The Behavior Analyst 2009, 32, 149–161 No. 1 (Spring)

A Behavior-Analytic Account of Motivational Interviewing

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Several published reports have now documented the clinical effectiveness of motivational interviewing (MI). Despite its effectiveness, there are no generally accepted or empirically supported theoretical accounts of its effects. The theoretical accounts that do exist are mentalistic, descriptive, and not based on empirically derived behavioral principles. Empirical research is being generated regarding the role of client and therapist verbal behavior in MI. Client and therapist speech in MI sessions has been correlated with subsequent client behavior change (Amrhein, Miller, Yahne, & Fulcher, 2003; Gaume, Gmel, & Daeppen, 2008; Moyers et al., 2007). Although provocative, these findings are correlational and no theory has yet been provided to explain them. The purposes of the present paper are (a) to bring MI to the attention of clinical behavior analysts; (b) to provide a conceptual account of MI that relies on recent developments in the behavior analysis of motivation and verbal behavior, especially stimulus equivalence and transformation of functions; (c) to provide a possible answer to two critical questions: ''How does MI evoke client in-session talk abut behavior change?'' and ''Why is this change talk related to outcomes?''; and (d) to use this account to identify important research questions and perhaps enhance MI's effectiveness.

Key words: motivational interviewing, transformation of functions, stimulus equivalence, verbal behavior, change talk, derived stimulus relations

Motivational interviewing (MI) is an empirically supported treatment developed in the addictions field that has demonstrated effectiveness across a wide variety of clinical problems (Hettema, Steele, & Miller, 2005). MI was not founded on behavioral principles, but rather grew from William R. Miller's clinical experience based on the Rogerian client-centered paradigm and his interest in social psychological theories. Its principles were derived from these experiences and were laid out with minimal specific theoretical derivation. Such a theory would be useful for future research and practice involving MI. The present paper will describe MI and present empirical support for its efficacy, review recent findings related to correlations between verbal behavior in MI sessions and subsequent behavior change, and provide a behavior-analytic account of these effects based on empirically derived behavioral principles, especially stimulus equivalence and transformation of functions. We hope that the following conceptual account of MI will provide a framework for clinical behavior analysts to understand and implement MI in their practice, identify important research questions, and perhaps, enhance the effectiveness of MI.

SUPPORT FOR THE EFFICACY OF MI

Reviews of MI have found robust and convergent effects in diverse areas of behavior change (Burke, Arkowitz, & Menchola, 2003; Dunn, DeRoo, & Rivara, 2001; Hettema et al., 2005). Hettema et al. recently published a thorough and exhaustive meta-analysis of the effectiveness of MI and its adaptations. Target behaviors included alcohol use, illicit drug use, HIV risk reduction, smoking cessation, treatment adherence,

We thank the reviewers for their valuable input and Theresa Moyers, Alisha Wray, and Rachel Freund for their insightful comments and suggestions.

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gambling, water purification and safety, eating disorders, and diet and exercise. The estimated average short-term between-groups effect size for MI calculated for comparisons to both other treatment and control groups was .77 *dc* post treatment and .30 *dc* at follow-ups up to 1 year (*dc* = 1.0 indicates a between-groups difference of one standard deviation).

The effects of MI seem to decrease over time, with the exception of studies in which MI is used in conjunction with standard treatments such as education, cognitive therapy, skills training, Alcoholics Anonymous, and stress management (Hettema et al., 2005). MI was found to increase engagement, retention, and adherence to standard treatments. Its average effectiveness in improving outcome was conserved or increased over time, averaging .60 *dc*. Its effects also appeared to be larger when therapists did not deliver MI in accordance with a treatment manual. The mean effect size of manualized treatments was .37 *dc*, and the effect size for nonmanualized treatment was .67 *dc*.

