

Brief Interventions and Motivational Interviewing With Children, Adolescents, and Their Parents in Pediatric Health Care Settings

A Review

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There is increasing demand for physicians in pediatric settings to address not only the physical but also the psychosocial health of their child and adolescent patients. Brief interventions (BIs), and in particular Motivational interviewing (MI), offer an efficient means of targeting behavioral, developmental, and social problems within the context of pediatric practice. This review addresses the patient-centered care foundation of and empirical support for brief pediatric interventions, including educational and media-based interventions, MI-based prevention and intervention with health risk behaviors, procedural pain control, and adherence to treatment recommendations. In addition, developmental considerations and future directions for BI research in pediatric practice are summarized.

Physicians in pediatric health care settings address complex challenges in providing comprehensive care to children, adolescents, and their parents. Toward this end, BIs have been used in pediatric settings to aid in the prevention, early detection, and brief treatment of behavioral, developmental, and social problems associated with health care concerns to serve children and their families more effectively. Brief interventions encompass a diverse range of theoretically based approaches, intervention targets, and delivery methods to address such issues as educational and media-based interventions, MI-based prevention and intervention with health risk behaviors, procedural pain control, and adherence to health care recommendations. One particularly efficacious form of BI used extensively with health risk behaviors is MI.¹ Motivational interviewing uses a patient-centered and directive approach that addresses the ambivalence and discrepancies between a person's current values and behaviors and their future goals. Motivational interviewing has primarily been used with adults and adolescents, whereas BIs have primarily targeted parents to address pediatric health

concerns. Collectively, these interventions have been shown to improve pediatric health outcomes ranging from adherence² to functional status.³

PATIENT-CENTERED CARE

Common to all forms of BI, a patient-centered interaction style encourages and facilitates discussion of psychosocial issues that may both directly and indirectly influence health-related outcomes. In particular, patient-centered communication (ie, communication characterized by partnership building, empathy, interpersonal sensitivity, and information giving) has been associated with increased parent satisfaction, adherence to pediatric treatment recommendations, and disclosure of psychosocial problems.⁴ In addition, satisfaction with health care has been linked to decreased utilization of health care services⁵ and decreased malpractice litigation.⁶ Furthermore, patient-centered care has also been associated with a more accurate recall of diagnosis and medical advice,⁷ increased symptom resolution, and improved pain control.⁸

From a humanistic perspective, a client-centered or patient-centered orientation requires therapists to integrate 3 elements into their work to effect positive thera-

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Table 1. Four Underlying Principles of Motivational Interviewing*

Underlying Principles	Exemplar Statements
Express empathy	Acceptance facilitates change. Skillful reflective listening is fundamental. Ambivalence is normal.
Develop discrepancy	The client rather than the counselor should present the arguments for change. Change is motivated by a perceived discrepancy between present behavior and important goals or values.
Roll with resistance	Avoid arguing for change. Resistance is not directly opposed. New perspectives are invited but not imposed. The client is a primary source in finding answers and solutions.
Support self-efficacy	Resistance is a signal to respond differently. A person's belief in the possibility of change is an important motivator. The client, not the counselor, is responsible for choosing and carrying out change. The counselor's own belief in the person's ability to change becomes a self-fulfilling prophecy.

*Adapted from Miller and Rollnick.¹

peutic effects: empathy, unconditional positive regard, and genuineness.⁹ Within a collaborative relationship between patient and health care professional, a professional can solicit a patient's ideas, thoughts, and perspectives on adhering to treatment recommendations and can explore the likely outcomes of related decisions. Moreover, patient-centered communication fosters rapport with both the child or adolescent and their parents. In some settings, particularly those with younger children, the development of a therapeutic alliance with the child's parents may be most salient to treatment adherence because parents are responsible for managing younger children's health care services and adherence.¹⁰ Regardless of the child's age or functional status, developing rapport with parents can yield beneficial results for the entire family, such as increasing family involvement in the prevention or treatment process.^{11,12} Furthermore, children who actively participate in the health care visit demonstrate greater visit satisfaction and enhanced recall of prescribed regimens.¹³

