	0.1[-0.2, 0.4]	0.59	0.1[-0.2, 0.4]	0.40	-0.1[-0.7, 0.5]	0.68	0.1[-0.7, 0.9]	0.76	-0.1[-1.2, 1.0]	0.88

Table 4

Results from mixed model examining association of patient and physician factors with time spent discussing weight (n=16; 16 observations deleted due to missing covariates).

Patient factor	**Estimate [95% CI]**	**p-value**
Female Gender	9.4[-61.4,80.2]	0.79
Non-White race	-5.5[-65.0,54.0]	0.85
Mom Post High School	56.3[-13.6,126.3]	0.11
Age	**-15.1[-29.9,-0.4]**	**0.04**
BMI percentile	**10.4[2.3,18.5]**	**0.01**
Motivation to lose wt	5.5[-18.0,29.1]	0.64
Comfort discussing wt	-11.0[-37.2,15.1]	0.41
Physician factor		
Female Gender	22.4[-70.7,115.6]	0.63
Family Medicine	8.7[-94.0,111.4]	0.87
Prior MITI training	16.4[-82.1,115.0]	0.74
African-American race	82.3[-59.9,224.6]	0.25
Years since med school	-3.7[-8.5,1.0]	0.12
BMI	-4.2[-16.0,7.7]	0.49
Efficacy discussing wt	30.7[-20.1,81.6]	0.23
Barriers discussing wt	44.1[-12.2,100.5]	0.12

Table 5

Results from mixed models examining association of each MI outcome separately with total time of visit with physician; each model was adjusted for patient and physician factors (n=165; 15 observations deleted due to missing covariates).

MI predictor	Estimate [95% CI]	p-value
Empathy score	-4.3[-86.9,78.3]	0.92
MI Spirit score	2.7[-92.2,97.5]	0.96
Open questions count	19.2[-24.9,63.3]	0.39
MI consistent count	4.5[-34.7,43.7]	0.82
MI inconsistent count	**24.3[3.5,45.3]**	**0.02**