Although the results of the Hettema et al. (2005) study are encouraging, its authors caution that the effect sizes reported in the meta-analysis have been found to be highly variable across providers, populations, target behaviors, and settings. They concluded that variation in MI delivery seems to have a large influence on outcome. Although there is little doubt that MI is effective, having an empirically based theory explaining its efficacy could perhaps help to resolve these effect-size differences and enhance the delivery of MI. MI researchers suggest that recent research involving "change talk," client statements about behavior change, may lead to such a theory. We next discuss the critical components of MI and review the literature related to change talk as a process proposed to underlie its effectiveness.

WHAT IS MI IN MI TERMS?

Miller and Rollnick (2002) define MI as "a client-centered, directive method for enhancing intrinsic motivation for change by exploring and resolving ambivalence" (p. 25). It is directive in the sense that MI therapists differentially respond to and reinforce client statements about change, and it is client-centered in that the client's goals and values are considered to be most important.

In MI, intrinsic motivation is not seen as a state or trait of an individual, nor is it imposed by outside forces, such as legal sanctions, punishment, social pressure, or financial gain. Rather, it is considered to be motivation that is inherent in certain behaviors. As an example, the motivation to read a good book or watch a good movie is inherent in those acts, and is not compelled by external forces. Miller and Rollnick (2002) believe that motivation can not only be influenced by, but may actually arise from, interpersonal processes, including specifically prescribed verbal behavior of the therapist during MI sessions. One such interpersonal process that is central to MI is the attempt to assist the client in exploring and resolving ambivalence about behavior change.

Ambivalence is described as having mixed feelings or feeling two ways about change and is viewed in MI as nonpathological. That is, ambivalence is a natural phase in the human change process. In MI, resistance and ambivalence are normalized and minimized through the therapeutic relationship. This differs from other therapies that seek to implement change whether the client is ambivalent or not.

Critical Components

Critical components of therapist behavior include adhering to what Miller and Rollnick (2002) term *MI spirit*. MI spirit consists of three components: collaboration, evoca-

tion, and autonomy. Collaboration involves a partnership between the client and the practitioner in which the practitioner honors or respects the client's expertise and perspective. No assumptions are made that the therapist enjoys a better, privileged, healthier, more accurate, or less pathological perspective. Evocation refers to a belief that the resources and motivation for change are within the client, and that these resources and motivation can and should be evoked from the client rather than provided by the practitioner. Autonomy is described as affirmation of the client's right to decide for him- or herself whether or not to change. The components of MI spirit are based on Carl Rogers' theory of critical counselor skills: accurate empathy, nonpossessive warmth, and genuineness.

Four general principles are cited as important to MI practice: expressing empathy (through respectful, accepting, reflective listening in order to convey understanding of the client's point of view), developing discrepancy (exploring client values and goals and the discrepancy between them and current behavior), rolling with resistance (not arguing with the client about change), and supporting self-efficacy (enhancing the client's belief in the possibility of successful change) (Miller & Rollnick, 2002), These principles reflect the humanistic philosophy of MI: Clients possess the capacity for change, and the therapist's goal is to release the client's inner potential and disencumber the natural change process through resolution of ambivalence.

Specific Strategies

MI therapists are taught eight strategies for successful practice. In addition to learning the spirit of MI, these include learning client-centered counseling skills, recognizing change talk and sustain talk (talk favoring the status quo), evoking and responding to change talk, responding to sustain talk and resistance, negotiating a change plan, and consolidating commitment to change.

Client-centered counseling skills are taught using the acronym OARS; open questions, affirmations, reflections, and summaries. These skills are designed to accomplish all of the tasks above with special emphasis placed on evoking and responding to change talk. Presumably, the therapist evokes and reinforces change talk in order to explore and resolve ambivalence. Within MI, there is a conscious and strategic effort to differentially reinforce change talk by attending to, affirming, and reflecting it back to the client (Hettema et al., 2005; Miller & Rollnick, 2004; Moyers & Rollnick, 2002). The founders of MI have stated that MI has made use of learning theory and behavior therapy in its deliberate differential reinforcement of change and sustain talk (Miller, 2000; Moyers & Rollnick).