MI-SPECIFIC ELEMENTS

Motivational interviewing, posited by its creators as "a way of being with people,"¹ is a client-centered, collaborative, and directive treatment approach that has proven efficacious in several behavioral health fields.^{14,15} In contrast to communication styles that elicit patient resistance, MI enhances a patient's intrinsic motivation to change by exploring their perspective and ambivalence. Rather than a set of techniques or a way of coercing treatment adherence, MI explores how a person feels about the status quo and about change through an exploration of the person's values, interests, and concerns. In contrast to more traditional medical approaches that rely on

confrontation, education, and authority, MI is centered on support of the patient's autonomy, collaboration, and the evocation of the patient's ideas regarding change. Through the validation and support of a patient's belief that it would be beneficial and value-congruent to follow recommended treatment protocols, the directive approach of MI supports a patient's inherent and natural potential to move toward change.¹

The transtheoretical model of intentional behavior change provides a framework for understanding the stages of behavior change.¹⁶ In this model, it is posited that changers progress through 5 stages: precontemplation (not yet considering change), contemplation (considering change), preparation (planning and committing to change), action (making the behavior change), and maintenance (maintaining and sustaining long-term change).¹⁷ Motivational interviewing requires that health care professionals understand their patient's stage of change to target their intervention effectively.^{18,19} Rollnick and Miller¹⁵ posit that moving beyond a patient's readiness to change is likely to increase the client's resistance to treatment. Thus, with overt risk behaviors like smoking, it may be tempting for health care professionals to highlight the likely harms of certain behaviors (eg, smoking is the most preventable source of morbidity and mortality for adolescents; it is a risk factor for cancer and heart disease). However, lecturing adolescents who are not yet ready to quit about the harm they are likely to incur by smoking is unlikely to be effective in reducing the frequency of the behavior and may even produce iatrogenic effects.¹⁸ In contrast, MI includes accepting a patient where he or she is in the process of change as well as encouraging any proactive movement toward healthier behaviors.

The foundation of MI requires that health care professionals follow 4 principles: genuine expression of empathy, development of discrepancy between the patient's current behavior and his or her treatment goal, rolling with the client's resistance, and support of the patient's self-efficacy (**Table 1**).¹ Operationally, MI relies on the health care professional's use of open questions; reflective listening; affirmation, such as through compliments or statements of understanding; provision of summary statements to unify and reinforce discussed material; and eliciting change talk. These techniques support the principles through conveying acceptance of the patient, understanding of the patient's ambivalence, collaboration with the patient in reflecting and reviewing available options, and ultimate support for the patient's autonomy to select and enact change (**Table 2**).¹

In contrast to closed questions, which generally require a simple yes/no or numeric answer, open questions do not direct a patient to respond in a particular manner. Instead, they enable a patient to think through and provide richer, fuller responses. Reflective listening is a method both of resonating with a patient and of clarifying the meaning of his or her statements. To demonstrate support of a patient's efforts, a health care professional may use affirmations. Summary statements include integrating the full picture of the pros and cons of a patient's behavior, followed by checking in with patients to make sure that they feel you have reflected their situation accurately. When practicing MI, it is important to