Support for Change Talk as an Effective Process Within MI

Empirical support exists for the relation between client change talk and treatment outcome. A study by Amrhein et al. (2003) examined client change talk in MI sessions. They classified change talk into categories including statements about the desire, ability, reasons, need, and commitment to change. Amrhein et al. found that when client statements about committing to behavior change increased in intensity throughout a particular therapy session, improvements in treatment outcome were observed. Specifically, they found that when clients came into treatment sessions stating, for example, that they "might" make changes and later in the session state that they "will" make changes, these increases in client commitment intensity were correlated with better outcomes. Earlier statements of the desire, ability, reasons, and need to change were

correlated with commitment statements but not outcomes. Subsequent studies, however, found that several types of change talk predicted outcomes.

Gaume, Gmel, and Daeppen (2008) found that client statements of ability to change in brief interventions delivered in a hospital setting predicted positive changes in drinking behavior 12 months later. Baer et al. (2008) examined adolescent client language in brief MI sessions related to illicit drug use. Their findings indicated that sustain talk related to desire and ability to change, strongly and negatively predicted days of abstinence at both 1- and 3-month follow-ups, and statements about reasons in favor of change predicted increased days of abstinence at 1-month follow-up. Thus, it seems that evoking all types of change talk is important in MI practice.

Moyers et al. (2007) linked therapist behavior to client speech. They found that client speech in early MI sessions was related to subsequent decreases in drinking, and that occurrences of specific types of client speech were influenced by therapist behaviors. In an earlier study, Moyers and Martin (2006) observed client responses to therapist speech consistent with the spirit of MI (affirming and emphasizing autonomy and personal control) and speech inconsistent with the spirit of MI (advising, directing, confronting) and found that MI-inconsistent speech evoked sustain talk, and MI-consistent speech evoked change talk. A subsequent study by Gaume, Gmel, Faouzi, and Daeppen (2008) supported the findings that therapist and client interpersonal processes were critical in evoking both change and sustain talk.

MI Theories of Change Talk

To explain these findings, Miller and Rollnick (2004) have appealed to self-perception theory. Self-perception has been described as judgments made about oneself by oneself (Bem, 1967). In line with Skinner (1957), Bem further describes self-perception as "an individual's ability to respond differentially to his own behavior and its controlling variables" (p. 184). Self-perception theory has been linked to MI, because it has been suggested that when clients in MI therapy attend to their own verbal behavior regarding behavior change, they begin to convince themselves of the need to change (Miller & Rollnick, 2004). Miller and Rollnick further elaborate that the empathic, accepting therapist facilitates this process. Thus, client speech in the therapeutic relationship is critically important in the theory and practice of MI and has been correlated with positive outcomes.

In their recent meta-analysis of MI's effectiveness, Hettema et al. (2005) put forth three hypotheses related to verbal behavior in sessions based on data collected over a 20-year period. These hypotheses are: (a) Counselors who practice MI will evoke increased levels of change talk and decreased levels of sustain talk from clients relative to more overtly directive or confrontational counseling styles, (b) the extent to which clients verbalize sustain talk during MI will be inversely related to the degree of subsequent behavior change, and (c) the extent to which clients verbalize change talk during MI will be directly related to the degree of subsequent behavior change.

Although these hypotheses are testable and have already been at least partially supported (e.g., Moyers et al., 2007), and self-perception theory has been offered to account for this these correlations, functional relations between change talk and subsequent behavior change remain unexplored. The following behavior-analytic account attempts to answer two important questions: (a) *How* does MI increase client

change talk? (b) *Why* does increasing client change talk influence postsession behavior?

PROCESSES THAT UNDERLIE MI'S EFFECTIVENESS: A BEHAVIOR-ANALYTIC PERSPECTIVE

It seems reasonable to begin by defining or characterizing the components of MI in behavioral terms. As mentioned earlier, MI is defined as "a client-centered, directive method for enhancing intrinsic motivation for change by exploring and resolving ambivalence" (Miller & Rollnick, 2002, p. 25). Hayes, Strosahl, and Wilson (1999) offered a behavior-analytically sensible definition of client-centered approaches as arranging a nonpunitive, nonconfrontational environment that is intended to reduce counterpliance. "Directive" refers to therapists evoking and differentially reinforcing change talk. "Intrinsic" motivation can be understood as automatic reinforcement (Vaughan & Michael, 1982), or behavior that is maintained because of its automatic or inherent consequences without specifically requiring environmental support. "Exploring and resolving ambivalence" can be interpreted in behavioral terms as verbalizing, during the therapy session, the range of short- and long-term consequences of the target behavior coupled with a subsequent verbal commitment (a public self-mand) to either change or not change the target behavior.

Behavior-analytically then, MI may be seen as a therapeutic strategy in which the therapist acts to reduce client counterpliance to evoke and reinforce tacting the full range of consequences (change talk and sustain talk) for the occurrence and nonoccurrence of the target behavior. This leads to elaborated self-mands, which are correlated with subsequent changes in the target behavior. Having offered one possible behavior-analytic definition of MI, we now discuss the two questions mentioned above.

How MI Evokes Change Talk

As Skinner (1957) noted, one way of strengthening verbal behavior is for a person to create an environment conducive to the verbal behavior that one wishes to evoke. The accepting, empathic therapist creates such an environment by rolling with resistance, expressing empathy, and accepting and affirming the client through the use of OARS. These behaviors signal the absence of punishment and enstate the therapist as a source of reinforcement for speaking freely about problem drinking or any other behavior. (For the sake of simplicity, all examples of MI practice used here will be related to alcohol use.) In so doing, the therapist increases the probability of the client emitting certain subdivisions of his or her verbal repertoire, in this case, verbal behavior about the full range of contingencies related to drinking (O'Donohue & Ferguson, 2001).

Empathy enhances acceptance in that an accurate understanding of the client's context facilitates or augments the client's sense of being accepted. If the client feels accurately understood, then acceptance by the therapist is perceived to be more genuine and reliable and less contrived. In that sense, empathic reflections can serve an autoclitic function in that they enhance the effects of the therapist's verbalizations that are intended to communicate acceptance. In addition, they can serve a motivating function in that they enhance the occasioning and reinforcing properties of the therapist's verbal behavior, thereby leading to a greater probability that the client will emit previously punished, painful, or sensitive verbal behavior about his or her problem drinking.

According to Kohlenberg (2000), clients in an accepting therapeutic

relationship are able to do their own functional analyses of the controlling variables present both within and outside the therapy session. Wagner (1999), like Kohlenberg, believes that person-centered processes of identifying the client's own choices and preferences regarding changing drinking behavior is similar to conducting functional assessments and analyses. The more accurately the client contacts the reinforcers and punishers associated with drinking, the more control these consequences can exert and the more accurate these analyses will be. Finally, although the client may have some understanding of his or her behavior, these accounts are often mentalistic or involve historical contingencies for drinking that are no longer in effect. Acceptance evokes more accurate exploration of previously avoided contingencies and may extinguish behavior related to inaccurate tacting of behavior–contingency relations.

To date, the MI literature has provided a topographical description of therapist reflections based on the linguistic structural paradigm. It is important to define functionally the different types of therapist reflections here, because the types of reflections identified in MI have distinct functions that are relevant to a behavior-analytic account of its effectiveness.

All reflections are mands of a sort in that they are verbal operants that are maintained by the consequences of evoking client change talk and expressing empathy. Reflections are also intraverbals because they are themselves evoked by verbal discriminative stimuli (e.g., client verbal behavior concerning drinking). Reflections can be either simple or complex. Complex reflections can be further categorized into amplified and double-sided reflections.

Simple reflections are defined as merely restating or repeating the client's preceding utterance. For example if a client states that "Drinking helps me to relax," a simple reflection would merely repeat, "Drinking helps you to relax." As mentioned above, one common function of simple reflections is to demonstrate that the therapist understands the client. Skinner (1974) lays out several levels of understanding. In its simplest form, understanding is being able to correctly repeat what someone says, related here to the MI concept of a simple reflection. The next level of understanding involves responding appropriately, and the deepest level of understanding is being able to specify the contingencies of which behavior is a function.