Table 2. Primary Techniques of Motivational Interviewing

Techniques	Exemplar Statements
Open-ended questions	How does smoking fit with your role as lead singer in the chorus?
vs	How does smoking fit with your dreams of becoming a pro basketball player?
Closed-ended questions	How do you feel about smoking?
	How many cigarettes did you smoke today?
	Did you take your medication?
Reflective listening	You're tired of being different from the other kids.
	It is embarrassing not being able to eat the same things as your friends.
	You have already done this for 10 years; having to stick with this diet for longer doesn't seem fair.
Affirmations	Coming in every week for treatment is really tough. You are handling a difficult treatment protocol really well.
	I'm impressed with how mature you are.
	Absolutely! It is really tough to do all that you need to do when you're not feeling well. And sticking to your diet makes it easier for you to do your chores, complete your homework, and hang out with your friends.
Summary statements	It's important for you to fit in with your friends. Sometimes adhering to your chest physiotherapy regimen makes that tough.
	On the other hand, when you don't adhere to your therapy, you notice that you don't feel as well. And when you don't feel as well, it's even harder for you to keep up with the energy of your friends. Is there anything that you want to add that I may have missed?
Evocation of change talk	I will quit smoking.
	I will exercise more.
vs	I wish I could quit smoking.
	I wish I could lose weight.
Importance and ability rulers	To a child with diabetes mellitus who indicates that the importance of checking their glucose is a "3":
	Why are you at a "3" and not a "1"?
	What would be necessary for you to feel like you could get from a "3" to a "5"?

have patients identify their own reasons, ability, and need for change (also known as "change talk").

Ambivalence frequently plays a key role in psychological difficulties. Rather than interpreting ambivalence as pathological or an indication of someone's moral or behavioral weakness, MI construes ambivalence as a resolvable issue that, once resolved, will move a person toward change. Another set of MI techniques often used to explore ambivalence includes the importance and ability rulers. Using these rulers can help patients express their subjective evaluation of the importance of changing the target behavior as well as how able they feel to enact the change. The exploration of why a patient attributes a certain level of importance to a behavior, as opposed to less importance, helps the health care professional and patient have a more concrete understanding of the patient's ratings of importance and ability for change. For example, patients may describe the importance of medication adherence and a health care professional can ask them why they are at that certain level as opposed to a lower number. This can enhance a person's feelings of self-efficacy. In addition, exploration and elaboration of the pros and cons of the ambivalent behavior, brainstorming about the extremes of the consequences of changing and not changing the behavior at hand, and contemplation of goals and values are strategies that can be used to evoke change talk.¹

The efficacy and brevity of MI is ideal for health care settings.¹⁹ Contrary to more prescriptive medical interventions, MI incorporates reasonable and attainable treatment goals proposed by the client and clarified in collaboration with the health care professional. The health care professional is able to provide information about the consequences of completing or electing not to complete treatment goals. With the client, the role of the health care professional is to examine and discuss any apparent discrepancies between treatment goals and current

behavior.¹⁰ In contrast to more prescribed treatment regimens, MI conveys information to the client in a neutral and empathic manner,²⁰ and resistance is perceived as a normal response to a perceived threat (such as confrontation or coercion).²¹

DEVELOPMENTAL CONSIDERATIONS

Although providing children with accurate and developmentally appropriate explanations of their health condition and treatment recommendations is an essential component of health-related interventions, there has been limited research examining how children of different ages understand and conceptualize health and illness. The extant empirical research suggests that pediatricians and parents both tend to overestimate the ability of younger children and underestimate the ability of older children to understand illness-related concepts.^{22,23} Current theories posit that the way in which children conceptualize illness changes over the course of development in accordance with their developing theories of biology.²⁴ In short, children use the knowledge they have about biology to develop their individualized biological theories (about the nature of infection, for example), which in turn inform their understanding of health and illness.

In this way, using a developmental framework is essential in providing appropriate health care interventions to children and adolescents. Because developmental competencies evolve and unfold over the course of development in relation to other competencies and contexts, no intervention is likely to be effective from early childhood throughout adolescence. Specifically, appropriate intervention in health care settings requires an understanding of children's causal reasoning, language ability, and self-understanding, as well as their environmental context.²⁵

Causal reasoning capacities have direct implications for the child's ability to benefit from interventions. Because younger children have a limited ability to understand health-related issues in relation to internal rather than external sources, interventions with younger children need to be concrete and focused on behavioral recommendations for the child. Health care professionals cannot assume that the recommendations will generalize but rather must convey specific behavioral expectations that include examples across settings and situations. More broadly, children's ability to consider and consolidate information is moderated by such factors as sex, culture, interest, and motivation.²⁶ In addition, because the ability to link past events with current health behavior or problems emerges in middle childhood, early childhood interventions should focus on current correlates of health-related behavior. Because of these limitations, most interventions with younger children largely rely on parents, with relatively less child involvement.