Complex reflections function to specify more precisely the contingencies that control drinking behavior and, hence, increase understanding of behavior. In response to the client statement, "Drinking helps me to relax," a complex reflection might be, "It would be hard for you to give up drinking." This reflection increases the probability of the client emitting statements about the contingencies that govern his or her ability to change while also reducing counterpliance.

Amplified reflections exaggerate or overstate client statements about change. Some functions of amplified reflections are to reduce counterpliance by emphatically agreeing with the client and to encourage further exploration and specification of the full range of contingencies that govern behavior. If in response to the client statement "Drinking helps me to relax," the therapist uses the amplified reflection "Drinking is the *only* way you can relax" the word *only* occasions additional verbal behavior about the relation between drinking and relaxing. To respond appropriately, the client can either endorse that statement, thereby restricting the class of relaxing events to just drinking, or qualify that statement by mentioning other behaviors that are also relaxing. The client has now identified more than one behavioral option for relaxing.

This alone may lead the client to relate the various ways of relaxing, or the therapist may prompt the client to relate these ways of relaxing by comparing the range of appetitive and aversive consequences for drinking. The function of drinking as the *only* way to relax is thus transformed. Drinking now becomes one of several members of a functional class of behaviors that are relaxing. However, drinking is distinct from most other members of this class in that it is harmful.

Double-sided reflections link client statements for and against change with an *and*. In this case a double-sided reflection might be, "You'd like to quit drinking *and* you find it hard to relax without alcohol." This type of reflection functions to develop a discrepancy between the client's values and goals and his or her current behavior. Verbally contacting the functions of drinking behavior and other behaviors with similar functions but without the aversive long-term consequences may momentarily increase the reinforcing value of talk in favor of change. Further, therapist reinforcement through empathic reflection for verbally contacting these contingencies may function as establishing operations that increase the reinforcing value of talking about behavior change.

Finally, therapist summaries reflect all of the client's relevant statements of change and sustain talk. Summaries reflect the core of client ambivalence; they lay out the range of competing contingencies controlling client behavior, thereby deepening understanding of behavior–contingency relations. The client is now able to resolve ambivalence and bring his or her behavior under the control of one or the other set of competing contingencies. Because the MI therapist has presumably developed discrepancy between behaviors and the client's own goals and values and has identified other behaviors that function similarly to drinking but without the aversive consequences, the client is more likely to choose to commit not to drink. The therapist can then move into consolidating that commitment by elaborating self-mands about change and assist the client in making a behavioral plan for change.

In summary, MI evokes change talk by creating a therapeutic relationship of acceptance, collaboration, and client autonomy, which reduces counterpliance and avoidance of contact with painful contingencies related to drinking, while deliberately and differentially reinforcing change talk by using client-centered counseling skills (OARS) to establish variation in client verbal behavior related to change. The therapist reinforces the client's behavior of accurately tacting the full range of competing contingencies, both historical and current and proximal and distal, that govern drinking behavior. Thus, MI is essentially an environment deliberately arranged for the evocation of change talk and the elaboration of self-mands that are correlated with behavior change.

Why Change Talk May Affect Outcomes

Social contingencies. Resolution of ambivalence during the session is indicated by client declarations of changes he or she will make in the frequency of the target behaviors, which is partly a function of the experienced consequences of past occurrences of the target behavior, the verbalized consequences of future occurrences of the target behavior, and the interpersonal contingencies that operate in the session. Once verbalized, there is an inherent social contingency between the therapist and client operating on the client's declarations or verbalized commitments to change.

For example, the client wants to appear rational and make the right choice between alcohol and health. Reinforcement delivered by the ther-

apist is a direct social contingency for making the right choice. A social consequence has been established that becomes a means of evaluating behavior. Once outside the therapy session, the behavior may be trapped by the environment, and natural contingencies may provide additional reinforcement.