Language skills must also be considered in implementing efficacious intervention strategies. Children's ability to label their experience and understand the recommended treatment approach may enhance or limit a child's ability to engage in and benefit from an intervention. Furthermore, children's expressive abilities, in part a function of culture and English proficiency,²⁷ are significant determinants of their participation in interventions.

Finally, self-understanding is another developmental competency deserving consideration in the health care setting. Over the course of childhood, with a dramatic peak in adolescence, children become increasingly concerned with developing coherence and consistency among their beliefs, values, and behavior. In this way, adolescents are actively constructing identity and asserting greater independence from parents. This striving can serve as a significant incentive for behavior change, particularly if current health-related behavior is in conflict with their self-identified goals. During this period, adolescents are often included to a greater, even exclusive, extent in intervention efforts while parental involvement is more limited and even negotiated with the adolescent.

Because children have relatively little control over selecting and modifying their environment, it is important to understand the larger context within which a child functions. In addition to affecting current functioning, social environments, including family, peers, school, and the larger community, may influence a child's efforts to modify health-related behavior. For example, nonadherence or engagement in health risk behavior may be reinforced, either intentionally or unintentionally, by individuals in the child's environment. Peer groups become especially salient in late childhood and adolescence when health risk behaviors dramatically increase. In this way, the environmental context for the targeted behavior must be considered and incorporated in the intervention approach.

EMPIRICAL SUPPORT FOR BI IN HEALTH CARE SETTINGS

Educational and Media-Based Interventions

One of the primary obstacles to implementing interventions in medical settings is the brief nature of medical vis-

its. One method used to circumvent such time constraints is the use of media-based interventions (eg, pamphlets, videotapes, compact discs). Limited research has shown that this type of intervention has been effective as a means of educating parents regarding many pediatric concerns, including children's antibiotic use,²⁸⁻³⁰ breastfeeding,³¹ poliovirus vaccinations,³² acute fever,³³ sun protection,³⁴ encopresis,³⁵ anesthesia,³⁶ lead poisoning,³⁷ and pesticides.³⁸ For example, children who participated with their parents in an adjunctive Internet therapy program for pediatric encopresis demonstrated greater improvements in toileting behaviors than did children who did not receive the Internet intervention.³⁵ In addition, media-based interventions have also had success in educating children and parents about childhood chronic illness, including asthma,^{39,40} cystic fibrosis,⁴¹ leukemia,⁴² and congenital heart disease.⁴³ A limitation of these interventions is that they often aim to increase knowledge, and it is unclear how knowledge gains translate to behavior change.

Computerized assessments are another form of media-based intervention that have been used less frequently. Computerized assessments can help tailor prescribed regimens to improve health outcomes without adding significant time to the medical visit. For example, adolescent girls who completed a computerized assessment of their health behaviors in the waiting room and then discussed the printout with their health care professional demonstrated improvement in nutrition and physical activity level.⁴⁴

An essential component of educational interventions is assessing the child's general functional status and, in particular, identifying psychosocial problems that may be affecting current health issues. Although this process is largely done in the examination room, self-administered questionnaires can aid in screening for problems and, thus, help to shape the pediatrician's focus, especially in regard to psychosocial concerns. Psychosocial dysfunction in children and adolescents has become a primary concern in pediatric practice¹; as many as half of child health care visits involve psychosocial concerns, such as behavioral, social, or educational difficulties.⁴⁵ However, parents may feel uncomfortable initiating conversation about psychosocial difficulties and prompts from the pediatrician may ease any distress or embarrassment. One of the most frequently used psychosocial questionnaires with pediatric populations is the Pediatric Symptom Checklist,⁴⁶ a 35-item parent-completed questionnaire designed to assess a wide variety of psychosocial dysfunction, including somatic complaints, emotional problems (eg, anxiety, depression), and behavioral problems (eg, school difficulties, aggression) in children and adolescents (aged 4-16 years). It has proven feasible for routine screening by nonmental health professionals.⁴⁷

MI-Based Prevention and Intervention With Health Risk Behaviors

Of all BIs targeting health risk behaviors in pediatric health care settings, MI has accumulated the most empirical support. With the exception of adolescent substance use interventions, the majority of the literature addressing the efficacy of MI with children, adolescents, and parents remains primarily theoretical.⁴⁸⁻⁵⁰ However, empirical sup-

port has accumulated for MI interventions aimed at tobacco use,^{19,51,52} alcohol use,⁵³⁻⁵⁶ and dietary control.⁵⁷ Because most adolescents do not self-refer for health-risk behavior intervention, these behaviors are likely to emerge when adolescents seek other services in health care settings.

Tobacco Use. Although most children and adolescents limit their cigarette use to experimentation, between 15% and 20% of youth smoke at least 1 cigarette daily.⁵⁸ Many youth believe that substance use is normative and therefore find it neither necessary nor desirable to quit.²¹ Whereas empirical studies with adult samples show moderate success with smoking cessation,⁵⁹ MI has accumulated limited, but promising, evidence as a BI for adolescent smoking. Brown et al⁵² and Colby et al¹⁹ found small effects, but not statistically significant group differences, between MI and brief advice conditions in increasing quit attempts. However, Brown et al⁵² found that youth who received MI reported greater self-efficacy regarding their ability to quit and, among youth who reported greater ambivalence, MI proved more efficacious than brief advice.

Alcohol Use. In comparison with the extensive research evaluating BI, and more specifically MI, to reduce alcohol use with adults,^{60,61} the literature evaluating brief strategies with adolescents is more limited. Adolescents' pattern of drinking appears to be unique in terms of higher levels of heavy episodic drinking (ie, drinking ≥ 5 drinks per occasion), decreased likelihood of meeting criteria for dependence, and increased likelihood of meeting criteria for abuse.^{53,62,63}

Barnett et al,⁵³ Monti et al,⁵⁵ and Spirito et al⁵⁶ have researched the effectiveness of MI in reducing alcohol use with adolescents (aged 13-19 years) seeking emergency health services. With older adolescents (aged 18-19 years), they found that the MI-intervention group and the standard hospital care group displayed equivalent levels of alcohol use reduction.^{53,55} However, at the 6-month follow-up, adolescents who received MI showed significantly greater harm-reduction behavior over the standard care group. Specifically, the MI-intervention group displayed decreased episodes of drinking and driving, alcohol-related injuries, and alcohol-related problems (ie, with parents, friends, police, school). With a sample of 16- through 20-year-olds engaged in polysubstance use, McCambridge and Strang⁵⁴ found a similar harm-reduction effect. Rather than commencing abstinence, adolescent participants who received MI subsequently engaged in moderate alcohol and substance use, representing a significant decrease in alcohol intake. As the authors indicate, the true benefit of MI with traditionally unreachable adolescent populations may be its ability to initiate any reduction in alcohol or substance use.⁵⁴

Similar to findings with older adolescents, there were no significant differences in drinking behavior between younger adolescents (aged 12-17 years) who received MI vs those who received standard care.^{53,56} However, Spirito et al⁵⁶ hypothesize that to effect change in alcohol-related behaviors with younger adolescents, parental communication skills and monitoring behaviors may warrant specific consideration.

Dietary Control. Although a relatively new health risk behavior area for using MI techniques, Berg-Smith et al⁵⁷ implemented an MI approach with a large sample of 13- through 17-year-old patients who had high levels of lipoprotein cholesterol and needed to reduce their intake of total fat, saturated fat, and cholesterol. Concordant with the patient's transition into high school, MI matched the patient's movement from family-based care to self-care. Postintervention, the MI group displayed reengagement in goal setting, as well as increased and renewed adherence to their specialized diets, resulting in decreased consumption of calories and dietary cholesterol. In addition, health care professionals and participants reported high levels of acceptance of the intervention.