Empirical support exists for social contingencies functioning to increase the effects of self-reinforcement (Hayes, 1985), self-statements (Rosenfarb & Hayes, 1984), and self-motivation (Hayes & Wolf, 1984). Social contingencies have also been shown to strengthen rule governance (Hayes & Wolf), especially for self-generated rules (Catania, 2006). In MI the therapeutic relationship again becomes extremely important. The accepting, empathetic therapist becomes a discriminative stimulus for social contingencies that are in effect regarding reporting drinking behavior. The client must come face to face with a respected, accepting person who has heard him or her utter statements related to drinking and what is important in their lives. In this way, social contingencies are also brought to bear on the client's rule-governed behavior, and new rules can be generated during the session as well.

Rule-governed behavior. Other MI strategies may also function to weaken rule-governed behavior. Let us use the example of the client statement "Drinking helps me to relax." This statement implies the rule, "If I drink, then I can relax." We previously described the therapist's amplified reflection, "Drinking is the *only* way you can relax," as changing the function of the client's statement, because the class of behaviors that are relaxing may become expanded or may be parsed into those that are relaxing and healthy and those that are relaxing and unhealthy. Many types of reflections serve to evoke further exploration of contingencies that govern drinking behavior and thereby identify inaccurate rules or weaken rigid rules around drinking and its consequences. The MI strategy of supporting self-efficacy may also weaken verbal rules about drinking.

Supporting client self-efficacy (Bandura, 1997) for behavior change refers to ways the therapist can alter the client's belief about the probability of successfully changing his or her drinking behavior. Changing addictive behaviors is difficult. If the client does not believe that he or she will succeed, it seems futile even to make the effort. The rule, "My life will be better if I quit drinking, but I don't think I can," is unlikely to be as correlated with successful outcomes as the statement, "My life will be better if I quit drinking, and if I try to quit I can."

The therapist's role as a trained professional gives credibility to assertions that the client can change, and combined with a trusting, supportive relationship may serve as an autoclitic that enhances the probability of a positive response to the therapist's encouragement (mand) to commit to change. A common way of supporting client self-efficacy is for MI therapists to ask clients to recall instances in which they have been successful in changing their behavior in the past. Discussing these variables with the therapist can lead to new strategies (rules) that serve to clarify the behavior needed to overcome temporally extended, competing, and conflicting contingencies. Equipped with new ways to obtain the potentiated consequences associated with reduced drinking or abstinence, the client may be more likely to comply with the therapist's subtle mands and verbally commit to change.

Values. Clarifying and identifying values helps clients to decide what goals are important in their lives. In describing the use of values in acceptance and commitment therapy, Hayes et al. (1999) explain the

function of statements about values as allowing behavior to be directed and coordinated over long periods of time even when more immediate reinforcement is available. Miller and Rollnick (2002) state that change occurs when a person connects his or her behavior to his or her own intrinsically held values. The fact that MI evokes statements from the client about his or her own values may be an important component of its effectiveness. An inherently held value is a stronger reinforcer for behavior than one imposed from without (Catania, 2006). By seeking to evoke and understand the client's own values, the MI therapist uncovers strong intrinsic motivation for change.

In providing an answer to why change talk is related to outcomes we have linked MI to the behavior-analytic literature regarding social contingencies, rule-governed behavior, and values. One more link is needed, however, to complete our task. Linking MI to the literature on transformation of functions via stimulus relations is necessary to further explain how client and therapist verbal behavior may alter the functions of the behaviors they describe.

Derived Stimulus Relations and Transformation of Stimulus Functions

Derived stimulus relations refer to the untrained relations among stimuli that emerge as a result of relational responding. One type of derived stimulus relation is stimulus equivalence. As Sidman, Kirk, and Willson-Morris (1985), Sidman and Tailby (1982), Sidman, Willson-Morris, and Kirk (1986), and others have repeatedly shown, when one stimulus (A) is directly related to two other stimuli, B and C, then untrained relations between B and A and C and A (symmetry) and between B and C (transitivity) typically emerge in verbal humans. Stimulus relations other than equivalence also result in derived relations. For example, if it is trained that A is greater than B and B is greater than C, then most verbally able humans will derive that B is less than A, C is less than B and A, and A is greater than C. When the relations among stimuli are based on the actual physical dimensions of the stimuli, the relations are nonarbitrary.