Emerging Areas for MI Research. The efficacy of MI is being evaluated in several new health-risk behavior areas, including risky sexual behavior and marijuana use. For example, the use of MI and narrative therapy may help reduce high-risk sexual behavior and increase contraceptive use with a sample of girls,⁶⁴ and motivational enhancement therapy (ie, MI with feedback) is currently being used with marijuana-using adolescents in community-based treatment centers. Although these areas do not yet have the same level of empirical support as previously reviewed areas, data are forthcoming.

Use of MI With Children, Adolescents, and Parents. Although MI has consistently demonstrated efficacy in changing adult behavior, questions remain about the viability of MI with school-aged children. In particular, it is not clear whether younger children, with more limited abilities to form long-term goals and to experience ambivalence between future goals and current behavior, may demonstrate the same levels of benefits with MI.

In contrast, MI appears to be highly effective in increasing self-efficacy to enact change in adolescents.⁵² In addition to MI's demonstrated efficacy with adolescent substance use,⁵³⁻⁵⁶ MI is amassing support as a BI with adolescents who are highly ambivalent or who may be ambivalent about following a prescribed health care regimen. As a supportive, flexible, idiographic, brief, and autonomy-based intervention, MI overlaps well with adolescents' competing attentional demands, developing identities, and desire to assert independence.^{57,65} In addition, MI has shown promise as an intervention with parents of younger adolescents.^{10,53}

Intervening with parents' health risk behaviors for the benefit of their children, for example, reducing substance use behaviors with the aim of improving parenting, shows promise as an efficacious treatment.⁶⁶ In addition, addressing other parental behaviors, such as smoking in order to reduce children's passive smoke exposure^{51,67-69} and attending to children's dental care needs to prevent dental caries,⁷⁰ is gaining empirical support. Although there is limited research on the outcome of effective treatment relationships with children, adolescents, and their parents,¹⁰ anecdotal and descriptive literature on therapeutic work with children support the use of methods that resemble MI, such as an emphasis on the use of open questions, declarative and summary statements, and joining with the child.⁷¹ Clearly, more systematic empirical research is warranted.

Procedural Pain Control

Strong support has been generated for the use of psychological interventions in pediatric populations for procedure-related pain. Brief cognitive-behavioral interventions, such as breathing exercises, imagery, modeling, reinforcement, and behavioral rehearsal, are a well-established treatment for procedural pain in children and adolescents with cancer. They have also been found to be effective in reducing distress and pain associated with routine immunizations, dental treatments, and burn treatments.⁷² For example, to address distress associated with immunizations, parent-directed behavioral interventions initiated both before the immunization delivery and used during the actual immunization, such as the use of visual items, pacifiers, and the parent's voice, were effective in reducing infant distress and salivary cortisol levels.⁷³ In addition, deep-breathing distraction techniques that were generated by using a party blower were found to reduce distress levels in young children.⁷⁴ In fact, Tsao et al⁷⁵ demonstrated in a laboratory setting the efficacy of a 5-minute behavioral intervention on pain reactivity, finding that children trained in distraction methods (ie, vividly imagining a pleasant scene or activity) had the highest pain tolerance.

Adherence

Immunizations. Efforts to improve adherence to immunization recommendations have been largely successful in pediatric populations but almost one fifth of children in the United States lack at least 1 basic immunization.⁷⁶ A review of BIs aimed at improving vaccination coverage for all ages found that the most effective interventions were the use of client reminders/recall notices, health care professional reminders (eg, in patient medical records), multicomponent interventions including either education or expanding access as one component, reduction of out-of-pocket costs, and assessment and feedback to health care professionals regarding performance in delivering vaccinations. There is also sufficient evidence for incorporating interventions to improve vaccination coverage in home settings; in Women, Infants, and Children program settings; and in child care, school, and college settings in the form of vaccination requirements.⁷⁷