More relevant to verbal processes is arbitrary relational responding, in which the relevant properties of the related stimuli are determined by social–verbal contingencies. The relations between words and their referents, for example, are arbitrary in that they are established by the verbal community. One example is the relation between nickels and dimes. Although nickels are larger than dimes, the verbal community has arbitrarily established that dimes are more valuable than nickels.

An interesting and particularly relevant characteristic of derived relational responding is the transformation of stimulus functions. Two laboratory examples are offered. Dougher, Augustson, and Markham (1994) showed that after equivalence relations were established among a set of stimuli, a fear-eliciting function established via classical conditioning for one member of that set transferred to the other members of that set so that they all elicited a fear response.

In a subsequent study, Dougher, Hamilton, Fink, and Harrington (2007) first established an arbitrary size ranking among three equally sized but visually distinct figures, such that Stimulus A was smaller than Stimulus B, which was smaller than Stimulus C. Stimulus B was then paired with mild electric shock until it elicited a conditioned fear response. After that, Stimuli A and C were presented on discrete trials. Most participants showed smaller fear responses to A than to B and larger fear responses to C than to B, even though neither A nor C had ever been paired with shock. That is,

participants not only responded with fear to stimuli that had never been associated with an aversive event but they also showed more fear to a stimulus that had never been paired with shock (C) than one that had been directly conditioned (B). In what follows, we use the principles of derived relational responding and transformation of stimulus functions to interpret the effects of the MI therapist on client verbal behavior and the relation between the client's in-session verbalizations and subsequent changes in targeted behavior.

Transformation of functions via stimulus equivalence may explain how the verbal report of the contingencies related to drinking—client change talk—acquires some of the functions of the actual consequences of drinking. This process brings real-world past, present, and future consequences into the psychological present in the therapy session.

In relation to supporting self-efficacy, verbalizing successful change strategies may serve several functions, including prompting new attempts to change, differential potentiation of the contingencies surrounding change, and the identification of variables that either prevented change or occasioned relapse. Verbally contacting the contingencies associated with past successful change efforts may help the client to experience some of these reinforcing consequences in the present because of the process of transformation of stimulus functions. This verbal contact may serve as a prompt for new efforts to change.

Stimulus equivalence can also make verbally contacting contingencies a painful affair. When the client thinks of past aversive consequences or possible future consequences related to drinking, the client may feel shame or guilt about both past and possible future occurrences of excessive drinking because some of the functions of these consequences are brought into the psychological present via the relations between the events and their verbal equivalents. MI therapists' responses to in-session client verbal behavior serve many functions, including verbally exploring and manipulating relevant contingencies for the client and fostering acceptance, that allow the client to contact psychologically painful verbal accounts of behavior without attempting to escape or avoid them.

The process by which behavior comes under the control of statements about values might be understood to occur through transformation of function via stimulus equivalence as well. The connection between statements about values and behavior is made relevant because the verbally contacted contingencies for drinking related to a client's values take on some of the psychological functions of the actual consequences themselves through stimulus equivalence. The function of behavior outside the therapy session is now transformed via its equivalence relation with the verbal behavior evoked in the MI session. Temporally extended consequences can now exert control over behavior in spite of more proximal available reinforcement.

DISCUSSION

Although the topography of MI might look generally the same, when used within a behavioral framework it may be used more flexibly and effectively. If empathic acceptance becomes understood functionally as a method of helping clients accurately tact the range of competing contingencies that control their behavior, the emphasis in therapy may shift from technique or form (e.g., making a good reflection) to function (e.g., occasioning clinically useful verbal behavior).

When therapists understand that verbal behavior in the therapy session shares some of the psychological functions of its referents through transformation of stimulus functions,

they can better understand the in-session verbal behavior of their clients and how to influence the probability and effectiveness of change talk. For example, when a client offers change talk, instead of classifying it as change talk and then reflecting for the sake of evoking and reinforcing it, the behavior-analytically oriented therapist might query the client as to the verbal and environmental contingencies and the social and nonsocial contingencies that control the behavior. Instead of evoking the pros and cons of behavior per se, the therapist evokes a description of the contingencies associated with the emission of that talk, and the consequences of the relevant behavior outside the session associated with the client's verbally governed and contingency governed behavior around drinking. Knowing about transformation of stimulus functions would change MI therapists' orientation from evoking change talk for the sake of evoking and reinforcing it, to evoking and reinforcing change talk in order to evoke the psychological functions associated with the consequences it refers to. The idea would be to have contingency-shaped, inaccurately verbally tacted, or no longer relevant historical contingencies shift to more accurate and flexible verbally governed behavior. This shift to verbal governance of behavior through transformation of stimulus functions allows a broad range of possible contingencies to be contacted in association with the behavior around drinking, thus allowing the client's behavior to come under the control of the contingencies associated with his or her values and goals.

If therapists were to concentrate on making salient and overt otherwise inconspicuous contingencies and covert rules governing behavior and understand the basic behavioral principles behind rule governance and transformation of stimulus functions, MI could possibly become an even more effective therapy. This is, of course, an empirical question that should be addressed in future research.

Another possible advantage of a behavioral account of MI is that it allows us to understand the functional relations as they happen in the therapy session so that therapists can adjust their behavior on the fly in relation to what clients do in therapy. In other words, therapists' behavior can be sensitive to the contingencies that exist during the session rather than be rule governed, as is the case when therapists strictly follow a manual or a treatment protocol. Evidence for the benefits of a more flexible approach is offered in Hettema et al.'s (2005) meta-analysis that found that manualization of MI decreased its efficacy. In light of this finding, manuals might be revised in an attempt to evoke and reinforce change talk more effectively by arranging verbal contingencies for a client rather than following rules about when and how to evoke change talk.

Finally, some traditional approaches to substance abuse counseling and therapists trained in them employ a confrontational therapeutic style (Toriello & Leierer, 2005). If therapists understand that modeling acceptance has specific functions and is intended to facilitate desired outcomes rather than just being a component of the spirit of MI, they may be more likely to adopt it and abandon more confrontational and less effective approaches.

We have offered a behavior-analytic definition of MI as a therapeutic strategy in which the therapist acts to reduce client counterpliance in order to evoke and reinforce tacting the full range of consequences for the occurrence and nonoccurrence of the target behavior. This strategy subsequently leads to elaborated self-mands, which are correlated with subsequent changes in the target behavior. In our attempt to answer

the questions, How does MI evoke client in-session talk abut behavior change? and Why is this change talk related to outcomes?, we linked MI spirit and strategies to the behavior-analytic literatures regarding social contingencies, rule-governed behavior, and values. Finally, we described transformation of functions via stimulus equivalence as the process through which talking about behavior change might exert its effects on subsequent behavior.

There is no question that MI is both an effective and efficacious therapeutic method for behavior change across a wide array of problem behaviors. We believe that it is worthwhile for behavior analysts to add MI to their list of essential clinical treatments. It is hoped that this behavior-analytic account of the effectiveness of MI will bring MI to the attention of behavior analysts and possibly improve its effectiveness.

We previously stated the three hypotheses put forth by Hettema et al. (2005) related to the correlation of in-session change talk in MI to outcomes and how MI might exert its effects. Perhaps future MI research influenced by this behavior-analytic description will shift the goal from predicting correlations between in-session client behavior and outcomes to prediction and influence of behavior both within and outside the therapy session. Such research might examine rule governance in MI and elucidate the process of transformation of stimulus functions that allows verbal behavior during the session to alter the source of control of clients' behavior. Of course it remains to be seen whether or not empirical studies related to this behavior-analytic account will bear fruit. We are of the opinion that they will.

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