Childhood Chronic Illness. Brief psychological interventions have also been conducted to promote adherence to recommended treatment regimens in children and adolescents with chronic illnesses. Although the number of empirically supported adherence interventions is relatively small, there is considerable support for adherence-related interventions involving children and adolescents with asthma, cystic fibrosis, type 1 diabetes mellitus, and juvenile rheumatoid arthritis.²

These BIs can involve educational, organizational, or behavioral strategies in isolation or combined in multicomponent packages. For instance, educational interventions, which typically include imparting verbal or written information to children and parents, and organizational interventions, such as increasing the level of physician supervision, have demonstrated support in promoting adherence in pediatric patients with asthma.² In

addition, behavioral interventions targeting dietary recommendation adherence, which reinforce adaptive behaviors and modify maladaptive behaviors, have been found to be successful with children with cystic fibrosis.⁷⁸ In fact, a meta-analysis revealed that behavioral interventions focused on improving nutritional status by increasing caloric consumption are comparable with more invasive interventions such as oral supplementation and enteral and parenteral nutrition.⁷⁹

Overall, brief multicomponent treatment packages have been the most frequent type of evaluated intervention used to promote adherence in a variety of childhood chronic illnesses. Multicomponent interventions have been found to effectively promote adherence to medical regimens in children and adolescents with asthma, type 1 diabetes mellitus, and juvenile rheumatoid arthritis.² In fact, multicomponent packages evidence the strongest support for successfully decreasing nonadherence in pediatric cases of type 1 diabetes mellitus² and for preventing the anticipated decreased medication adherence in juvenile rheumatoid arthritis.⁸⁰

In addition, MI has provided another means of BI to promote diabetes mellitus-related adherence. Research investigating the effects of MI with adolescents with diabetes mellitus is in the initial stages, but preliminary results suggest that MI promotes better metabolic control⁶⁵ and that MI delivered in a group format effects an adaptive shift in illness perception, which may later influence self-care behaviors.⁸¹

In summary, across chronic illness categories, although few in number and variable in methodological rigor, brief psychological interventions have demonstrated various levels of efficacy in increasing adherence with children and adolescents with chronic illness.

SUMMARY AND FUTURE DIRECTIONS

Brief interventions, including MI, have begun to accumulate empirical support as efficacious approaches to treating a wide range of behavioral, developmental, and social disturbances in children and adolescents within pediatric settings. Specifically, BIs in pediatric care have targeted educational and media-based interventions, MI-based prevention and intervention of health risk behaviors, procedural pain control, and adherence to treatment recommendations.

In spite of recent advances, future research must reflect the complexity of health-related behaviors and their relationship to individual and contextual systems at various levels of analysis over time.⁸² In BI outcome research attending to the predictive value of individual (eg, comorbid conditions, developmental level) and contextual (eg, peer influences, family conflict) characteristics and the bidirectional dynamics between them (eg, parental modeling of health risk behavior) is needed. In this way, interventions best matched to patient characteristics and current health-related issues may be identified.

Although support is amassing for BI efficacy with a variety of health-related issues, effectiveness has not yet been adequately addressed. Larger and more diverse samples, more detailed descriptions of intervention approaches, and greater methodological rigor are needed to demonstrate the generalizability of BI. In addition, some

studies have begun to compare the relative efficacy of different forms of BI. Continued effort in this direction is needed to identify the relative efficacy of various approaches for various health-related issues and for various types of patients.

In addition, BI outcome research must evaluate the ways in which parental involvement may optimize health-related outcomes. Identifying the most beneficial way to involve parents with respect to health-related intervention target, developmental level, nature of parent-child relationship, and the type of proposed treatment would represent significant progress.

Accepted for Publication: May 23, 2005.

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Chloroform, effective in flatulent colic, also useful in hepatic or saturnine colic, often used in combination with opium. Morphine, hypodermically, repeated in 15 minutes, gives more relief than any other remedy in all forms of colic.

—On the treatment of colic, from *Materia Medica Pharmacy and Therapeutics*, 1906